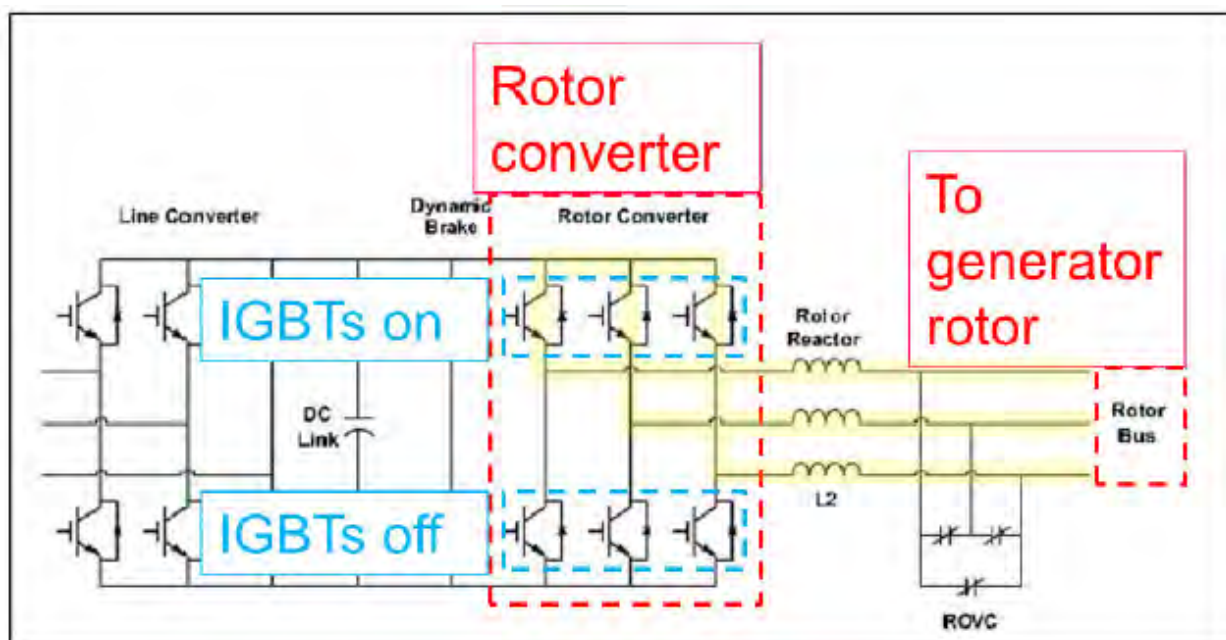


uninterruptible power supply provides power to the converter controller during low voltage events. Tr. (Holliday) at 217:17-218:4; JX-0046C.0043 (“24 V dc control power is supplied through a 230 V UPS. . . . This 24 V is supplied to control boards and critical relay logic, which cannot be allowed to drop out during line bus voltage dips or DC Link failures.”). SGRE does not dispute that the Domestic Industry Products practice this limitation. *See* RRB at 27-29.

d) Limitation [15.6]: “a circuit coupled with the input of the inverter and with the converter controller to shunt current from the inverter and generator rotor in response to a control signal from the converter controller.”

GE adduced evidence to show that the Domestic Industry Products comprise “a circuit coupled with the input of the inverter and with the converter controller to shunt current from the inverter and generator rotor in response to a control signal from the converter controller.” Tr. (Habetler) at 317:1-319:4; Tr. (Holliday) at 219:2-221:24. Specifically, the Domestic Industry Products comprise a crowbar protection circuit that can be turned on and off by the converter controller to shunt current from the rotor bridge and generator rotor. The “‘crowbar’ function that shorts the rotor circuit and isolates the dc link . . . is used for severe faults close to the WTG [wind turbine generator].” CX-0115C.0006. GE’s crowbar works by shorting together the upper or lower IGBT gates in the rotor bridge, effectively shorting the three phases of the rotor to the upper or lower DC link in the power converter. Tr. (Holliday) at 219:5-14; Tr. (Habetler) at 317:10-23; *see also* Tr. (Saylor) at 437:16-24 (“IGBT” stands for insulated gate bipolar transistor). The annotated figure below illustrates the circuit formed while the crowbar is active:



CDX-069 (annotating JX-0046C.0043)

GE's expert Dr. Habetler testified that the crowbar creates a circuit coupled with the input of the inverter (rotor converter) and with the converter controller to shunt current from the inverter and generator rotor. Tr. (Habetler) at 317:24-318:14.

In the Domestic Industry Products, the converter control unit ("CCU") triggers the crowbar protection circuit. See CDX-070 (annotating JX-0047C.0038 and JX-0048C.0091). The crowbar can be turned on and off by the converter controller. Tr. (Habetler) at 318:15-319:4; Tr. (Holliday) at 219:15-220:7; see also CX-0115C.0010 ("The crowbar is activated when dc link voltage exceeds a predetermined threshold. It is released when the dc voltage falls below a lower threshold.").

SGRE argues that the Domestic Industry Products do not satisfy this limitation because activation of the crowbar circuit does not "shunt current *from* the inverter," but instead directs current *through* the inverter. RRB at 27-29. SGRE did not offer evidence in support of this

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argument; GE's evidence that the Domestic Industry Products satisfy this limitation is therefore un rebutted. *See id.*

The crowbar functionality in GE's products was previously litigated before the Commission in Investigation No. 337-TA-641, and the Federal Circuit held on appeal that GE's products that included this rotor crowbar functionality practiced claim 15 of the '985 patent. *See Gen. Elec. Co. v. Int'l Trade Comm'n*, 685 F.3d 1034, 1042-46 (Fed. Cir. 2012) ("We conclude that claim 15, correctly construed, covers the domestic industry turbines."). The products at issue in the 641 Investigation were GE's "SLE, XLE, and SE" wind turbine models. *Id.* at 1037. At the evidentiary hearing in this investigation, GE's lead systems engineer Mr. Holliday testified that the crowbar in the Domestic Industry Products at issue in this investigation operate in the same way as the crowbar in GE's SLE, XLE, and SE wind turbines. Tr. (Holliday) at 220:8-15. Although the Federal Circuit's opinion does not have preclusive effect in this investigation, it is consistent with the evidence adduced by GE and with my finding that the Domestic Industry Products practice limitation [15.6].

In view of the evidence presented at the hearing and discussed above, I find that the Domestic Industry Products practice claim 15 of the '985 patent and that GE has satisfied the technical prong of the domestic industry requirement with respect to this claim.

3. Claim 29

GE contends that operation of its 30 Nm Domestic Industry Products practices claim 29 of the '985 patent. CIB at 57-60.

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a) Steps [29.1]-[29.2]: “providing power to wind turbine components using a generator of the wind turbine; detecting a low voltage event;”

The evidence demonstrates that operators of GE’s 30 Nm Domestic Industry Products perform step [29.1] by “providing power to wind turbine components using a generator of the wind turbine.” Specifically, the 30 Nm Domestic Industry Products comprise doubly-fed induction generators. During operation, the doubly-fed induction generator generates power, which along with the grid is used to power, *inter alia*, the turbine controller and the pitch control system. Tr. (Habetler) at 319:5-12. These power connections were discussed above in Section VI.F.1.b) with respect to limitation [1.4] and the evidence addressed there applies equally to the analysis of claim 29 here.

The record evidence also shows that operators of the 30 Nm Domestic Industry Products perform step [1.2] by “detecting a low voltage event.” *See* Tr. (Habetler) at 319:13-15. The way in which the 30 Nm Domestic Industry Products practice this limitation was discussed above in Section VI.F.1.d) with respect to limitation [1.6] and the evidence addressed there applies equally to the analysis of claim 29 here.

b) Steps [29.3]: “receiving power from an uninterruptible power supply to a first subset of wind turbine components, wherein the first subset of wind turbine components comprises a blade pitch controller to selectively power the blade pitch controller to maintain a rotor speed below a predetermined overspeed limit during the low voltage event”

GE adduced evidence demonstrating that operation of the 30 Nm Domestic Industry Products performs step [29.3]. *See* Tr. (Habetler) at 319:16-321:3. As discussed above in Section VI.F.1.c) for claim 1, the 30 Nm Domestic Industry Products include an interruptible power supply in the wind turbine’s down tower assembly to supply power to, *inter alia*, the turbine controller

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and a hub uninterruptible power supply to provide power to the blade pitch control system. These uninterruptible power supplies provide power to a subset of wind turbine components during a low voltage event. Tr. (Habetler) at 319:16-320:2; JX-0043C.0011, .0035.

The evidence shows that the 30 Nm Domestic Industry Products have a predetermined rotor overspeed limit. *See* Tr. (Habetler) at 320:3-11. As shown in demonstrative slide CDX-073 (annotating JX-0047C.0023 and JX-0048C.0070), and as explained by Mr. Barton at the evidentiary hearing, the 30 Nm Domestic Industry Products keep the rotor from turning faster than the overspeed limit. *See* Tr. (Habetler) at 320:12-24; Tr. (Barton) at 86:20-88.3. During normal operation, the 30 Nm Domestic Industry Products will try to keep the rotor from turning too fast with torque commands and pitch commands, but during LVRT Mode, the 30 Nm Domestic Industry Products only use pitch commands to control rotor speed. *See* Tr. (Habetler) at 320:12-24; Tr. (Barton) at 86:20-88.3.

Thus, operators of the 30 Nm Domestic Industry Products perform the claimed step of receiving power from an uninterruptible power supply (the down tower assembly uninterruptible power supply and hub uninterruptible power supply) to a first subset of wind turbine components (the turbine controller and 30 Nm PCS), wherein the first subset of wind turbine components comprises a blade pitch controller (30 Nm PCS) to selectively power the blade pitch controller to maintain a rotor speed below a predetermined overspeed limit during the low voltage event.

SGRE argues that operators of the 30 Nm Domestic Industry Products do not practice step [29.3] because the blade pitch control system in the 30 Nm Domestic Industry Products receives power from an uninterruptible power supply (*i.e.*, a battery) during low voltage ride through. *See* RRB at 29-30. This argument is similar to the argument SGRE raised in connection with limitation

[1.5]. SGRE's argument fails here for the same reasons it failed in connection with the discussion of limitation [1.5] above in Section VI.F.1.c).

c) Step [29.4]: “disconnecting a subset of wind turbine components from the generator during the low voltage event”

The evidence shows that operators of the 30 Nm Domestic Industry Products perform the step of “disconnecting a second subset of wind turbine components from the generator during the low voltage event.” *See* Tr. (Habetler) at 321:4-322:1. GE principal engineer Werner Barton testified that the 30 Nm Domestic Industry Products switch off components—such as the lubrication pump—that are not required for operation during a low voltage event. *See* Tr. (Barton) at 82:19-83:4; *see also* JX-0047C.0007, .0066; JX-0048C.0029, .0126 (“Detect short-term under/overvoltage for the low voltage ride through. . . . In this case . . . all consumers are switched off, but turbine stays online.”). SGRE does not contest this functionality of the 30 Nm Domestic Industry Products. *See* RRB at 29-30.

In view of the evidence presented at the hearing and discussed above, I find that operators of the 30 Nm Domestic Industry Products practice claim 29 of the '985 patent and that GE has satisfied the technical prong of the domestic industry requirement with respect to this claim.

G. Invention Date

In this investigation, SGRE contends a certain reference called Akhmatov-2002 is prior art to the '985 patent. *See* RIB at 13-14. GE seeks to antedate, or “swear behind” the Akhmatov-2002 reference. *See* CRB at 8-13.⁷ Accordingly, I must resolve the date of invention for the invention disclosed in the '985 patent.

⁷ I address arguments surrounding the disclosures in the Akhmatov-2002 reference in Sections VI.G.1.d), VI.G.2, and VI.G.5 below.

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Pre-AIA section 102(g) allows a patent owner to claim an earlier invention date and antedate a prior art reference by proving an earlier conception date and reasonable diligence in reducing the invention to practice. 35 U.S.C. § 102(g) (pre-AIA); *see Perfect Surgical Techniques, Inc. v. Olympus Am., Inc.*, 841 F.3d 1004, 1007 (Fed. Cir. 2016) (citing *Monsanto Co. v. Mycogen Plant Sci., Inc.*, 261 F.3d 1356, 1362 (Fed. Cir. 2001)). “[T]he test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the invention.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994). A patentee may rely on declarations as evidence of conception and reduction to practice, but the declarations must be corroborated. *Perfect Surgical Techniques*, 841 F.3d at 1007. Reasonable diligence must be shown throughout the entire critical period, which begins just before the competing reference’s effective date and ends on the date of the invention’s reduction to practice. *Id.* Actual reduction to practice requires that the claimed invention work for its intended purpose, while constructive reduction to practice occurs when a patent application on the claimed invention is filed. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986); *see also Solvay S.A. v. Honeywell Int’l*, 622 F.3d 1367, 1376 (Fed. Cir. 2010).

GE contends that the invention described in ’985 patent was conceived December 6, 2002. *See CIB* at 18. To achieve low voltage ride through, the ’985 inventors conceived of using an uninterruptible power supply to power various controllers, such as the turbine controller, blade pitch control systems, and converter controller during a low voltage event. ’985 reexam history at .07652-.07657. The inventors further conceived of varying the blade pitch during a low voltage event, selectively shunting current away from the inverter in response to a control signal from the converter controller (which is monitoring current in the inverter), and maintaining the rotor speed while disconnecting auxiliary components. *Id.* These concepts were set forth in a presentation

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describing the inventors' low voltage ride through solution, which was attached to an email sent from inventor Henning Lütze to Arthur Romano on December 6, 2002. *Id.* at .07659. In a sworn declaration before the Patent Office, inventor Till Hoffman testified that the December 6th presentation illustrated the inventors' low voltage ride through solution. *Id.* at .07654-.07657, .07664. Mr. Hoffman's testimony, and the corroborating December 6, 2002, email and attached presentation, demonstrate that the inventors conceived of the low voltage ride through invention claimed in the '985 patent no later than December 6, 2002.⁸

The evidence also shows that the inventors exercised reasonable diligence in reducing the claimed invention to practice until the application leading to the '985 patent was filed a few weeks later on January 24, 2003. James Fogarty, a GE engineer, submitted a sworn declaration to the Patent Office regarding the "ongoing activity or excused inactivity from at least December 10, 2002 until January 16, 2003 for the low voltage ride through (LVRT) project that is described and claimed in the '985 Patent." '985 reexam history at .07522-.07526. Mr. Fogarty's testimony is supported by emails among the project team throughout December 2002 and January 2003. *Id.* at .07461-.07463. In addition, patent prosecution attorney Paul Mendonsa submitted a sworn declaration to the Patent Office stating that, from January 16, 2003, through January 24, 2003, he diligently worked on the patent application for the conceived invention. *Id.* at .07531-.07534.

⁸ In his declaration before the Patent Office, Mr. Hoffmann testified that the documents show that the inventors had conceived of the claimed inventions "*at least* as early as December 10, 2002." *See* '985 reexam history at .07653 (emphasis added). In the reexamination, GE was attempting to antedate a reference dated December 11, 2002; establishing a priority date of December 6, 2002 was unnecessary at that time. *See id.* at .07652. Mr. Hoffmann's declaration nevertheless demonstrates that the December 6, 2002, email and attached presentation "singly" demonstrates conception of "the LVRT concept," and thus supports an invention date of December 6, 2002. *See id.* at .07653.

Mr. Mendonsa's testimony is corroborated with emails, invoices, and time entries. *Id.* at .07535-.07647; JX-0006.07521.

Throughout this investigation, SGRE did not challenge GE's position that it is entitled to an invention date of at least December 6, 2002, for the '985 patent. SGRE's pre-hearing brief included no argument contradicting the December 6, 2002, invention date, and its experts adopted it for purposes of their validity analysis. *See* Tr. (Brown) at 739:3-7; *see also* Order No. 2 at Ground Rule 11.2 (deeming an issue abandoned or withdrawn if not addressed in pre-hearing briefing) (Sept. 8, 2020). Now, in a footnote in its initial post-hearing brief, SGRE contends that, because "GE presented no testimony or other evidence at hearing to support" its claimed conception date, "the invention date is presumed to be the patent's filing date." *See* RIB 14 n.3. SGRE's passing challenge to GE's invention date has not been preserved. *See* Order No. 2 at Ground Rule 14.1. Even if the argument had been preserved, it is contradicted by the great weight of the record evidence reviewed above.

In view of the record evidence demonstrating conception, reduction to practice, and diligence, I find that GE has established an invention date for the '985 patent of December 6, 2002.

H. Validity

SGRE argues that all asserted claims of the '985 patent are invalid in view of the prior art. *See* RIB at 12-75. Specifically, SGRE argues that claims 1, 6, and 12 are obvious; claim 15 is anticipated; and claims 29, 30, 33-35, and 37 are anticipated and/or obvious. *Id.*

1. Relevant Dates of the Asserted Prior Art

a) E.ON-2001

E.ON-2001 is a document that discusses, *inter alia*, requirements for wind farms connected to a network in Germany. RX-0434. E.ON-2001 published on December 1, 2001, and is therefore

prior art to the '985 patent under 35 U.S.C. § 102(b) (pre-AIA). SGRE also argues E.ON-2001 is prior art under 35 U.S.C. § 102(f) (pre-AIA) “because it was known to the inventors.” RIB at 12 n.2 (citing RX-0002C.0021).

E.ON-2001 imposes ride through requirements down to 15% of rated voltage for wind farms placed into operation after January 1, 2003. RX-0434.0003. E.ON-2001 nevertheless acknowledges that the low voltage network connection characteristics, to which its requirements apply, differ from the requirements set for an individual wind turbine. *See, e.g.*, RX-0434.0006, .0007 (“The power factor mentioned here applies at the network connection node. Different values can occur at generator terminals.”).

E.ON-2001 was raised during reexamination proceedings at the Patent Office. *See, e.g.*, RX-0650.0046-47. Because E.ON-2001 does not explain how to achieve the low voltage ride through target, the Patent Office analogized E.ON-2001 to President Kennedy’s goal of getting to the moon—it set “a goal for the industry,” but did not “provide[] any teaching how to get there.” RX-0650.0046-47. The Patent Office nevertheless found that E.ON-2001 “shows that it was desirable to stay connected down to 15% of the rated voltage.” RX-0650.0047.

E.ON-2001 is undisputedly not enabling. Tr. (Brown) at 742:11-14.

b) Akhmatov-2000

“Akhmatov-2000” refers to a paper describing simulations with “a very simple model of an electrical network” to investigate power stability. RX-0593.0001, .0009. Specifically, Akhmatov-2000 proposes methods to improve the dynamic stability of grid-connected squirrel-cage induction generators. *Id.* Akhmatov-2000 published before the '985 patent’s December 2002 invention date and is prior art under 35 U.S.C. § 102(b) (pre-AIA).

c) Akhmatov-2001

“Akhmatov-2001” refers to a paper describing simulations using wind farm models to investigate power stability. JX-0102.0001. Akhmatov-2001 proposes potential improvements in voltage stability of the power grid via wind turbine blade angle control. *Id.* The simulation in Akhmatov-2001 involves an induction generator without a converter (*i.e.*, not a DFIG). *See* Tr. (Brown) at 772:5-9. Akhmatov-2001 published before the '985 patent's December 2002 invention date and is prior art under 35 U.S.C. § 102(b) (pre-AIA).

d) Akhmatov-2002

“Akhmatov-2002” refers to a paper describing wind farms to investigate dynamic stability during grid disturbances. RX-0425.0001. Akhmatov-2002 discusses proposed solutions to maintain dynamic stability for wind farms and examines its proposed solutions using simulations with a software tool called PSS/E that simulates electrical power transmission networks. *Id.*

SGRE bears the burden of proving that Akhmatov-2002 is prior art under 35 U.S.C. § 102(a) (pre-AIA) by clear and convincing evidence. *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1578 (Fed. Cir. 1996) (accused infringer bears the burden of proving asserted reference was prior art by clear and convincing evidence). SGRE relies on three documents to argue that Akhmatov-2002 predates the '985 patent's December 6, 2002, invention date: RX-746, RX-744, and RX-747. RIB at 14. RX-746 is a website screenshot dated January 2, 2003. *See* Tr. (Brown) at 739:24-740:21. RX-744 is an affidavit from an employee at the Internet Archive that does not reference Akhmatov-2002. *See* Tr. (Brown) at 740:22-741:5. RX-747 is a “library copy” of Akhmatov-2002 with stamped dates of December 9, 2002, and June 9, 2003. *See* Tr. (Brown) at 741:6-742:10. The dates on these documents, even assuming they are dates of public accessibility for Akhmatov-2002 (which has not been proven), do not predate the December 6, 2002, invention

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date of the '985 patent. I therefore find that SGRE has not met its clear and convincing burden of proving that Akhmatov-2002 is prior art under 35 U.S.C. § 102(a) (pre-AIA).

e) Enron Wind

“Enron Wind” refers to wind turbines manufactured by GE’s predecessor, Enron Wind. *See* RIB at 18. By 2001, operational 1.5 MW Enron Wind turbines had been sold and installed in wind farms throughout the United States. JX-0094C; RX-0931C.0003; RX-0926C.0001; *see also* Tr. (Larsen) at 112:24-113:9 (when GE acquired Enron’s wind business in 2002, it assumed responsibility for 2,000 turbines per year). SGRE takes the position that the public use and sale of Enron Wind turbines installed in Montfort, Wisconsin, and commissioned on May 17, 2001 invalidates certain claims of the '985 patent under 35 U.S.C. § 102(b) (pre-AIA). *See, e.g.*, RIB at 18, 34, 41-48; *see also* Tr. (Brown) at 759:23-760:1.

SGRE relies on the Montfort Escrow Book 2 (“Escrow Book”) to show alleged details of the wind turbines installed at Montfort in 2001. *See* Tr. (Brown) at 760:2-5. SGRE contends that the Escrow Book “contains detailed schematic drawings and parts lists identifying the composition of Enron Wind turbines installed at the Montfort wind farm.” RIB at 34-35. The record evidence, however, fails to establish that the Escrow Book describes an actual installation of Enron Wind turbines in 2001. On cross-examination, SGRE’s expert Dr. Brown admitted that (i) he did not know who put the Escrow Book together, (ii) he did not know whether the documents in the Escrow Book accurately described the Montfort 2001 installation, and (iii) he did not speak to anyone involved with Montfort. Tr. (Brown) at 760:8-761:6.

Dr. Brown further testified that SGRE’s counsel provided him with the Escrow Book, leading him to assume that it described Enron Wind turbines installed in 2001. Tr. (Brown) at 760:16-20. Dr. Brown also admitted that he did not have technical documentation describing the

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Montfort installations. Tr. (Brown) at 758:4-759:22. The Escrow Book contains some documents post-dating the 2001 installation of Enron Wind turbines at Montfort. *See* Tr. (Brown) at 761:24-762:3. In particular, the second page of the Escrow Book has a software version date of October 30, 2001, whereas the Enron Wind turbines at issue in this investigation were commissioned at Montfort on May 17, 2001. Tr. (Brown) at 759:23-760:1, 762:4-8; RX-0401.0002. Those facts further support a conclusion that the Escrow Book does not describe Enron Wind turbines installed in 2001.

SGRE and its expert Dr. Brown rely on other documents for their invalidity arguments with respect to Enron Wind, but these documents also fail to demonstrate the features of an Enron Wind turbine commissioned at Montfort in May 2001. For example, Dr. Brown relies on documents that are for wind turbines at an installation site called Indian Mesa and not Montfort (RX-0404C) and other documents that were undated and not included in the Escrow Book (JX-0097). Tr. (Brown) at 762:12-19, 765:3-13. Moreover, Dr. Brown relies on RX-0354C to support his opinion that Montfort wind turbines used blade pitch control, but RX-0354C is dated March 2002—almost a year after the turbines were commissioned at Montfort. Tr. (Brown) at 762:20-763:5.

I therefore find that SGRE has not met its burden to show that the documents it relies on reflect the actual characteristics of the Enron Wind turbines commissioned at Montfort in May 2001, and that SGRE has failed to establish that Enron Wind turbines qualify as invalidating prior art under 35 U.S.C. § 102(b) (pre-AIA).

2. Claims 1, 6, and 12: Obviousness over the Akhmatov References, E.ON-2001, and the Enron Wind 1.5 MW Turbines

SGRE argues that claims 1, 6, and 12 of the '985 patent are obvious in view of the combination of Akhmatov-2000, Akhmatov-2001, Akhmatov-2002, E.ON-2001, and Enron Wind.

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RIB at 12-40. As discussed below, SGRE has failed to meet its burden to show that this combination renders claims 1, 6, and 12 obvious by clear and convincing evidence.

As an initial matter, I have determined above that neither Akhmatov-2002 nor Enron Wind qualify as prior art to the '985 patent and SGRE's obviousness argument fails accordingly. Notwithstanding my determination that Akhmatov-2002 and Enron Wind are not prior art, SGRE's obviousness argument also fails because the references in combination do not meet all the limitations of claims 1, 6, and 12.

The claims require the generator to remain connected during a low voltage event when the grid voltage is less than 50% (claims 1, 12), or between 15% and 50% (claim 6). It is undisputed that Enron Wind turbines did not perform low voltage ride through because they tripped offline during low voltage events. *See* RIB at 37. Further, SGRE's expert Dr. Brown testified that Akhmatov-2000 and Akhmatov-2001 did not disclose a generator staying connected to a grid as required by the claims. Tr. (Brown) at 706:6-707:19, 770:24-771:20. To plug this gap in the obviousness argument, Dr. Brown relied on E.ON-2001 and provided a conclusory answer of "Yes" when asked by SGRE's counsel whether Akhmatov's teachings would "solve the problem presented by E.ON." Tr. (Brown) at 707:4-8. E.ON-2001 is undisputedly non-enabling, and neither Akhmatov-2000 nor Akhmatov-2001 disclose remaining connected to the grid during low voltage conditions. *See* Tr. (Brown) at 742:11-14 (E.ON-2001 is not enabling). The combination of E.ON-2001, Akhmatov-2000, and Akhmatov-2001 is not greater than the sum of its parts; the references do not collectively disclose the limitations recited in claims 1, 6, and 12.

Adding Akhmatov-2002 to the mix does not result in a *prima facie* showing of obviousness. Akhmatov-2002 teaches that its simulation predicts that wind turbines would trip offline during a low voltage event located close to the turbine. RX-0425.0005 ("It is noticed that when a short-

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circuit fault occurs much closer to the wind turbine terminals, that both generator models, i.e. 3rd and 5th order, predict the converter blocking and sub-sequential tripping of the wind turbine.”); Tr. (Habetler) at 1113:20-1114:20. In view of this disclosure, I conclude that SGRE has failed to demonstrate by clear and convincing evidence that Akhmatov-2002 teaches how a wind turbine can achieve low voltage ride through and remain connected to the grid.

SGRE nevertheless argues that the Akhmatov references teach remaining connected to the grid during a low voltage event because the references teach the use of blade pitch controls. RIB at 13, 15-17. But SGRE has not demonstrated that controlling blade pitch necessarily results in a turbine remaining connected during a low voltage event. Indeed, for the Enron Wind turbines, the blades were pitched in order to shut down the wind turbines during a low voltage event. *See* Tr. (Brown) at 699:17-700:3. Moreover, the '985 patent specification teaches that controlling blade pitch to shut down a wind turbine was known in the art and distinguishable from the claimed invention because the prior art wind turbines tripped offline. '985 patent at 1:49-57.

SGRE has also failed to show that a person of ordinary skill in the art would be motivated to combine the Akhmatov references with Enron Wind to achieve the '985 claimed inventions. SGRE argues that motivation is provided by E.ON-2001, but, as explained below, the record evidence demonstrates otherwise. *See* RIB at 37-38.

The Patent Office previously rejected an argument that E.ON-2001 supplies a motivation to combine references to achieve the claimed inventions. In an *inter partes* review proceeding challenging the '985 patent, the petitioner argued that a person of ordinary skill in the art would have modified the prior art to achieve low voltage ride through “[b]ased on the teaching and motivation of EON.” RX-0698.0007. The Patent Trial and Appeal Board noted the similarity of this argument to an argument raised by a third party requestor in an earlier reexamination

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proceeding, and it denied institution. RX-00698.0012-.0016; Tr. (Brown) at 753:13-755:3. The actions of the Patent Trial and Appeal Board are consistent with the evidence adduced in this investigation that show a lack of motivation to combine the prior art asserted by SGRE.

The evidence demonstrates that a person of ordinary skill in the art would not have been motivated to combine these references at least because Akhmatov-2000 and Akhmatov-2001 simulate induction generators, whereas Enron Wind is a doubly-fed induction generator. *See* Tr. (Brown) at 768:11-17, 772:5-7, 780:5-6. These are fundamentally different machines. The simulated Akhmatov induction generators would be less sensitive to voltage fluctuations than doubly-fed induction generators and do not have a power converter that “can burn up” due to such fluctuations. *See* Tr. (Brown) at 768:18-21, 772:5-9; *see also* Tr. (Habetler) at 1121:25-1122:11. Accordingly, there is no need for the simulated Akhmatov induction generators to incorporate the overvoltage protections required by turbines such as Enron Wind. *See* Tr. (Brown) at 768:18-21, 772:5-9; *see also* Tr. (Habetler) at 1121:25-1122:11.

The evidence also fails to show why a person of ordinary skill in the art would be motivated to combine Akhmatov-2002 with Enron Wind. Akhmatov-2002 describes a simulated wind farm based on a generic converter and not a real-world wind turbine. RX-0425.0015-.0016. As with the Enron Wind turbines, the turbine described in Akhmatov-2002 trips offline during a low voltage event located close to the wind turbine. RX-0425.0005 (“It is noticed that when a short-circuit fault occurs much closer to the wind turbine terminals, that both generator models, i.e. 3rd and 5th order, predict the converter blocking and sub-sequential tripping of the wind turbine.”); *see* Tr. (Brown) at 751:11-15. SGRE has failed to establish that a person of ordinary skill in the art would be motivated to combine two references that disconnect from the grid during a low voltage event to arrive at an invention that requires staying connected to the grid during such an

event. Indeed, any such reasoning appears to be based on hindsight informed by the '985 patent. *See KSR*, 550 U.S. at 421 (“A factfinder should be aware [] of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.”) (citation omitted).

For the reasons set forth above, I find that SGRE has failed to demonstrate by clear and convincing evidence that claims 1, 6, and 12 of the '985 patent are rendered obvious by the Akhmatov references and Enron Wind in view of E.ON-2001.

3. Claim 15: Anticipation by Enron Wind

As discussed in Section VI.H.1.e) above, I have determined that SGRE has failed to show that any of the documentary evidence adduced in this investigation, such as the Escrow Book, actually describe the features of Enron Wind turbines installed at Montfort and commissioned in May 2001. For its argument that Enron Wind anticipates claim 15 of the '985 patent, SGRE relies on an undated document that was not part of the Escrow Book. *See* RIB at 44-48 (citing to JX-0097C); Tr. (Brown) at 765:9-13. SGRE has not established by clear and convincing evidence that exhibit JX-0097C describes the features of Enron Wind turbines installed at Montfort.

Accordingly, I find that SGRE has failed to demonstrate by clear and convincing evidence that claim 15 of the '985 patent is invalid due to anticipation by Enron Wind.

4. Claims 29, 30, 33, 34, 35, and 37: Anticipation by Enron Wind

SGRE argues that claims 29, 30, 33, 34, 35, and 37 are anticipated by Enron Wind. RIB at 53-67. But as discussed in Section VI.H.1.e) above, SGRE has failed to show by clear and convincing evidence that any of the documentary evidence it relies on for its anticipation arguments reflect the actual features of Enron Wind turbines installed and commissioned in Montfort in May 2001. Accordingly, I find that SGRE has failed to demonstrate by clear and

convincing evidence that claims 29, 30, 33, 34, 35, and 37 of the '985 patent are invalid due to anticipation by Enron Wind.

5. Claims 29, 30, 33, 34, 35, and 37: Obviousness Based on Enron Wind, Akhmatov-2002 and E.ON-2001

SGRE argues that claims 29, 30, 33, 34, 35, and 37 are rendered obvious by Akhmatov-2002 and Enron Wind, with the motivation to combine provided by E.ON-2001. *See* RIB at 68-73. As an initial matter, I have determined above that neither Akhmatov-2002 nor Enron Wind qualify as prior art to the '985 patent and SGRE's obviousness argument fails accordingly.

Even if Akhmatov-2002 and Enron Wind were not prior art, SGRE's obviousness argument would still fail because the references in combination do not meet all the limitations of claim 29. As discussed above, Enron Wind shuts down during a low voltage event and would not satisfy the claim 29 limitation "disconnecting a second subset of wind turbine components from the generator during the low voltage event." Moreover, SGRE's expert Dr. Phinney admitted that Akhmatov-2002 and E.ON do not satisfy this limitation either. *See* Tr. (Phinney) at 1023:5-16.

As Akhmatov-2002 and Enron Wind combined do not meet all the limitations of claim 29, SGRE has failed to prove by clear and convincing evidence that claim 29 is obvious in view of this combination. In addition, SGRE has also failed to prove by clear and convincing evidence that claims 30, 33, 34, 35, and 37—which all depend from claim 29—are obvious in view of this combination.

6. Secondary Considerations

SGRE argues that secondary considerations of non-obviousness cannot overcome its strong showing that the asserted claims of the '985 patents are obvious. RIB at 73. I have weighed all

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of the secondary consideration evidence in my obviousness analysis and I discuss it below. *Apple Inc. v. Samsung Elec. Co., Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc).

Here, GE has licensed the '985 patent many times, which supports a finding that the inventions claimed therein are nonobvious. *See Metabolite Labs., Inc. v. Lab. Corp. of America Holdings*, 370 F.3d 1354, 1368 (Fed. Cir. 2004). GE's licensees include multiple manufacturers that supply or at one point supplied variable speed wind turbines in the United States, including Gamesa (SGRE's predecessor). *See* CX-0276C; JX-0049C; JX-0050C; JX-0051C; JX-0052C; JX-0053C; JX-0054C. GE has received substantial revenue and value for the invention licensed in the '985 patent. *Id.*

SGRE argues that when seeking to establish commercial success based on licensing, the patentee must show affirmative evidence of nexus. RIB at 74 (citing *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004)). SGRE contends that GE has failed to show that nexus here. SGRE's argument lacks merit.

"Questions of nexus are highly fact-dependent." *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331 (Fed. Cir. 2016). Where a patentee claims licensing success, the relevant inquiry is whether "the factfinder can infer that the licensing 'arose out of recognition and acceptance of the subject matter claimed' in the patent." *S. Alabama Med. Sci. Found. v. Gnosis S.P.A.*, 808 F.3d 823, 827 (Fed. Cir. 2015) (citing *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995)). Here, the record evidence shows multiple companies licensed the '985 patent based on a recognition of the low voltage ride through technology it claims. Five of the GE licenses are for only a handful of GE patents, which tends to show the importance of the invention claimed in the '985 patent in those agreements. *See* CX-0276C (licensing only 6 GE patents); JX-0049C (licensing only 4 GE

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patents); JX-0051C (licensing only 4 GE patents); JX-0052C (licensing only 7 GE patents); JX-0053C (licensing only 2 GE patents, the '985 and '705 patents at issue here).

Also, SGRE avers that one of GE's licensees, Vestas, uses zero voltage ride through technology in its products. *Compare* JX-0053C with RIB at 159-60. GE's license to Vestas includes only the low voltage ride through and zero voltage ride through patents asserted in this investigation. That evidence shows Vestas recognized the technology and wanted the freedom to use it in its own business. Moreover, SGRE itself instituted an arbitration so it could have certainty about the status of its license to the '985 patent, indicating SGRE's own recognition of the importance of the invention disclosed in the '985 patent. CIB at 26.

SGRE's argument that there is no nexus between the patented invention and GE's licenses is premised on pure conjecture; SGRE argues it is possible that "companies licensed the '985 Patent simply to avoid the expense and uncertainties of litigation, or because of other business concerns." RIB at 74. That attorney argument does not overcome the record evidence showing the importance of the invention claimed in '985 patent to GE's licensing deals. *See WBIP, LLC*, 829 F.3d at 1329 ("[A] patent challenger cannot successfully rebut the presumption [of nexus] with argument alone—it must present evidence."). And, quite tellingly, SGRE never disputes that the reason it expended time and expense in arbitration of the status of a license to the '985 patent was because the patent is relevant to its own ability to provide low voltage ride through technology.

Viewing the record evidence of the industry and GE's licenses as a whole, I find the record supports a nexus between the invention claimed in the '985 patent and GE's licenses. That evidence of commercial success undercuts SGRE's argument that the asserted claims of the '985 patent are obvious. I have taken that evidence into account in formulating my ultimate conclusion on obviousness.

To be clear, though, even if I were to entirely discount GE's evidence of commercial success through licensing, I still would find that SGRE has not shown by clear and convincing evidence that the asserted claims of the '985 patent are obvious. As detailed above, SGRE has not shown a prior art combination that would result in an invention having every element of the asserted claims, nor has SGRE shown a motivation to combine prior art references.

In sum, SGRE has not shown by clear and convincing evidence that any claim of the '985 patent is obvious.

VII. THE '705 PATENT

A. Overview

The '705 patent is directed to zero voltage ride through, which involves the behavior of the wind turbine when the voltage at the point of connection between the wind turbine generator and the grid is approximately zero. JX-0002.00010 at 6:19-36; RX-0670.0009 (“Here, when read in context in the specification, it is clear that the voltage that the '705 patent is concerned with is the voltage seen by the turbine, or the voltage at the point of connection of the turbine and the grid.”). GE argues that the method to achieve zero voltage ride through disclosed in the '705 patent is distinguishable from prior methods of configuring wind turbines to handle grid disturbances. CIB at 60-61. Specifically, prior techniques involved the use of external hardware equipment, or involved disconnecting and re-connecting the wind turbine generator in response to a zero voltage event. *See* Tr. (Habetler) at 1128:17-1130:21; Tr. (Saylor) at 467:8-24, 468:14-470:3; CX-0461.0003, .0010, .0013. GE contrasts these prior techniques with the method taught by the '705 patent, where a control system is coupled to the electric power system and in electronic data communication with the generator, and where the control system and generator are configured

such that the generator remains electrically connected during and subsequent to the zero voltage event. CIB at 61.

On March 8, 2012, a jury in the Northern District of Texas found that claim 1 of the '705 patent was infringed by Mitsubishi Heavy Industries, Ltd. ("Mitsubishi"), and not invalid by reason of anticipation by prior art, anticipation by an on-sale bar, lack of enablement, or lack of written description. JX-0012.

Asserted claim 1 of the '705 patent has been subject to three reexamination proceedings at the Patent Office, one *inter partes* and two *ex parte*. See JX-0002.00016-.00021; see also JX-0008 (*inter partes* reexamination history); JX-0009 (*ex parte* reexamination history); JX-0010 (*ex parte* reexamination history).

B. Level of Ordinary Skill in the Art

At the claim construction hearing, the parties agreed that a person of ordinary skill in the art relevant to the '705 patent in 2006, the year in which the application for the '705 patent was filed, would have a bachelor's degree in electrical engineering with coursework completed (or equivalent experience) in electrical power systems, electrical machines, power electronics, and renewable energy. A person of ordinary skill in the art would also have two years of experience working with power electronics and/or electrical machines. CC Tr. 91:3-7, 92:13-25; see also Tr. (Phinney) at 866:7-17.

As the parties have no dispute as to the level of ordinary skill in the art for the '705 patent, I hereby adopt their definition of a person of ordinary skill in the art at the time of the alleged inventions of the '705 patent.

C. Claim Construction

This section addresses claim terms in dispute between the parties that were identified in briefing and discussed during oral argument at the claim construction hearing held February 25, 2021.

1. “undetermined period of time”

The following table sets forth the parties’ proposed constructions for the term “undetermined period of time.”

Complainant’s Construction	Respondents’ Construction
An indeterminable or unknowable period of time (referring to the voltage fluctuation taking place on the grid itself, not the connection between the grid and the wind turbine).	A time whose duration is undefined when the machine is configured.

CIB at 64; RIB at 79.

The parties agreed at the claim construction hearing that an undetermined period of time is a period of “indeterminable or unknowable or undefined” duration. CC Tr. at 123:2-5, 126:12-15. The parties also agreed that the dispute regarding this term was whether the “undetermined period of time” refers to the time when the voltage fluctuation taking place on the grid. CC Tr. at 123:8-9 (SGRE’s counsel stating “[t]he dispute is whether this term refers only to the fluctuation taking place on the grid”), 126:21-127:6 (GE’s counsel arguing that the term “refers to the voltage fluctuations taking place on the grid itself” and it “does not refer to [] the connection between the machine and the grid”).

This term was previously construed in litigation between GE and Mitsubishi in the Northern District of Texas. *See Gen. Elec. Co. v. Mitsubishi Heavy Indus., Ltd.*, Case No.

3:10-cv-276-F, 2011 WL 13201880, at *6 (N.D. Tex. 2011). The *Mitsubishi* court “agree[d] with GE that the ‘undetermined’ period of time refers to the voltage fluctuation taking place on the grid itself, not within the connection between the grid and the wind turbine” and construed “undetermined period of time” to mean “an indeterminable or unknowable period of time.” *Id.* Although I am not bound by the *Mitsubishi* court’s construction, I find much of its reasoning persuasive here in this investigation.

The plain language of claim 1 indicates that the claimed “undetermined period of time” refers to the time when the “voltage amplitude of the electric power system operat[es] outside of a predetermined range.” The relevant limitations of claim 1 are reproduced below:

. . . configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time . . .

. . . configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time . . .

’705 patent at claim 1.

These limitations require (1) configuring the electrical machine to remain electrically connected to the electric power system during the period in question; (2) that the electrical connection remains during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range including approximately zero volts; and (3) that the decreased voltage amplitude of the electric power system occurs for an undetermined period of time. *Id.*

The '705 patent specification supports this claim interpretation. The disclosed invention maintains an electrical connection between a wind turbine and the electrical grid during a voltage fluctuation at the connection between the wind turbine and grid. By their nature, such voltage fluctuations are random and unpredictable—for example, it is not possible to determine when and where a lightning strike may occur on the electric power system and cause a severe fault that results in a voltage drop to approximately zero volts at the wind turbine. *See* Tr. (Larsen) at 127:6-23. Recognizing this, the claimed invention is directed to riding through such disturbances (*i.e.*, performing zero voltage ride through) where the length of time of the voltage fluctuation is unknown before it occurs. *See, e.g.*, '705 patent at 6:30-37 (“[A] length of time of the zero voltage condition and the characteristics of a grid voltage recovery depend upon a variety of factors known in the art.”).

In view of the plain language of claim 1 and the teachings of the '705 patent specification, I hereby construe “undetermined period of time” to refer to the duration of the grid voltage fluctuation, whose length is unknowable at the onset of the fluctuation.

2. “voltage amplitude of the electric power system”

The parties proposed the following constructions for the term “voltage amplitude of the electric power system” as it is used in claim 1 of the '705 patent:

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Complainant's Construction	Respondents' Construction
Grid voltage at the connection between the wind turbine and the grid.	<p>“voltage” and “amplitude” are to be given their plain meaning.</p> <p>“electric power system” is to be construed to mean “[a] power transmission system from which an electrical machine may trip”</p>
	<p>New alternative construction:</p> <p>A voltage measured by the electrical machine at the point of connection between the electrical machine and the electric power system.</p>

CIB at 67; RIB at 78.

In its initial post-hearing brief, SGRE proposed an entirely new alternative construction—“a voltage measured by the electrical machine at the point of connection between the electrical machine and the electric power system.” RIB at 78. SGRE did not propose this construction in its claim construction or pre-hearing briefs, and it presents no argument or evidence in support of this alternative construction. *Id.* SGRE also argues for the first time that none of the asserted prior art anticipates, and that the Accused Products do not infringe, under its new, alternative construction. *Id.* I find that SGRE’s newly proposed alternative construction violates my Ground Rule 11.2 and is therefore deemed abandoned or withdrawn. *See* Order No. 2 at Ground Rule 11.2.

Claim 1 of the ’705 patent requires that the electrical machine and control system are configured “such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts.” In earlier litigation involving the ’705 patent and the *inter partes* reexamination, a dispute arose regarding whether the “voltage amplitude of the electric power system” referred to the voltage seen by the wind turbine generator

or whether it could refer to the voltage at any point on the electric power system. *See* RX-0672 at 7-8. The Patent Office decided that, “when read in context in the specification, it is clear that the voltage that the ’705 patent is concerned with is the voltage seen by the turbine, or the voltage at the point of the connection of the turbine and the grid.” *Id.*

The Patent Office’s determination is consistent with the teachings of the ’705 patent. The specification discloses a “graphical view of grid line voltage versus time 300 that may be associated with electrical and control system 200 (shown in FIG. 2),” reproduced below. ’705 patent at 6:19-21.

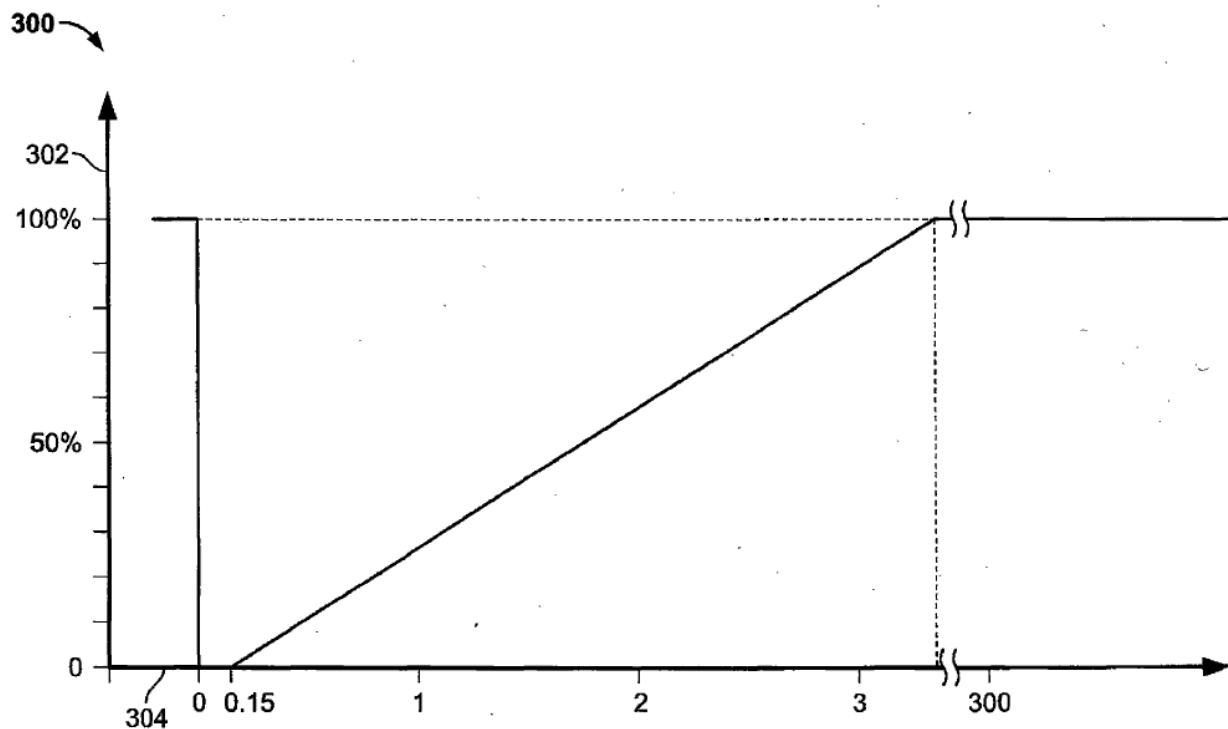


FIG. 3

’705 patent Fig. 3

The ’705 patent explains that the y-axis in Figure 3 “represents grid line voltage in units of percent” and that a “grid line voltage of 0% is indicative of **zero voltage on bus 242** (shown in FIG. 2).”

'705 patent at 6:21-25 (emphasis added). Conversely, a “grid line voltage of 100% indicates a *voltage on bus 242* that is 100% of the nominal pre-determined voltage associated with system 200.” *Id.* at 6:25-27 (emphasis added). Bus 242 is highlighted below in the schematic of the '705 patent's wind turbine generator control system:

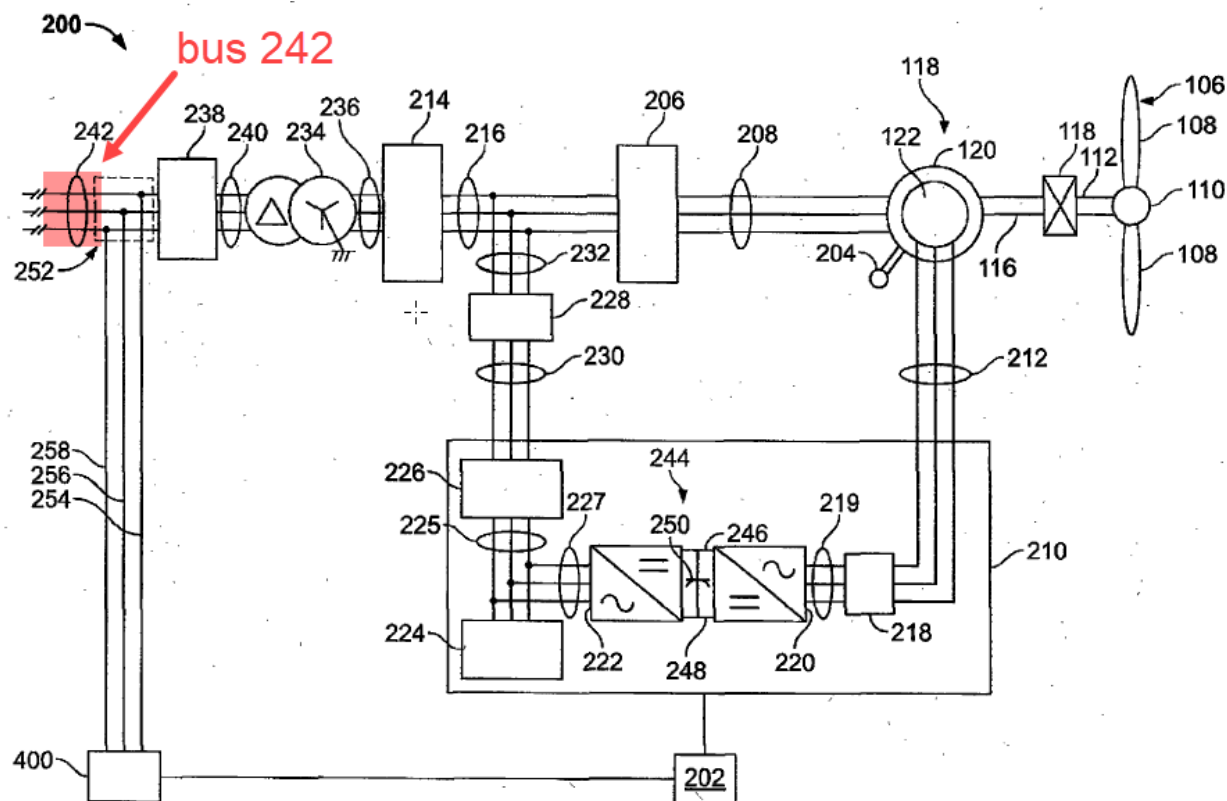


FIG. 2

'705 patent Fig. 2

As illustrated in the schematic shown above, bus 242 is located at the connection point between the wind turbine and the electric power system. Thus, when the '705 patent refers to the voltage on bus 242, it refers to the voltage at the point of connection between the wind turbine and the grid.

As another example of how the claimed voltage amplitude of the electric power system refers to the voltage at the point where the wind turbine connects to the grid, the specification

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describes the operation of a phase-locked loop (“PLL”) regulator 400 and phase-locked loop state machine 404 for synchronizing power output to the grid, noting that the plurality of states are managed “as a function of the voltage characteristics of the grid to which PLL 402 (shown in FIG. 4) is attempting to lock on to and/or stay locked on to.” ’705 patent at 8:61-67. Phase-locked loop 402 includes a “phase detector function block 406 that is configured to receive the sinusoidal voltage measurement signals transmitted from conduits 254, 256, and 258 for A-phase, B-phase and C-phase of grid bus 242, respectively.” *Id.* at 7:28-31. Again, the “voltage” that the ’705 patent describes in reference to “voltage characteristics of the grid” is the voltage at grid bus 242, which is at the point of connection between the wind turbine and the grid.

As already noted, the Patent Office previously determined that the claimed “voltage amplitude of the electric power system” refers to the grid voltage at the connection between the wind turbine and the grid. During an *inter partes* reexamination of the ’705 patent, the Examiner concluded that “when read in context in the specification, it is clear that the voltage that the ’705 Patent is concerned with is the voltage seen by the turbine, or the voltage at the point of connection of the turbine and the grid.” RX-0672 at 7.

By contrast, SGRE’s originally proposed construction for this claim term is overly broad and is not supported by the intrinsic evidence. The ’705 patent specification does not suggest that a zero voltage condition as contemplated by the patent would involve a grid voltage of zero at a location distant from the wind turbine—such a circumstance would mean that the grid voltage *at* the wind turbine would be non-zero, and that the method for zero voltage ride through recited in claim 1 would not be triggered.

In view of the plain language of claim 1 and the teachings of the ’705 patent specification, I hereby construe “voltage amplitude of the electric power system” to refer to the grid voltage at

the connection between the wind turbine and the grid. This construction is also consistent with previous statements made by the Patent Office during reexamination proceedings for the '705 patent.

3. “electrical machine”

The parties propose the following constructions for the term “electrical machine” as it is used in claim 1 of the '705 patent:

Complainant’s Construction	Respondents’ Construction
Wind turbine generator comprising a rotor and stator that converts mechanical energy to electrical energy.	An electric apparatus depending on electromagnetic induction for its operation and having one or more component members capable of rotary and/or linear movement.

See CIB at 66; RIB at 77.

The parties agree the construction of this term is only relevant to an anticipation argument raised by SGRE in which SGRE contends the “electrical machine” of claim 1 reads on an electric motor in a reference called the MV-3000 system. CIB at 66; RIB at 77.

As discussed below in Section VII.H.5, I have determined that the MV-3000 system does not anticipate claim 1 of the '705 patent for reasons unrelated to the construction of the term “electrical machine.” I therefore I need not construe this term to resolve the parties’ dispute. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (claim construction is required “only to the extent necessary to resolve the controversy”).

4. “electric power system”

None of the issues raised in the parties’ post-hearing briefs turns on the construction of “electric power system.” *See* RIB at 78; CRB at 28. As there is no dispute between the parties, I need not construe this term. *See Vivid Techs.*, 200 F.3d at 803.

5. “approximately zero volts”

At the claim construction hearing, the parties agreed there was no longer a dispute regarding the construction of “approximately zero volts.” CC Tr. 89:23-90:17; *see also* CIB at 68; RIB at 78. As there is no dispute between the parties, I need not construe this term. *See Vivid Techs.*, 200 F.3d at 803.

6. “thereby facilitating low voltage ride through”

At the claim construction hearing, the parties agreed there was no longer a dispute regarding the construction of “thereby facilitating low voltage ride through.” CC Tr. at 96:7-97:13; *see also* CIB at 68; RIB at 79. As there is no dispute between the parties, I need not construe this term. *See Vivid Techs.*, 200 F.3d at 803.

D. Direct Infringement

GE asserts that the “Accused Products practice each and every step of claim 1 of the [’705 patent] when they are operated (e.g., when they are commissioned).” CIB at 69-82. In its post-hearing briefs, GE refers to each step of claim 1 by a unique numerical identifier. For reference, claim 1 is reproduced below with GE’s labels:

[1.0] A method for operating an electrical machine, said method comprising:

[1.1] coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and

[1.2] configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the

electric power system operating outside of a predetermined range for an undetermined period of time, said configuring the electrical machine comprising:

[1.3] electrically coupling at least a portion of a control system to at least a portion of the electrical power system;

[1.4] coupling the control system in electronic data communication with at least a portion of the electrical machine; and

[1.5] configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZVRT).

CIB at 69.

1. Preamble [1.0]: “A method for operating an electrical machine, said method comprising:”

No party has argued that the preamble of claim 1 is limiting. In any event, operation of the Accused Products satisfies preamble [1.0], “a method for operating an electrical machine,” because the Accused DFIG and Full-Converter Products include a generator, which is an “electrical machine.” *See* Tr. (Habetler) at 322:15-323:13, 335:11-21; *see also* CX-0145C.0004; JX-0124C.0026. SGRE does not contest that preamble [1.0] is satisfied. *See* RRB at 32-42.

2. Step [1.1]: “coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and”

a) Accused DFIG Products

The evidence shows that operation of the Accused DFIG Products includes the step of “coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine.” *See* Tr. (Habetler) at 323:14-325:9. As shown in the illustration below, the generator stator is coupled to

the electrical grid (via the transformer), and the electrical grid transmits power to the machine in certain modes, including startup mode. *See* Tr. (Habetler) at 324:21-325:9; *see also* CX-0146C.0019 (“Stator circuit. Three phases at 690Vac (phase-phase). Connects the LV circuit of the power transformer to the generator stator by means of a circuit breaker and contactor.”). SGRE does not contest that operators of the Accused DFIG Products perform this step. *See* Tr. (Phinney) at 978:18-979:7; RRB at 32-42.

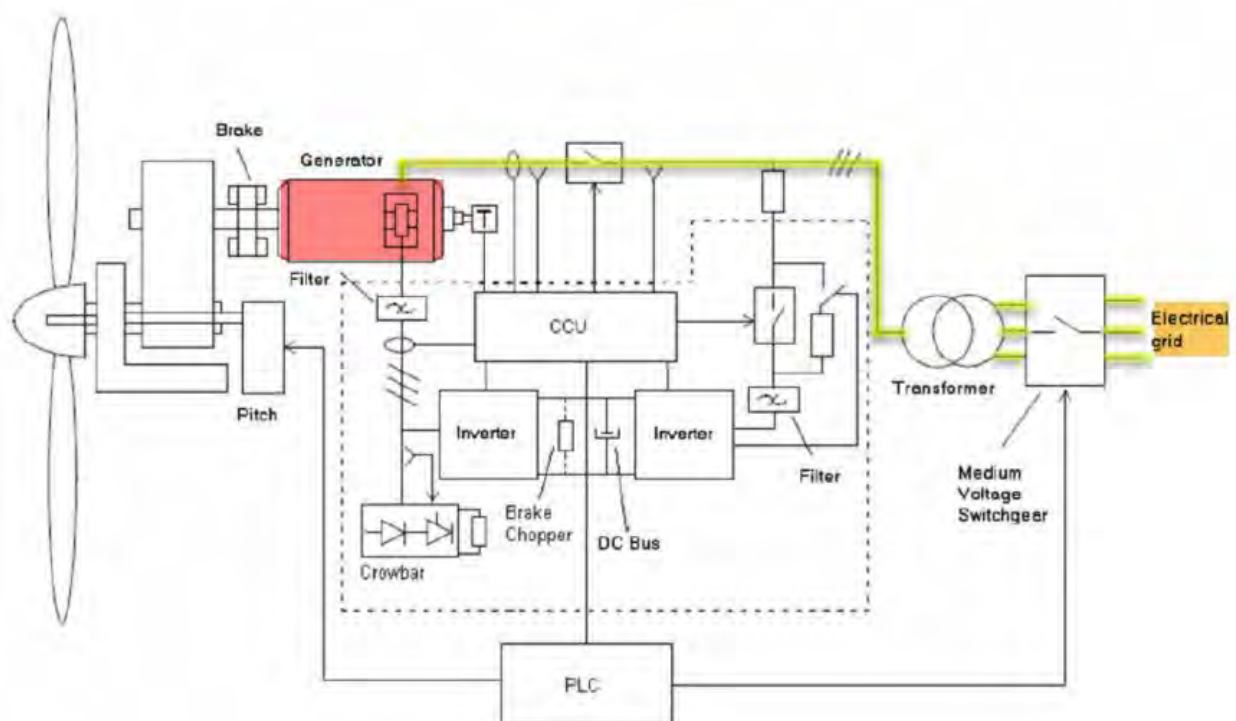


Figure 1. Hardware diagram of SG2.X, SG3.X and SG4.X wind turbines

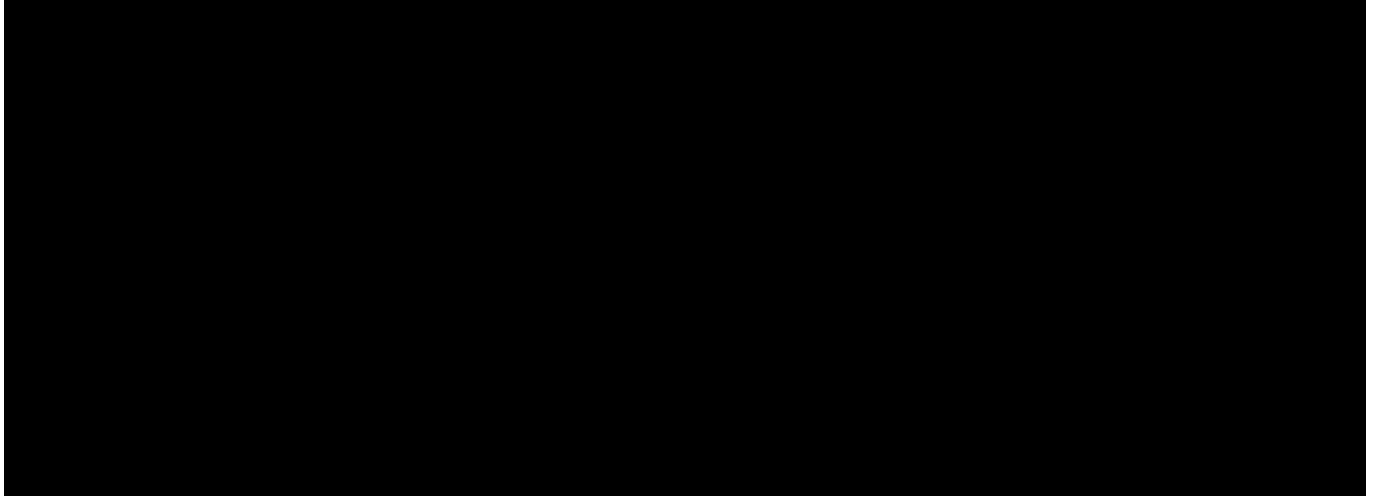
CX-0145C.0004 (annotated)

b) Accused Full-Converter Products

GE argues that the Accused Full-Converter Products are used to perform the step of “coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine” under either parties’ construction of “electric power system.” *See* CIB at 71-73. The single line diagram for

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the Accused Full-Converter Products reproduced below illustrates the coupling between the generator (*i.e.*, the electrical machine) and electric power system:



JX-0133C.0026 (annotated)

When power flows from the grid (red) to the generator (orange), a power converter (green) alters the power's phase, frequency, and amplitude. The power converter is a bidirectional AC-DC-AC converter and converts an AC voltage on one side of the power converter to an intermediate DC voltage. *See* Tr. (Habetler) at 413:1-414:3; Tr. (Phinney) at 902:10-25. The power converter then converts the internal DC voltage to an output AC voltage with a phase, frequency, and amplitude determined by the converter. *See* Tr. (Habetler) at 414:4-25.

The record evidence fails to show that, in the Accused Full Converter Products, “at least one phase of electric power [is transmitted] to the electrical machine.” Although GE’s expert Dr. Habetler testified that power is transmitted from the grid to the generator, he did not specifically address how the grid’s phase is transmitted to the generator through the intermediate AC-DC-AC power converter. *See* Tr. (Habetler) at 337:19-338:21 (discussing power generally, but not the power’s phase). Dr. Habetler also testified that the power converter tailors the phase, frequency, and amplitude of the generator’s voltage in a programmable way, suggesting that the

phase of the grid power is interrupted before it reaches the generator. *See* Tr. (Habetler) at 414:4-25.

In sum, I find that GE has failed to establish that operators of the Accused Full Converter Products perform the step of “coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine.”

3. Step [1.3]: “electrically coupling at least a portion of a control system to at least a portion of the electrical power system”

GE adduced evidence to show that operation of the Accused Products includes the step of electrically coupling at least a portion of a control system to at least a portion of the electrical power system. *See* Tr. (Habetler) at 330:6-331:11 (DFIGs), 343:5-24 (full-converters). In the Accused Products, the converter control unit is electrically coupled to the low voltage side of a transformer in order to measure grid parameters, including grid voltage. Tr. (Habetler) at 330:21-331:11, 343:7-24; Tr. (Phinney) at 974:10-25; *see also* CDX-086 (citing CX-0145C.0004, .0005); CDX-087C (citing CX-0138C.0013); CDX-095C (citing JX-0117C.0026).

SGRE does not dispute that the control systems in the Accused Products are electrically coupled to the low side of the transformer to measure the grid voltage; SGRE instead argues that coupling to the low side of the transformer does not demonstrate coupling to “the electrical power system,” which is what the claim requires. *See* RRB at 36-41. SGRE’s argument centers on a statement GE made to the Patent Office during a reexamination proceeding:

[A]s Patent Owner explained above, the claims of the ’705 patent require that the wind turbine generator ride through faults in which the voltage falls to zero volts at the point where the grid’s voltage is measured, wherever such a point may be located.

JX-0008.06224 (emphasis added).

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SGRE argues this statement means that claim 1 requires an electrical machine to measure a voltage where the grid fault occurs, *i.e.*, that the claimed electrical coupling requires the electrical machine to “see” the voltage amplitude of the electric power system. *See* RRB at 36.

SGRE’s argument was shown without merit through cross-examination of its expert Dr. Phinney, who admitted that coupling components to the electric power system through a transformer is within the scope of term “coupling” as used in claim 1. *See* Tr. (Phinney) at 978:10-17 (“Q. If coupling doesn’t allow you to couple to the power system through a transformer, then the DFIG topology that’s shown in Figure 2 [of the ’705 patent] would not have an electrical machine that’s coupled to the electric power system, correct? A. . . . I think it’s fair to say that the stator could be coupled through – through the transformer.”).

Dr. Phinney also acknowledged that the ’705 patent explicitly discloses that the control system can be coupled to either the high or low side of the transformer. Tr. (Phinney) at 976:12-17 (“Q. Okay. So you understand that in the ’705 patent, it specifically described that the control system can be coupled on either the high or the low side of the transformer, right? A. Yeah, the specification specifically describes both of those conditions.”); *see also* ’705 patent at 4:34-37. And when asked at the hearing, Dr. Phinney admitted that he specifically omitted the 705 Patent’s disclosure that the control system can be coupled on the low side of the transformer when forming his opinion:

Q. Okay. So you understand that in the ’705 patent, it specifically described that the control system can be coupled on either the high or the low side of the transformer, right?

A. Yeah, the specification specifically describes both of these conditions.

Q. Okay. But in your analysis, in your report, you specifically omitted the part of the patent that described coupling the control system on the low voltage side of the transformer, didn’t you?

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A. That's not what I applied, that's correct, because of its – its conflict with GE's statements to the Patent Office.

Q. So when you were forming your opinion in your report, you specifically omitted the portion of the specification that describes coupling the control system on the low side of the transformer, correct?

A. I guess that's another way of saying what I'm telling you, yes.

Tr. (Phinney) at 976:12-977:5.

It is unclear what Dr. Phinney meant when he testified that the teachings of the '705 patent specification conflict with statements GE made to the Patent Office during reexamination. The reexamination addressed whether riding through zero voltage at a location distant from the wind turbine fell within the scope of claim 1. The Patent Office determined that a distant voltage fault did not fall within the scope of the claim and found that the voltage at issue in the '705 patent is the voltage at the point of connection of the wind turbine and the grid. RX-0670.0009. GE never stated to the Patent Office that the control system could not be coupled to the grid on the low side of the transformer.

In view of the evidence adduced by GE at the hearing, I find that operation of the Accused Products performs this step.

4. Step [1.4]: “coupling the control system in electronic data communication with at least a portion of the electrical machine; and”

GE adduced evidence showing that the operation of the Accused Products includes the step of “coupling the control system in electronic data communication with at least a portion of the electrical machine.” *See* Tr. (Habetler) at 333:3-17 (DFIGs), 345:3-18 (full-converters). The Accused DFIG Products' converter controller unit is coupled to the generator to receive various measurements, including frequency and speed measurements. *See* CX-0138C.0013 (disclosing that the “main functionalities of CCU” include “[f]requency measurement” and “[s]peed

measurement” of the generator). The controller in the Accused Full Converter Products receives speed measurements from the generator, as shown in JX-0124C.0026. In addition, SGRE engineer Mr. Lund testified that the converter controller unit in the Accused Full-Converter Products measures the output current of the generator, which is another example of how the control system is coupled in electronic data communication with the generator. *See* JX-0156C.0023 (Lund Depo. Tr.) at 89:6-90:1. SGRE does not dispute that the Accused Products perform step [1.4]. *See* RRB at 32-42.

5. Steps [1.2] and [1.5]: “configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time, said configuring the electrical machine comprising” and “configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZVRT).”

GE asserts that the operation of the Accused Products involves “configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time” (step [1.2]) and “configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZVRT)” (step [1.5]). CIB at 76-77 (citing Tr. (Habetler) at 325:10-330:5, 333:18-334:2, 340:3-341:7, 345:19-346:8); *see also id.* at 76-82.

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The record evidence shows that the control system and generator of the Accused Products are configured such that the generator remains electrically connected during and subsequent to the grid voltage dropping to approximately zero volts at the point of connection of the wind turbine. This was confirmed by the testimony of SGRE engineers Mr. Lund and Mr. Agudo, and SGRE's expert Dr. Phinney. *See* Tr. (Lund) at 573:6-574:3, 582:5-18; Tr. (Agudo) at 596:22-597:10, 598:15-602:1; Tr. (Phinney) at 970:11-971:1. Specifically, the Accused DFIG Products are configured such that the generator remains electrically connected for zero voltage events lasting up to 500 milliseconds, while the Accused Full-Converter Products are configured such that the generator remains connected for zero voltage events lasting up to 850 milliseconds. *See* Tr. (Phinney) at 970:11-971:1. The zero voltage ride through specifications for the Accused Products are shown in the graphs below taken from CX-0148C and JX-0108C, and these specifications have been verified by testing. *See* Tr. (Habetler) at 328:10-329:14, 342:3-14; CX-0149C (DFIG); CX-0125C (Full-Converter).

SG 4.5-145 - 60 Hz Grid Performance Specification

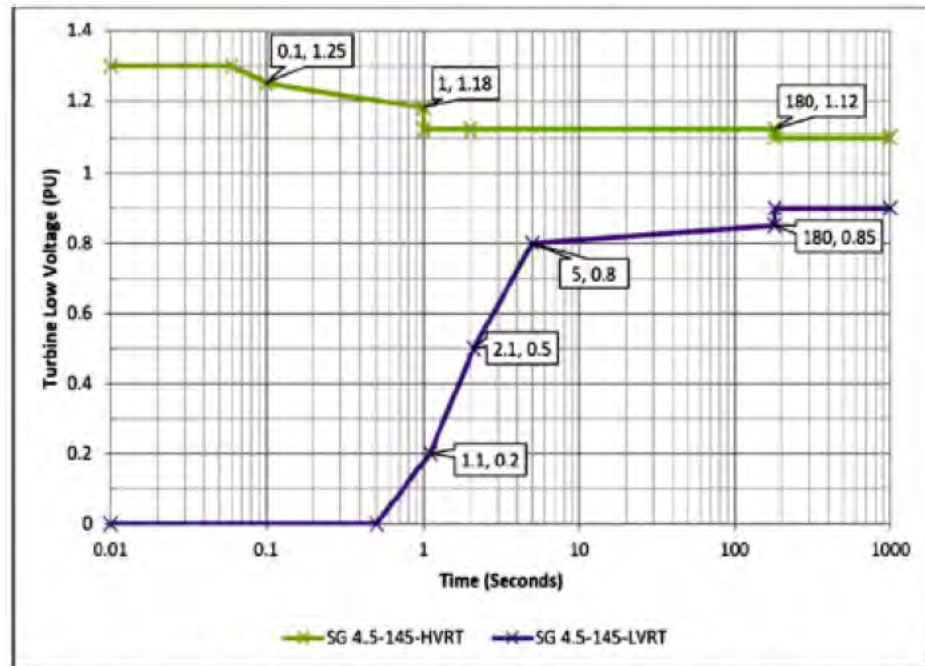
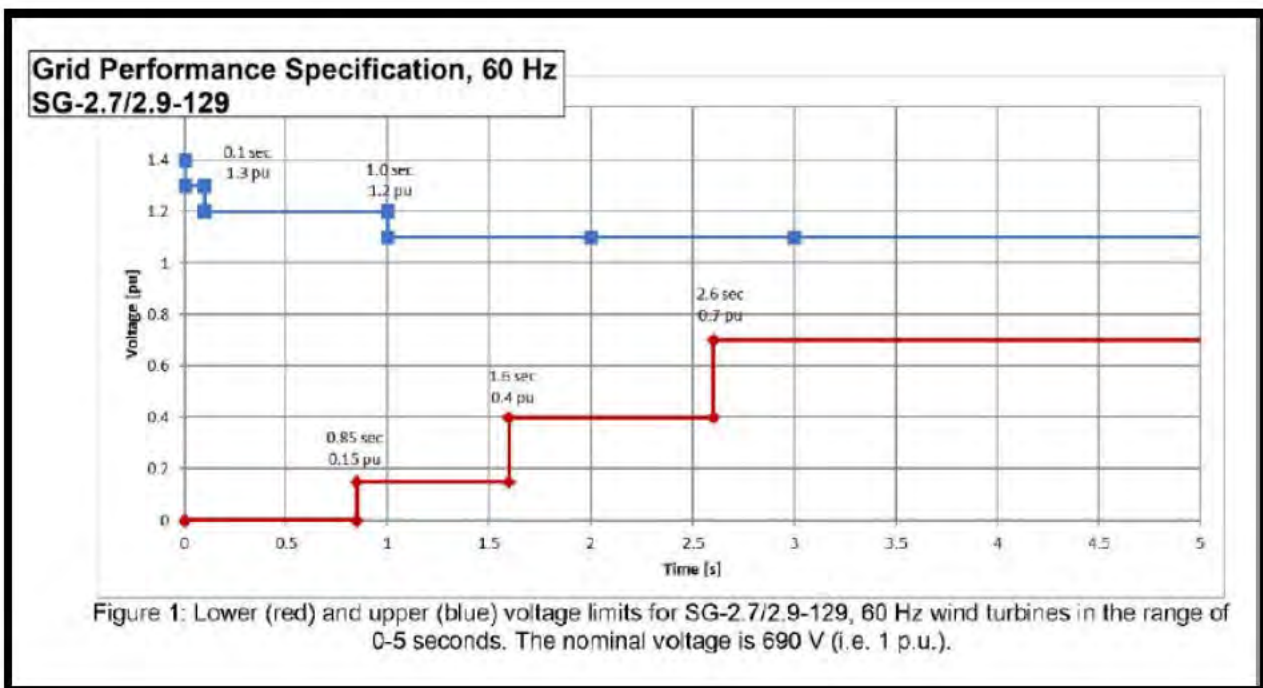


Figure 2: LVRT and HVRT characteristics of SG 4.5-145, 60 Hz wind turbines, at LV side of wind turbine transformer.

CX-0148C.0002 (DFIG)



JX-0108C.0003 (Full-Converter)

SGRE argues that the Accused Products are not configured to remain connected to a power system “during and subsequent to” a zero voltage fault “for [an] undetermined period of time” because the products are programmed to disconnect from the grid if a zero voltage fault exceeds a certain period. RRB at 32-35. Indeed, the evidence shows that the Accused DFIG Products are programmed to disconnect from the grid if a zero voltage exceeds 500 milliseconds, and the Accused Full-Converter Products are programmed to disconnect from the grid if a zero voltage fault exceeds 850 milliseconds. *See* Tr. (Habetler) at 385:12-366:7, 898:7-899:3. SGRE’s position, however, would require that an accused product be configured to remain connected to a power system during *the entire duration of* and subsequent to a zero voltage fault that lasts for an undetermined period of time before a finding of infringement could be made. The claims do not require any such thing.

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The evidence shows that the Accused Products are configured to remain connected to the power system “during and subsequent to” a zero voltage fault lasting “for [an] undetermined period of time” up to 500 milliseconds (for Accused DFIG Products) or 850 milliseconds (for Accused Full-Converter Products). The claim language does not require more to find infringement, even considering the parties’ differing proposals for the construction of the term “voltage amplitude of the electric power system.” *See* Section VII.C.2, *supra*.

Under SGRE’s originally proposed construction of “undetermined period of time,” which is “a time whose duration is undefined when the machine is configured,” the Accused Products satisfy this limitation because (i) they are configured to remain electrically connected during and subsequent to zero voltage events that last up to 500 / 850 milliseconds; and (ii) the duration of the zero voltage events are not defined when the machine is configured. *See* Tr. (Habetler) at 329:20-330:5. The Accused Products also satisfy this limitation under my construction of the term, where “undetermined period of time” refers to the voltage fluctuation taking place on the grid and is an indeterminable or unknowable period of time. For example, if an unexpected zero voltage event occurred and it happened to persist for 250 milliseconds, the limitation would be satisfied. So also for an unexpected event that persisted for 321 milliseconds or 187 milliseconds. In all of those scenarios, the limitation is satisfied under any construction of the claim language.

For the reasons set forth above, I find that when SGRE customers, including BMP Wind LLC and King Creek Wind Farm 2 LLC, operate the Accused DFIG Products, each step of claim 1 of the ’705 patent is performed and claim 1 is infringed. *See* Section I.D.2. On the other hand, GE did not show that operation of the Accused of the Full-Converter Products performs each step of claim 1 of the ’705 patent and therefore I do not find infringement based on the operation of those machines.

E. Indirect Infringement

For the reasons set forth in Section VI.E above, the evidence shows that SGRE induces the infringement of claim 1 of the '705 patent. However, for the same reasons stated in the same section, GE has not shown that SGRE contributes to the infringement of claim 1 of the '705 patent.

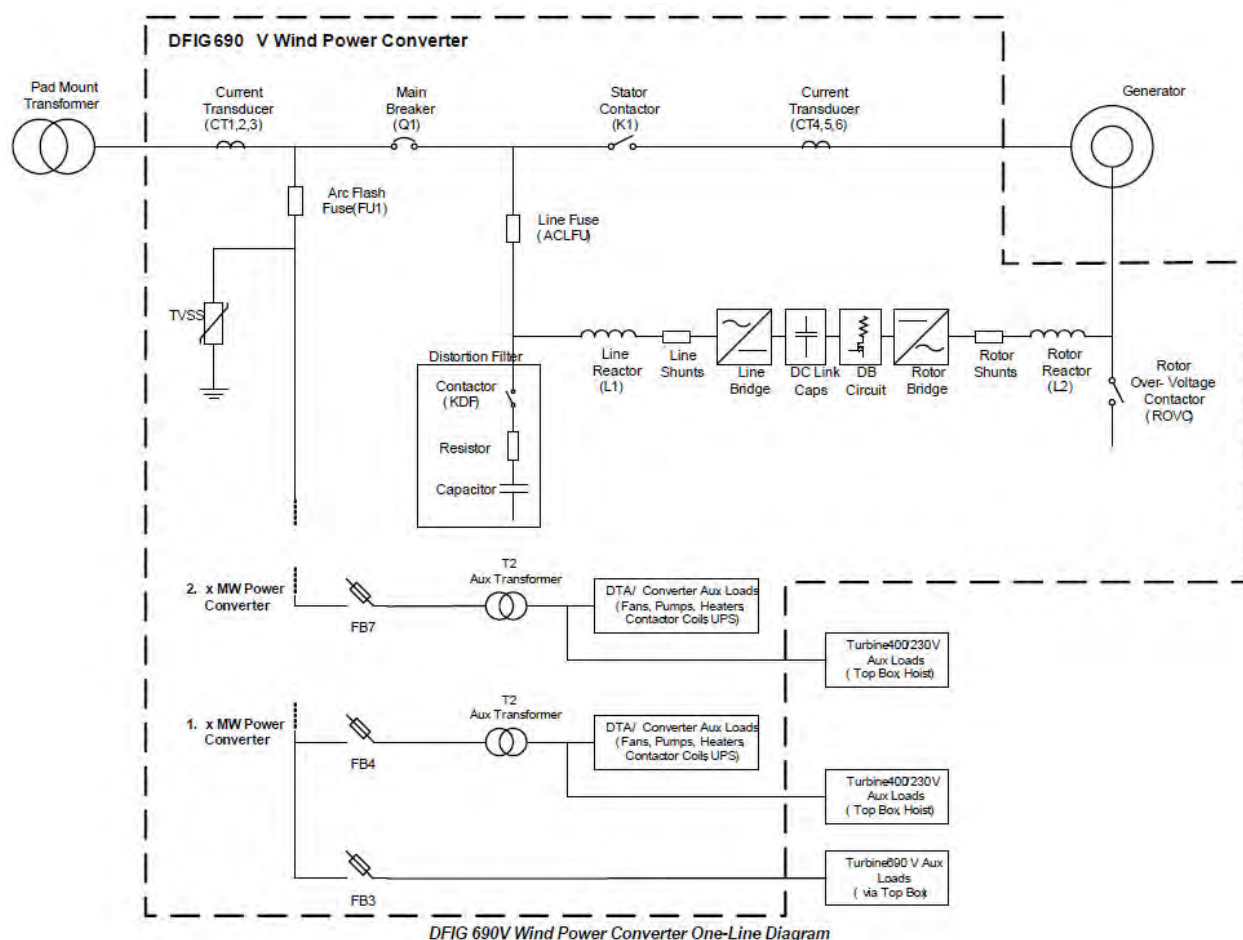
F. Technical Prong of the Domestic Industry Requirement

GE asserts that operation of the Domestic Industry Products, which all have a doubly-fed induction generator (or DFIG) configuration, practices claim 1 of the '705 patent. CIB at 82-87.

1. Preamble [1.0], Steps [1.1] and [1.4]: “A method for operating an electrical machine, said method comprising: coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine;” and “coupling the control system in electronic data communication with at least a portion of the electrical machine;”

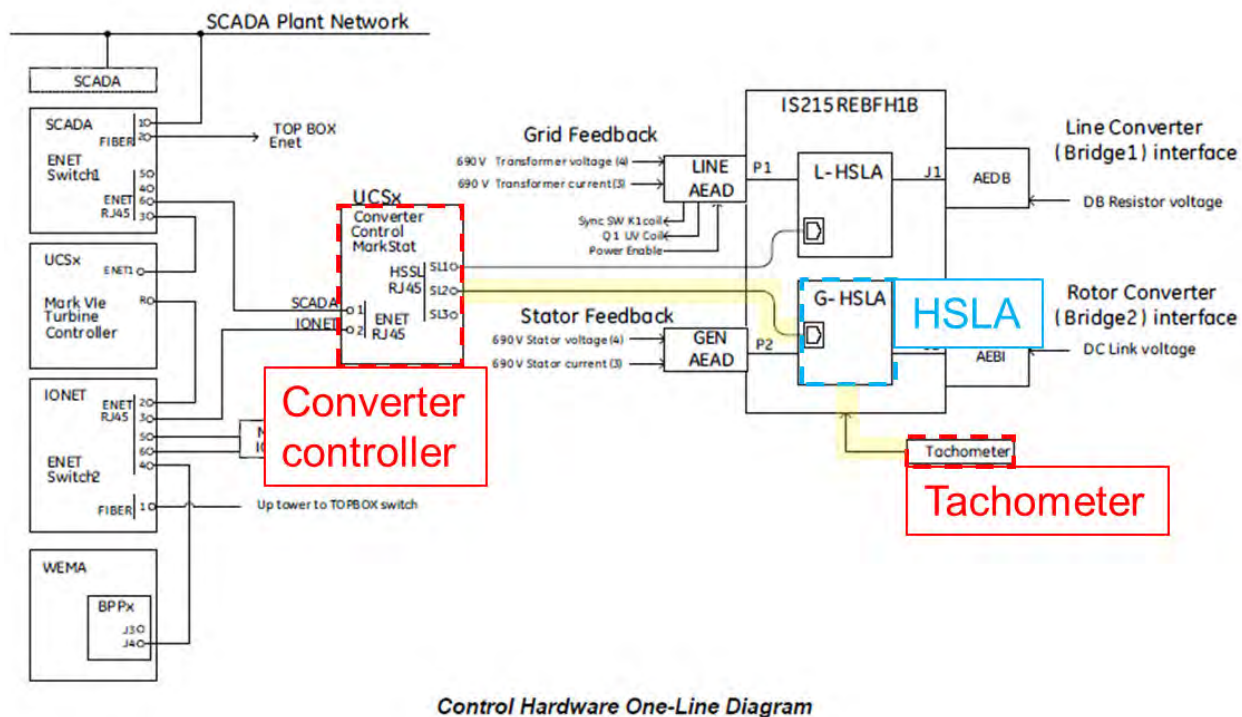
GE adduced evidence to show that preamble [1.0] is satisfied and method steps [1.1] and [1.4] are performed when the Domestic Industry Products are operated. Specifically, operation of the Domestic Industry Products is a “method for operating an electrical machine” comprising “coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine.” As shown in the illustration below, the Domestic Industry Products include a doubly-fed induction generator, in which the stator is coupled to the grid and the rotor is coupled to the grid via a power converter. *See* Tr. (Habetler) at 346:18-347:1; JX-0046C.0019 (disclosing that power “flows from the grid, through the converters, and into the rotor” in the Domestic Industry Products).

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JX-0046C.0013

Operation of the Domestic Industry Products also includes the step of “coupling the control system in electronic data communication with at least a portion of the electrical machine.” The one-line diagram for the Domestic Industry Products shown below discloses a path from the tachometer, which measures the speed of the electrical machine, to the converter controller, which receives the signal after it is processed. *See* Tr. (Habetler) at 349:11-21.



JX-0046C.0017 (annotated)

SGRE does not dispute that operators of the Domestic Industry Products perform these steps. *See* RRB at 43-44.

2. Step [1.3]: “electrically coupling at least a portion of a control system to at least a portion of the electrical power system”

The record evidence shows that operation of the Domestic Industry Products includes the step of electrically coupling at least a portion of a control system to at least a portion of the electrical power system. The one-line diagram of the Domestic Industry Products shows that the converter controller is electrically coupled to measure the grid voltage on the low side of the transformer. *See* Tr. (Habetler) at 348:14-349:10; CDX-102 (annotating JX-0046C.0017). GE engineer Cory Holliday testified that the converter controller in the Domestic Industry Products measures the grid voltage and is therefore electrically coupled to the electric power system. *See* Tr. (Holliday) at 212:7-213:12.

SGRE's argument that operators of the Domestic Industry Products do not practice this step is identical to its argument that operation of the Accused DFIG Products does not practice this step. *See* RRB at 43-44. As explained in above Section VII.D.3, SGRE's argument is unavailing.

3. Steps [1.2] and [1.5]: “configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time, said configuring the electrical machine comprising” and “configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZVRT).”

The record evidence shows that operation of the Domestic Industry Products performs steps [1.2] and [1.5]. *See* Tr. (Habetler) at 347:2-348:13. GE's technical documentation for its 1 MW and 2 MW platform wind turbine generators discloses the fault ride through capabilities of the Domestic Industry Products, which includes zero voltage ride through. *See* CDX-103 (annotating JX-0039C.0006 and JX-0077C.0006). GE engineer Mr. Holliday testified that GE performs simulations, conducts laboratory testing, and performs field testing to determine that the Domestic Industry Products are capable of performing zero voltage ride through consistent with the voltage tolerance tables included in exhibit JX-0039C.0006 and JX-0077C.0006. *See* Tr. (Holliday) at 223:6-224:25. Mr. Holliday also testified that during testing, the voltage will be reduced to zero volts to ensure that the converter will ride through without tripping—*i.e.*, the converter will remain electrically connected to the grid during and subsequent to a voltage dip down to zero volts. *See* Tr. (Holliday) at 223:19-224:1. These tests are performed where the voltage on both the low side and high side of the transformer is lowered to zero volts to confirm

that the Domestic Industry Products can remain electrically connected during and subsequent to the zero voltage dip. *See* Tr. (Holliday) at 224:4-25.

SGRE contends that operation of the Domestic Industry Products do not practice these steps because the control system imposes an upper time limit on the connection between the converter and the grid during zero voltage events. *See* RRB at 43-44. This argument is identical to the non-infringement SGRE made with respect to the Accused Products. As explained in Section VII.D.5, SGRE's argument is unavailing.

For the reasons set forth above, I find that operation of the Domestic Industry Products performs each step of claim 1 of the '705 patent and that the technical prong of the domestic industry requirement is satisfied as to this claim.

G. Patent Ineligible Subject Matter

SGRE contends claim 1 of the '705 patent is directed to ineligible subject matter under § 101 of the Patent Act. 35 U.S.C. § 101; RIB at 161-63. In particular, SGRE argues that claim 1 is directed to the abstract idea of "allowing an electrical machine coupled to an electric power system to remain connected to the electric power system during and subsequent to the electric power system voltage decreasing to approximately zero volts." RIB at 161.

Section 101 of the Patent Act permits the patenting of "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. Prohibited, however, are patents claiming "[l]aws of nature, natural phenomena, and abstract ideas" because they "are basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012). While these narrow exceptions to the broad scope of patentability are necessary to serve the patent clause's stated function of "promot[ing] the progress of science and useful arts," Art. I, Sec. 8, Cl. 8, "too broad

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an interpretation of this exclusionary principle could eviscerate patent law. For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Mayo*, 566 U.S. at 70.

To determine whether a patent’s claims fall within one of the narrow exemptions to patentability, courts must engage in a two-step inquiry. First, the court must “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). If not, the inquiry ends, and the claims are not directed to ineligible subject-matter under section 101. *Id.* This inquiry “focus[es] on the language of the Asserted Claims themselves. . . . considered in light of the specification.” *See TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1292 (Fed. Cir. 2020) (cleaned up). “A relevant inquiry at *Alice* Step 1 is ‘whether the claims in the[] patent[] focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery.’” *Free Stream Media Corp. v. Alphonso Inc.*, 996 F.3d 1355, 1363 (Fed. Cir. 2021) (quoting *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016)).

Only if one or more claims are found to be directed to a patent-ineligible concept does the inquiry then turn to the second step: examination of the elements of each claim “both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. at 79). A patent is directed to ineligible subject-matter only if it fails both steps. *See id.*

Beginning with *Alice* Step 1, I examine the words of claim 1 to determine if they are directed to a result or effect. Claim 1 of the ’705 patent states:

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1. A method for operating an electrical machine, said method comprising:

coupling the electrical machine to an electric power system such that the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and

configuring the electrical machine such that the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time, said configuring the electrical machine comprising:

electrically coupling at least a portion of a control system to at least a portion of the electric power system;

coupling the control system in electronic data communication with at least a portion of the electrical machine; and

configuring the electrical machine and the control system such that the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts for the undetermined period of time, thereby facilitating zero voltage ride through (ZRVt).

'705 patent at claim 1.

On its face, claim 1 is directed to the “result” of allowing an electrical machine to remain connected to an electric power system during and subsequent to the electric power system voltage decreasing to approximately zero volts, however achieved. The Federal Circuit has admonished that a claim “must ‘have the specificity required to transform [it] from one claiming only a result to one claiming a way of achieving it’ to avoid ineligibility.” *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167-68 (Fed. Cir. 2018) (cleaned up) (collecting cases). A claim is ineligible if it “fail[s] to recite a practical way of applying an underlying idea . . . and instead [is] drafted in such a result-oriented way that [it] amount[s] to encompassing ‘the principle in the abstract’ *no matter how implemented*.” *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1343 (Fed. Cir. 2018)

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(emphasis added). To survive *Alice* Step 1, the claim itself “must identify ‘how’ that functional result is achieved by limiting the claim scope . . . to concrete action, in the case of a method claim.” *Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 967 F.3d 1285, 1302 (Fed. Cir. 2020). The claim at issue here is results-oriented; it covers the operation of any system that “facilitat[es] zero voltage ride through” without identifying concrete actions that cause the machine to remain connected to the electric power system during and subsequent to a zero voltage event. The claim is thus directed to an abstract idea, and the inquiry thus moves on to Step 2 of *Alice*.

Here, claim 1 of the ’705 patent fails to recite a patent-eligible application of its abstract idea. The claim refers to only three technological features—an electric power system, an electrical machine, and a control system—each of which is a conventional, well-known component. The claimed electric power system is “an electric power transmission and distribution grid” of the type that supplies power to hundreds of millions of U.S. customers. *See* ’705 patent at 3:54-55. An “electrical machine” as described in the claim is also well-known and familiar. This term covers the wind turbine generators described by the ’705 patent as well as those described in the ’985 patent also asserted in this investigation. *See* ’705 patent at 1:9-28 (describing general properties of wind turbine generators). Control systems are likewise familiar and well-known. As discussed in the ’705 patent specification, the control system can comprise a computer of any shape or size. *See* ’705 patent at 3:1-40 (describing various configurations of the controller 202), 7:12-17 (PLL regulator 400 is part of the computer). Significantly, claim 1 never specifies a particular structure or method of operation of the control system.

The elements of claim 1, when considered as a combination, provide no patent-eligible application of the claim’s abstract idea. The method steps are defined solely by the results they achieve:

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Step [1.1]: coupling the electrical machine to an electric power system ***such that*** the electric power system is configured to transmit at least one phase of electric power to the electrical machine; and

Step [1.2]: configuring the electrical machine ***such that*** the electrical machine remains electrically connected to the electric power system during and subsequent to a voltage amplitude of the electric power system operating outside of a predetermined range for an undetermined period of time

Step [1.5]: configuring the electrical machine and the control system ***such that*** the electrical machine remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing below the predetermined range including approximately zero volts

Moreover, claim 1 recites none of the features that the patent’s specification identifies as providing a zero voltage ride through capability, such as the filter settings (FIG. 6, row 3) that permit a phase-locked loop regulator 400 to ride through a zero voltage event. *Compare* claim 1, step [1.5] with ’705 patent at 10:49-67 (providing example register settings of A=2.46737, C=328.039, and E=376.99 to mitigate the potential for a wind turbine generator to trip during a zero voltage ride through event).

The facts here are similar to those in *Free Stream*. There, the Federal Circuit found the claims were directed to “the abstract idea of providing targeted advertising to [a] mobile device user.” *Free Stream*, 996 F.3d at 1365. Although the asserted claims recited “generic computing components—e.g., ‘servers’—arranged in a conventional manner,” that claim language did not transform the claim into something other than the abstract idea. *Id.* at 1366. As in *Free Stream*, the claim 1 here “simply recite[s] that the abstract idea will be implemented” with a generic “control system.” *Compare Free Stream*, 996 F.3d at 1366 with ’705 patent claim 1. Claim 1 does not “recite particular features” of the electrical machine, the control system, or the steps that are necessary to achieve zero voltage ride through. *See Intellectual Ventures I LLC v. Capital One Fin.*

Corp., 850 F.3d 1332, 1342 (Fed. Cir. 2017) (rejecting argument that “the claims set forth a unique solution to a problem” because the claims did not “recite particular features to yield these advantages”).

Under the precedents examined above, claim 1 of the ’705 patent is directed to ineligible subject matter, and therefore there can be no liability under section 337 for importing or selling articles used to perform the method of claim 1.

H. Validity

SGRE argues that claim 1 of the ’705 patent is invalid as both anticipated by and obvious in view of the prior art. *See* RIB at 79-161.

1. Anticipation by Vesta’s Sales of AGO4-Equipped Wind Turbines

SGRE contends that a Turbine Sales Agreement for Vestas V80 wind turbines dated September 30, 2005, invalidates claim 1 of the ’705 patent under the on-sale bar of § 102(b). RIB at 79-99. The Vestas V80 turbines in question were destined for an installation called the Wild Horse Wind Farm. SGRE relies on documents in the Turbine Sales Agreement that discuss Vestas Advanced Grid Option 4 (“AGO4”), which is a specification that allegedly required a zero voltage ride through capability. *See id.*

In view of the evidence presented at the hearing, I find that SGRE has failed to prove by clear and convincing evidence that the Wild Horse turbines were equipped with Vestas’s AGO4 design, regardless of whether or not AGO4 actually did require a zero voltage ride through capability. SGRE argues that Vestas executed a “contract for sale of 127 AGO4-equipped wind turbines,” but the Turbine Sales Agreement does not indicate whether the turbines that were actually sold and commissioned were equipped with AGO4. *See* RIB at 93-94. On this point, Vestas engineer Steven Saylors provided inconsistent testimony. At his first deposition,

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Mr. Saylor testified that “there was no advanced grid option actually enacted on Wild Horse” because AGO4 “was not ready for market at that time.” *See* Tr. (Saylor) at 463:3-11. At a later, second deposition, Mr. Saylor retracted his earlier testimony and stated that AGO4 was installed at Wild Horse. *See* Tr. (Saylor) at 463:12-16. Mr. Saylor also admitted that he spoke only to two Vestas lawyers between the two depositions, and “did not speak to any technical personnel in Vestas” or to anyone with personal knowledge of the Wild Horse turbines. *See* Tr. (Saylor) at 463:17-465:3. Mr. Saylor further testified that he was “only peripherally involved in Wild Horse for an issue regarding foundations that had no relation to the AGO4.” *See* Tr. (Saylor) at 465:4-8. Mr. Saylor’s inconsistent testimony and lack of personal knowledge fail to establish by clear and convincing evidence that the Vestas turbines implicated in the September 2005 Turbine Sales Agreement actually incorporated the AGO4 design before the ’705 patent’s critical date of October 20, 2005.

I therefore find that SGRE has failed to demonstrate by clear and convincing evidence that claim 1 of the ’705 patent is anticipated by Vestas wind turbines incorporating the AGO4 design.

2. Anticipation by GE’s Colorado Green and Sweetwater Wind Turbines

SGRE contends that GE’s sale of 1.5 MW wind turbines for a site called Colorado Green and other sites anticipate claim 1 of the ’705 patent. RIB at 99-101.

SGRE argues that, during development of its “AccuWave” 1.5 MW power converter (later renamed “GEIS”), GE tested the ride through capability of the converter on a DFIG wind turbine test rig in May and June 2003 and concluded that it operated “flawlessly during and after” voltage faults “down to 0%.” RX-0908C.0011, .0017; Tr. (Larsen) at 133:21-23, 174:8-179:14; Tr. (Phinney) at 919:4-15.

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Based on this testing evidence, SGRE argues that GE's subsequent sales in 2003 of GEIS power converters in wind turbines destined for the Colorado Green site and a site called Sweetwater invalidate claim 1 of the '705 patent. *See* RIB at 100-01. SGRE also argues that GE's 2004 demonstration of a turbine to Florida Power and Light also invalidates claim 1 of the '705 patent. *Id.* at 101.

In view of the evidence presented at the hearing, I conclude that SGRE has failed to meet its burden to show by clear and convincing evidence that the GEIS converters sold for Colorado Green or Sweetwater, or the converter demonstrated to Florida Power and Light, anticipate claim 1 of the '705 patent. In particular, SGRE has not demonstrated that the wind turbines installed at Colorado Green or Sweetwater were configured for zero voltage ride through.

Regarding the June 2003 laboratory test report that SGRE contends is proof that the turbines in question were configured for zero voltage ride through (*see* JX-0083.0001), GE engineer and '705 patent named inventor Mr. Larsen testified that the low voltage tests were performed over a wide range of load speeds and power factors to determine that the AccuWave/GEIS converter would meet the requirements specification and work as intended. *See* Tr. (Larsen) at 133:1-7. In addition to performing a wide range of tests for the low voltage specification, Mr. Larsen testified that a few tests were performed in excess of the specification, including down to zero volts, as "a learning exercise." *See* Tr. (Larsen) at 133:8-14.

As Mr. Larsen explained, these four tests do not establish that GE had completed development of zero voltage ride through by 2003. Unlike the extensive testing performed to confirm the AccuWave/GEIS converter's low voltage ride through functionality, the zero voltage ride through tests were run only under limited conditions. *See* Tr. (Larsen) at 134:4-10. For example, the test report shows that zero voltage tests in excess of the specification were done only

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at the full load condition. JX-0083.0007. Mr. Larsen testified that zero volt tests in the June 2003 report were “nowhere near the full set that we need to satisfy ourselves that it’s working, that we can -- that we can put it out in the field and not get phone calls in the middle of night.” *See* Tr. (Larsen) at 134:11-23.

Subsequent zero voltage tests performed by GE support a conclusion that the converters sold for the Colorado Green and Sweetwater sites were not configured for zero voltage ride through. These tests were performed in Germany and the United States at conditions and with parameters that were not included in the June 2003 test, and they failed. *See* Tr. (Larsen) at 136:9-23. GE also performed unsuccessful zero voltage ride through tests in 2005 wherein the wind turbine disconnected during the zero voltage fault at partial load condition. *See* Tr. (Phinney) at 999:19-1001:25 (testimony regarding JX-0092 describing tests conducted in April/May 2005).

As for the alleged demonstration to Florida Power and Light, SGRE relies on an email from October 2004 (RX-0414) as evidence that GE had “demonstrated and delivered wind turbines with ZVRT capability before the critical date.” *See* RIB at 101. This email, which was written by someone external to GE, states that GE had tested under “full load” conditions, that the turbines “may not ride through as well at half power,” that “[a]dditional testing would be required,” and that GE’s turbines “are not setup to do so.” RX-0414.0001. This email supports a conclusion that GE had not yet provided zero voltage ride through capability in its wind turbines as of October 29, 2004, the date of the email.

In view of the record evidence summarized above, I find that SGRE has failed to meet its clear and convincing burden to show that the turbines at Colorado Green installed in 2003 practiced claim 1 of the ’705 patent, or that the turbines sold for the Sweetwater site or demonstrated to

Florida Power and Light practiced claim 1 of the '705 patent. I therefore find that claim 1 of the '705 patent is not invalid as anticipated by these turbines.

3. Anticipation by GE's Sales to Kaheawa Wind Power

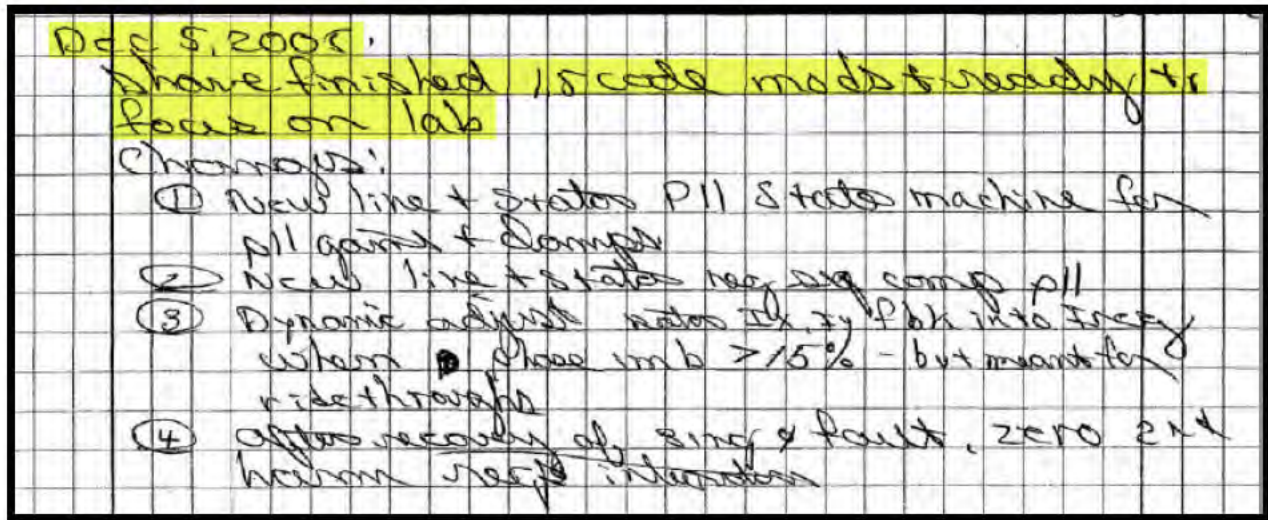
SGRE contends that claim 1 of the '705 patent is anticipated under 35 U.S.C. § 102(b) (pre-AIA) by a January 19, 2005, contract to sell wind turbines to Kaheawa Wind Power. *See* RIB at 101-28. GE disputes that the invention claimed in the '705 patent was ready for patenting before October 20, 2005, which is the patent's critical date. Based on the evidence adduced at the hearing and discussed below, I find that SGRE has failed to show by clear and convincing evidence that the zero voltage ride through invention claimed in the '705 patent was ready for patenting before October 20, 2005.

Trial testimony establishes that the zero voltage ride through invention claimed in the '705 patent required verification testing before its inventors could be certain it would work under real-world conditions. *See* Tr. (Larsen) at 138:12-140:10, 199:13-201:12; Tr. (Brogan) at 857:5-16; *see also* CX-0042C.0016 (Alstom simulation report stating that "[t]he stability of the 0% condition requires testing on the 520kW test rig in the Kidsgrove laboratory"). The record evidence demonstrates that the '705 patent inventors were conducting extensive laboratory tests after the critical date of October 20, 2005, and their work was not ready for patenting before the conclusion of these subsequent experiments. *See* Tr. (Larsen) at 138:18-140:14; RX-0074.0062-.0089 (Barker Testimony).

The exemplary embodiment of the invention set forth in the '705 patent involves a doubly-fed induction generator topology, which is the same topology found in the 1.5 MW turbines that were subject to the Kaheawa contract. '705 patent at 3:41-48; JX-0089C.0007 ("twenty (20) General Electric Company model 1.5 Megawatt SE wind turbine generators"); *see* Tr. (Larsen) at

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128:18-25. The lab notebook of inventor Sidney A. Barker demonstrates that he did not finish the code module needed to begin testing the 1.5 MW doubly-fed induction generators in the lab until December 5, 2005:



CX-0174C.0130 (annotated)

Subsequent entries in Mr. Barker's personal journal demonstrate the extensive testing and experimentation that occurred between December 2005 and January 2006 to evaluate whether the proposed zero voltage ride through concept would work for its intended purpose. The four entries excerpted below range from December 10, 2005, to January 7, 2006, and demonstrate that the tests failed and caused the lab's breakers to trip:

I was in the lab just after 6:00am . . . I made some good progress for a while this morning until we tripped out a main breaker . . . It was about 11:00 when we had power back again. I ran a few more test before going home.

CX-0183C.0093 (Dec. 10, 2005).

I was out in the lab shortly after 1:00pm. I began testing, but within an hour I had tripped the OCB, like Saturday, and had brought all the labs down. That pretty much said that I would be off the rest of the year.

CX-0183C.0096 (Dec. 16, 2005).

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I was in the lab pretty much all afternoon trying to establish correct timing for the one second tests. The yard tripped out at the end of one of those tests. This of course caused quite a bit of commotion and got some folks angry at me.

CX-0183C.0098 (Jan. 4, 2006).

We went to the lab. I made a number of tests before about 8:30 when we blew apart a limit amp.

CX-0183C.0099 (Jan. 7, 2006).

The entries below dating from January 9, 2006, through January 18, 2006, document unexpected issues that arose regarding an undervoltage condition on the DC link during a zero voltage event:

I worked on various items in the afternoon, including working with Jack & Dave some with the 1.5 uv (dc) problem at 1,000 RPM.

CX-0183C.0100 (Jan. 9, 2006).

I spent my morning working on a solution to the vdc uv faults. That is not going well. We still don't have an answer . . . I finally made it in the lab . . . We worked until after 6:00pm, but after that I had a long conversation with Scott Frame about our direction & testing. I fully expect Scott to be my manager before I retire.

CX-0183C.0102 (Jan. 12, 2006).

I spent most of my morning working on a number of changes to the code that will allow us to give up on zero voltage ride through torque and vars near zero volts . . . After lunch, I made sure that Jack had all my changes, then headed to the lab with Raf and John about 3:00pm to try out the new arrangement . . . The new setup worked well and the new code did not at first, but after a change all was ok. However, I tried a couple of tests at 815 rpm and they failed. I could not get them to work.

CX-0183C.0103 (Jan. 13, 2006).

I spent my morning until 10:00 am at my desk and talking to Jack about the 820 rpm test failure & trying to do some simulations . . . I was in the lab pretty much all afternoon, most of it with Jack D'Atre at my side. We did a total of 17 tests and we still have a problem, but we understand it better.

CX-0183C.0106 (Jan. 18, 2006).

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On January 19, 2006, Mr. Barker notes that he decided to “call a meeting to consider shutting down the converter in fixed freq mode,” which the inventors determined would prevent tripping offline during a zero voltage dip. *See* CX-0183C.0107. This decision is summarized in an April 10, 2006, report that Mr. Barker drafted compiling his January 12 and January 19, 2006, notebook entries. JX-0088C.0001.

Named inventor Einar Larsen testified that, during the testing performed by Mr. Barker and others at the low power condition, the '705 inventors discovered that the DC link discharged too much. *See* Tr. (Larsen) at 138:12-140:10. If the voltage on the DC link is too low during a zero voltage event, the grid-side converter could be damaged by a large in-rush current when the grid fault is cleared—the possibility of this damaging current caused a protective trip at low voltages on the DC link. *Id.* Accordingly, the inventors determined it was necessary to suspend firing of the grid-side converter when certain conditions were met during a zero voltage event. *Id.* This concept to suspend the grid-side converter was part of the disclosure in the '705 patent specification. '705 patent at 6:13-18; *see also* Tr. (Larsen) at 142:21-143:20, 145:22-146:12.

Despite ample evidence showing extensive testing and development of the zero voltage ride through technology after the '705 patent's critical date of October 20, 2005, SGRE contends that the '705 invention was ready for patenting when Mr. Larsen prepared an initial concept document (RX-0044) in January 2005. *See* Tr. (Phinney) at 989:1-7; RIB at 102-03. But this concept document does not disclose a phase-locked loop with modes and transitions for handling zero voltage, which is included in the '705 patent disclosure. *See* Tr. (Phinney) at 991:7-16; *see also* '705 patent at 10:43-67, 11:1-14. Nor does Mr. Larsen's concept document disclose the suspension of the grid-side converter during a zero voltage event, which is also included in the '705 patent and discussed above. *See* RX-0044. This evidence shows that, as of the January 14,

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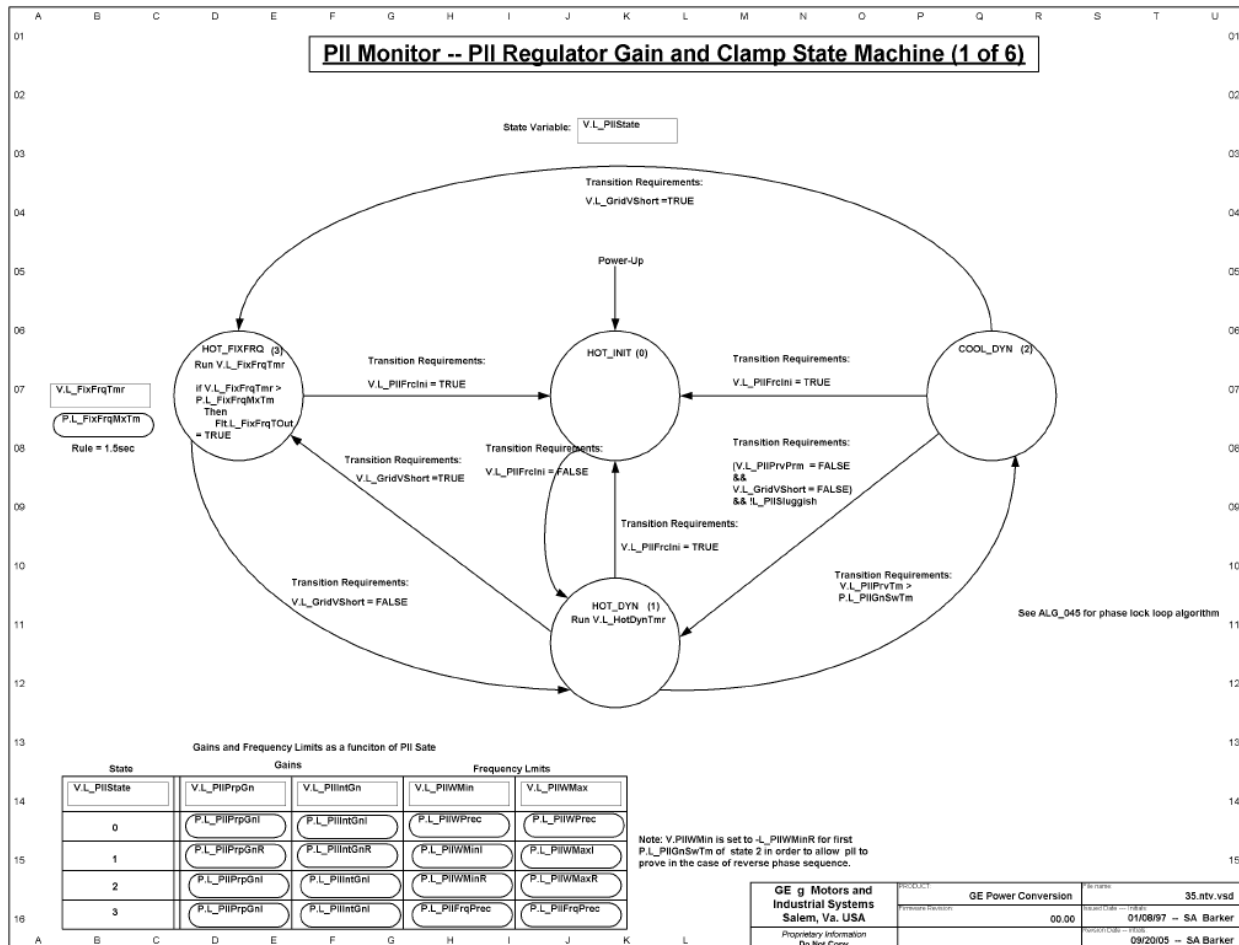
2005, date of Mr. Larsen's concept document, the invention recited in claim 1 was not ready for patenting.

On January 19, 2005, five days after Mr. Larsen prepared his zero voltage ride through concept document, GE business leaders debated whether to go forward with a proposed installation at Kaheawa that would require ride through at "0V, 600msec." RX-0254.0001-.0002. Mr. Larsen recommended that GE sign the contract and charge a premium because his "study showed that we have a fairly good chance of meeting these requirements." *Id.*; *see also* Tr. (Larsen) at 151:18-154:3. GE subsequently signed the Kaheawa sales agreement and charged a \$25,000 premium per turbine. JX-0089C.0004, .0014.

SGRE argues that GE's apparent reliance on Mr. Larsen's recommendation that "we have a fairly good chance of meeting [the zero voltage ride through] requirements" means that the '705 invention was ready for patenting as of January 2005. *See* RIB at 105. SGRE also argues that GE's August 2005 approval for "purchasing components for Hawaii and Hydro-Quebec projects" means that the zero voltage ride through concept in the '705 patent was ready for patenting. *Id.* (citing RX-0280C.0003-.0004 and Tr. (Phinney) at 927:16-928:14). But these business decisions were likely based on considerations other than the purely technical analysis that Mr. Larson provided. Mr. Larsen stated that his team "ha[s] *a fairly good chance* of meeting [the zero voltage ride through] requirements"; he did not write that technology meeting the requirements already had been developed and was ready to go. RX-0254.0001-.0002 (emphasis added). The law requires more. SGRE must show that GE "(1) constructed an embodiment or performed a process that met all the limitations and (2) determined that the invention would work for its intended purpose." *Barry*, 914 F.3d at 1322. The evidence proffered by SGRE not meet that standard. It is entirely possible that GE leaders weighed the rewards accruing from the Kaheawa contract

versus the risk that GE would be unable to fulfil the requirements and decided to go ahead despite the technical difficulties that lay ahead.

SGRE alternatively contends that the invention was ready for patenting on September 20, 2005, based on the drawing below prepared by Mr. Barker:



JX-0086.0001

RIB at 105-07; *see also* RX-0074.0112 (Barker testimony regarding DTX-8 in previous litigation in the Northern District of Texas); RDX-0010C.0093 (showing that JX-0086 is DTX-8).

Although the September 2005 drawing includes information that is contained in the '705 patent, the drawing is incomplete in that it does not explain the nature of each state in the diagram

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or the parameters identified. For example, it is not clear from the drawing what gain and limit value would be employed for each state, and which state corresponds to a particular condition. By contrast, the '705 patent contains detailed descriptions of those parameters. '705 patent at 9:1-11:19. SGRE's expert Dr. Phinney admits that the phase-locked loop state machine shown in the September 2005 drawing is not understandable using the January 2005 concept document, and that he needed the description the '705 patent specification to understand the September 2005 drawing. *See* Tr. (Phinney) at 997:16-998:14. Moreover, the September 2005 drawing does not include any information regarding the suspension of the grid-side converter during zero voltage events, an aspect of the claimed invention that was developed during testing performed after the critical date of the '705 patent. The September 2005 drawing is not one "sufficiently specific to enable a person skilled in the art to practice the invention." *Pfaff*, 525 U.S. at 67-68.

SGRE's other arguments that the '705 invention was ready for patenting likewise fail. SGRE contends Mr. Larsen "acknowledged that the September 2005 design materials . . . would enable a person of 'reasonable competence' to practice zero voltage [ride through]." RIB at 124 (citing Tr. (Larsen) at 164:23-166:2). But Mr. Larsen's testimony does not support SGRE's assertion—Mr. Larsen testified that a person of ordinary skill in the art given the disclosure *in the '705 patent* would be able to do the experimentation to obtain the phase-locked loop gain values and frequency limits that would achieve the claimed invention. *Id.*

SGRE also asserts that Mr. Barker "successfully tested [zero voltage ride through] by October 14, 2005." RIB at 124-25. The journal entry SGRE cites in support of this proposition states: "We were able to make a few successful [zero voltage ride through] tests before we went home." CX-0183.0072. As previously discussed, "a few successful ZVRT tests" does not demonstrate that the invention was ready for patenting; the inventors still had to verify that their

invention would work for its intended purpose in the real world. *See Barry*, 914 F.3d at 1323 (although a doctor performed the inventive method in surgery before the critical date, he did not know that his invention would work for its intended purpose until he examined patients months after the surgery). Testing and development continued after the critical date, and the inventors experienced unsuccessful zero voltage ride through tests that failed and tripped the power converter offline. Thus, the few successful early tests “were part of the [] effort to reduce the invention to practice, rather than an actual reduction.” *See Honeywell Int’l*, 488 F.3d at 997.

In addition, SGRE argues that Mr. Barker’s preparation of an invention disclosure form on November 1, 2005, demonstrates that the claimed invention was ready for patenting before October 20, 2005. RIB at 125. An invention disclosure prepared twelve days after the critical date does not demonstrate that the invention was ready for patenting before the critical date.

In sum, based on the evidence adduced at the hearing and discussed above, SGRE has failed to establish by clear and convincing evidence that the zero voltage ride through invention claimed in the ’705 patent was ready for patenting before October 20, 2005.

4. Anticipation by Guggisberg

SGRE contends that DE 101 05 892 A1 (“Guggisberg”) (RX-0438), a German patent application published on December 9, 2002, anticipates claim 1 of the ’705 patent. RIB at 128-40. Guggisberg is prior art to the ’705 patent under 35 U.S.C. § 102(b) (pre-AIA).

As illustrated in Figure 1 (RX-0438.0008), Guggisberg teaches a generator labeled “ASM,” a generator-side converter labeled “GSR” and a network-side converter labeled “NSR” with an intermediate circuit labeled “ZK” extending between them, a transformer labeled “MST,” and switchgear labeled “MSS” that connects the wind turbine to a grid. *See* RX-0438.0003 ¶¶ [0022], [0032]; Tr. (Phinney) at 936:1-937:6. A brake chopper labeled “BC” connects to the intermediate

circuit ZK. RX-0438.0003 ¶ [0024]. The turbine is controlled by a control system labeled “LNSR,” “LGSR,” and “VST.” *Id.* ¶¶ [0022], [0024], [0035], [0042].

The brake chopper supports the wind turbine in several modes of operation. During nominal operation, if power output from the network-side converter NSR exceeds a programmable limit value Pmax1, the brake chopper converts excess power (*e.g.*, P-Pmax1) to heat. RX-0438.0004 ¶ [0040]; *see* Tr. (Phinney) at 938:12-25. During a short-term grid interruption—such as a fault that drops grid voltage to zero—the system sets Pmax1 to zero, in turn causing the brake chopper to convert all generator power to heat. RX-0438.0004 ¶ [0043]. When the grid interruption ends, the network-side converter power level PNSR rises gradually and the brake chopper’s level PChopper reduces to the same extent, until pre-fault conditions are reached. RX-0438.0005 ¶ [0046]; *see* Tr. (Phinney) at 941:10-21. The brake chopper also enables the turbine to shut down when longer grid outages occur. RX-0438.0005 ¶¶ [0049]-[0050]; *see* Tr. (Phinney) at 941:22-942:14. As the generator reduces torque, the brake chopper converts generator power to heat, which reduces mechanical oscillations that otherwise might arise. *Id.*

Guggisberg teaches that “conventional” wind energy plants used a doubly-fed induction generator topology with a stator that is directly connected to the grid via a transformer and that, in response to short-term grid interruptions, these conventional doubly-fed induction generators would switch off and require resynchronization when coming back online. RX-0438.0002 at 1:10-23, 2:28-32; *see also* Tr. (Phinney) at 1014:1-1016:10. In contrast to conventional approaches to grid interruptions, Guggisberg proposes the use of a full converter topology that eliminates the direct connection between the generator stator and the grid. RX-0438.0002 at 2:49-59; *see also* Tr. (Phinney) at 1014:11-15. But unlike the method claimed in the ’705 patent, Guggisberg discloses that the generator is electrically disconnected from the grid during a short-

Dr. Phinney also testified that Guggisberg “restores” the grid connection after the voltage returns, thus confirming there is an electrical disconnection from the grid during the voltage disturbance. Tr. (Phinney) at 1017:2-6, 1017:23-1018:10. This functionality taught in Guggisberg was confirmed by GE’s expert Dr. Habetler. *See* Tr. (Habetler) at 1135:2-20. The expert testimony offered at the hearing confirms that, although the generator in Guggisberg remains in operation during a grid disturbance, the generator electrically disconnects from the grid and the brake chopper absorbs power while the generator is disconnected.

In view of the record evidence discussed above, SGRE has failed to demonstrate by clear and convincing evidence that Guggisberg anticipates claim 1 of the ’705 patent, which requires that “the electrical machine *remains electrically connected* to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing” ’705 patent at claim 1.

5. Anticipation by MV-3000

SGRE contends that a sale of a power conversion system called the MV-3000 anticipates claim 1 of the ’705 patent under 35 U.S.C. § 102(b) (pre-AIA). RIB at 141-57.

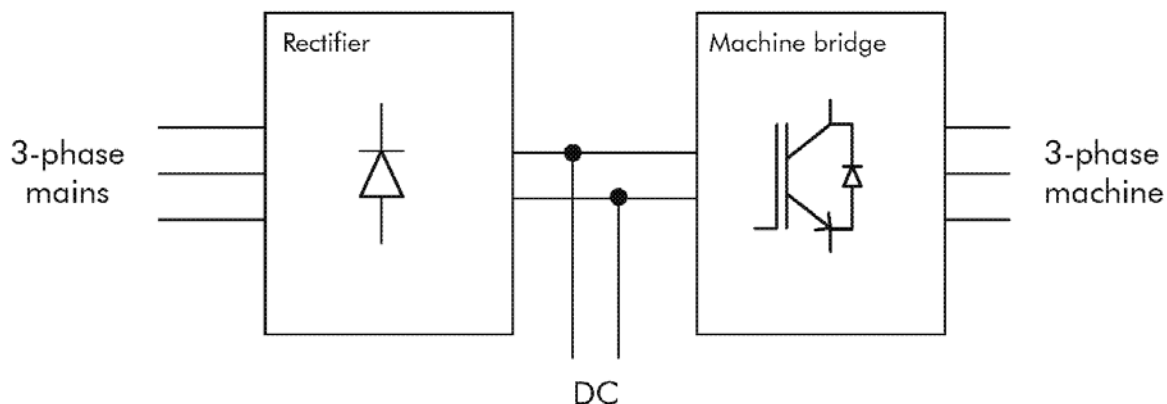
The MV-3000 is a power converter product for electric motors, originally manufactured by Alstom Drives and Controls (“Alstom”). *See* Tr. (Brown) at 784:12-23.⁹ It converts an input AC voltage to a different amplitude, frequency, and/or phase, which permits control of a connected motor at variable speeds. *Id.* There are two configurations of the MV-3000 relevant to this investigation. First, a diode front-end (“DFE”) configuration with a zero voltage ride through capability was released in 1999. Second, a sinusoidal front-end (“SFE”) configuration was

⁹ Alstom renamed itself “Converteam” and was eventually acquired by GE. *See* Tr. (Brown) at 783:7-9, 812:17-20.

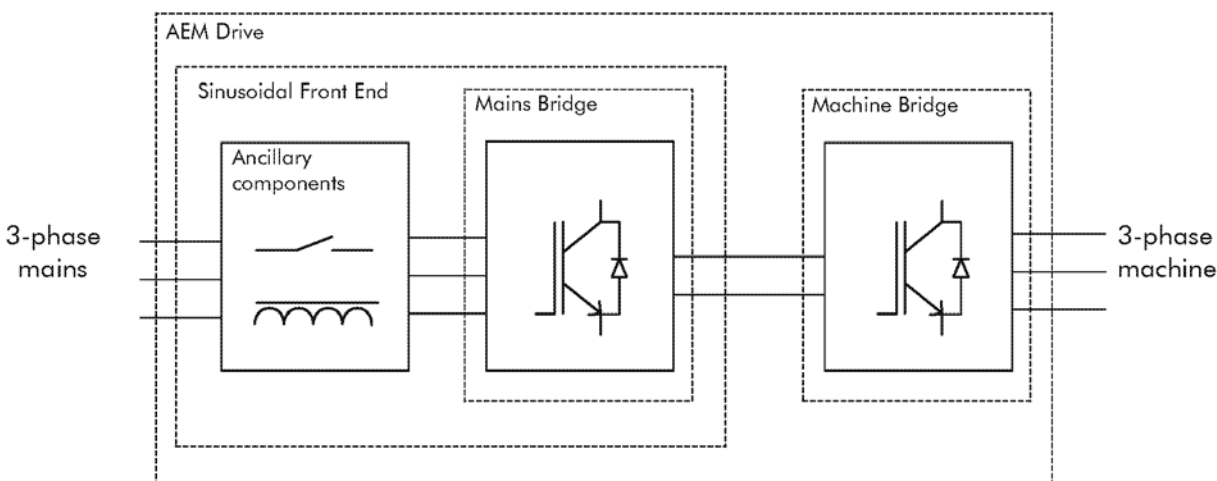
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released in 2001 but it did not have a zero voltage ride through capability added to it until May 2004. *See* Tr. (Waite) at 785:4-11, 786:19-13, 789:18-23; RX-0730C.0008-.0009. Both configurations were manufactured in Pittsburgh, Pennsylvania, and were offered for sale and sold worldwide, including in the United States, before October 2005. *See* Tr. (Waite) at 789:24-792:1; RX-0730C.0003.

As illustrated below, both configurations of the MV-3000 included a mains bridge and a machine bridge with a DC link extending between them:



RX-0581C.0016 (the MV-3000 DFE Configuration)



RX-0581C.0018 (the MV-3000 SFE Configuration)

See Tr. (Waite) at 785:13-786:18 (DFE Configuration), 787:14-788:9 (SFE Configuration); RX-0730C.0003-.0007, 951:18-25. In both configurations, the mains bridge connected to an electric power system that supplied an AC voltage, and the machine bridge connected to a 3-phase squirrel cage induction motor. See Tr. (Waite) at 785:13-786:18 (DFE Configuration), 787:14-788:9 (SFE Configuration).

In the DFE Configuration, power flowed only one way, from the AC mains to the motor. See Tr. (Waite) at 788:15-20. The mains bridge possessed a diode-based rectifier that was controlled by voltages on the mains network and the DC link. See Tr. (Waite) at 785:24-786:5. When the mains voltage exceeded the DC link voltage by an amount that caused diodes to be forward-biased, the diodes became conductive and power flowed to the DC link. If the mains voltage were lost such that the DC link voltage exceeded the mains voltage, the diodes stopped conducting. See Tr. (Waite) at 815:3-18. The MV-3000 rode through such faults by switching operation of the machine bridge and causing the motor to generate power that sustained the DC link. Operating in this manner, the DFE Configuration could ride through a zero voltage fault for

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an undetermined period time, one that is determined by the motor's inertia. *See* Tr. (Waite) at 786:24-787:10, 952:3-954:15.

The SFE Configuration could transfer power between the mains and the motor in either direction. *See* Tr. (Waite) at 788:11-16. The SFE Configuration operated with regenerative machine loads, such as crane hoists or downhill conveyors. *See* Tr. (Waite) at 788:21-789:7; RX-0730C.0009. When these machines generated power, the SFE Configuration injected the power into the mains instead of burning it, for example, in a resistive device. *See* Tr. (Waite) 789:8-17. Former Alstom engineer Philip Waite¹⁰ testified that the SFE Configuration was able to ride through a zero voltage fault by May 2004. *See* Tr. 789:18-23; RX-0730C.0008-.0009; RX-0154.0005 (“SFE mains voltage support and ride-through functionality added.”).

Mr. Waite's testimony and documentary evidence adduced at the hearing establish that the zero voltage ride through capability described above—also referred to as “AC Loss Ride-Through” in Alstom documents—was a feature offered in the DFE and SFE Configurations. *See, e.g.*, RX-0498C. As illustrated below, the evidence also demonstrated that AC Loss Ride-Through was disabled by default in the MV-3000 converters.

Par No.	Function	Default	Range	Attrib	Mode No.	Comments
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P35.12	AC Loss Ride-through	0	0 = Disabled 1 = Enabled	S,E,N,L	0-4	Mains Dip Ridethrough
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CX-0050C.0078

¹⁰ Mr. Waite also worked for SGRE from approximately 2007 to 2021. *See* Tr. (Waite) at 782:17-22.

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Par No	Function	Default	Range	Attrib	Mode no.	Comment
P46.00	AC Loss Ridethrough Enable	0	0 =disable 1 = enable	E,N,L	2	

CX-0050C.0093

See also Tr. (Waite) at 819:8-15, 820:17-21.

Thus, the evidence adduced at the hearing showed that the MV-3000 could be configured in multiple ways, including ways not alleged to anticipate the patent claims. I find SGRE has failed to establish by clear and convincing evidence that any sale of the MV-3000 in the United States was actually configured for AC Loss Ride-Through before October 2005. For instance, SGRE's technical expert Dr. Phinney testified he did not know whether the DFE Configuration products used AC Loss Ride-Through in the United States. *See* Tr. (Phinney) at 1010:20-23 ("Q. So then I will repeat my question. You don't have any information regarding how any of these 266 DFEs were configured in the United States, correct? A. Yes, that makes sense."). Moreover, neither Mr. Waite nor former Converteam engineer Paul Brogan¹¹ testified about any particular sale in the United States that involved the use of AC Loss Ride-Through for the SFE Configuration products; in fact, they expressed doubt that such a feature was implemented in the relevant sales. *See* Tr. (Waite) at 822:12-824:12, 824:7-12 ("Q. And you don't know, but you doubt, that they had ride through, correct? A. I -- I don't think they used ride through. They're not the type of application where you could rely on regeneration from a load to ride through in that -- in that case."); *see also* Tr. (Waite) at 790:8-791:24, 791:8-11 ("Q. And do you know roughly how many of the MV3000s sold to U.S. customers were actually configured to perform the AC loss ride through? A. No, I don't.").

¹¹ Dr. Brogan currently works for SGRE. Tr. (Brogan) at 829:14-21.

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Additionally, the mere fact that the DFE and SFE Configuration products were sold to customers in the United State does not by itself support a finding that the method of claim 1 of the '705 patent was performed prior to the critical date. To anticipate a method claim, there must be evidence that would support a conclusion the method was “carried out or performed.” *See In re Kollar*, 286 F.3d 1326, 1332-33 (Fed. Cir. 2002) (for method claims, mere sale of an article “is not a ‘sale’ of the invention within the meaning of § 102(b) because the process has not been carried out or performed as a result of the transaction”); *see also BASF Corp. v. SNF Holding Co.*, 955 F.3d 958, 970 (Fed. Cir. 2020) (finding no on-sale bar when “the essential features of the claimed process here were not embodied in a product sold or offered for sale before the critical date”); *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U.S. 403, 422 (1902) (“[A] process patent can only be anticipated by a similar process. It is not sufficient to show a piece of mechanism by which the process might have been performed.”).

Therefore, regardless of whether the AC Loss Ride-Through capability described in the record satisfies all limitations of claim 1 of the '705 patent (and regardless of whether the MV-3000 is an “electrical machine,” see Section VII.C.3 above), I find that SGRE has not met its burden of proving by clear and convincing evidence that any MV-3000, as sold, was configured to perform ride-through and was in fact used to perform ride-through. SGRE has failed to demonstrate by clear and convincing evidence that claim 1 of the '705 patent is invalid due to anticipation by the MV-3000.

6. Obviousness Over Guggisberg and MV-3000

SGRE alleges that claim 1 of the '705 patent is rendered obvious over Guggisberg and the MV-3000. RIB at 157-61. SGRE has not demonstrated that a person of ordinary skill in the art would have been motivated to combine these references with a reasonable expectation of success.

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See Proctor & Gamble Co. v. Teva Pharms. USA, Inc., 566 F.3d 989, 994 (Fed. Cir. 2009). SGRE argues that a “[person of ordinary skill] would recognize that the MV3000 SFE is a commercial power converter suitable for use in Guggisberg’s system.” RIB at 159. But SGRE has not adduced any evidence to show that a person of ordinary skill in the art at the time of the invention would have been motivated to combine the motor control system in the MV-3000 SFE Configuration with the Guggisberg wind turbine generator. SGRE supports its position solely with conclusory attorney argument. *See id.* SGRE’s attorney argument cannot meet its clear and convincing burden. *See Acoustic Tech., Inc. v. Itron Networked Sols., Inc.*, 949 F.3d 1366, 1375 (Fed. Cir. 2020) (“conclusory expert testimony and attorney argument cannot constitute substantial evidence of a motivation to combine”) (citing *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) (“[a]ttorney argument is not evidence” of a motivation to combine)).

SGRE argues that secondary considerations demonstrate that claim 1 of the ’705 patent is obvious. RIB at 159-60. Specifically, SGRE alleges that three commercial manufacturers—GE, Siemens Wind Power, and Vestas—each brought wind turbines capable of zero voltage ride through to market in the United States market within a twelve-month span, and that these simultaneous inventions indicate the subject matter recited in claim 1 is obvious. *Id.* (citing *Lindemann Maschinefabrik GmbH v. Am. Hoist and Derrick Co.*, 730 F.2d 1452, 1460 (Fed. Cir. 2010)).

The facts of these developments, even if true, do not bolster the weight of the record evidence enough to make a convincing showing of obvious. SGRE has failed to show that a person of ordinary skill in the art would be motivated to combine Guggisberg and the MV-3000 to arrive at the invention claimed in the ’705 patent, which tends to demonstrate its argument is built on

impermissible hindsight. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 36 (1966) (a tribunal must “guard against slipping into use of hindsight”).

Additionally, as discussed above in Section VI.H.6, GE’s success in licensing the ’705 patent weighs against a finding that claim 1 is obvious. GE cites two licenses that were exclusively focused on zero voltage ride through technology. *See* CRB at 26, 63 (citing JX-0053C and JX-0055C). I find these licenses “‘arose out of recognition and acceptance of the subject matter claimed’ in the patent.” *S. Alabama Med. Sci. Found.*, 808 F.3d at 827 (citing *In re GPAC Inc.*, 57 F.3d at 1580). Additionally, SGRE itself asked an arbitrator to make findings about the status of its license to the ’705 patent specifically, indicating a recognition of the relevance of the ’705 patent to SGRE’s own ability to provide zero voltage ride through capabilities. *See* CRB at 26.

After evaluating all of the evidence as a whole, I determine SGRE has failed to show clearly and convincingly that Guggisberg and the MV-3000 in combination render claim 1 obvious.

7. Enablement

SGRE argues that claim 1 is invalid for lack of enablement because it “is so abstract that it covers designs that are markedly different from anything disclosed by the ’705 [p]atent’s specification.” RIB at 164; *see also id.* at 164-71. As discussed below, SGRE has failed to meet its burden to show by clear and convincing evidence that claim 1 is not enabled.

“To be enabling under § 112, a patent specification must disclose sufficient information to enable those skilled in the art to make and use the claimed invention.” *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir. 1987). “[A]s is well established, an applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention.” *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1370-71 (Fed. Cir. 2008). “If an invention pertains to an art where the results are predictable, e.g., mechanical as opposed to

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chemical arts, a broad claim can be enabled by disclosure of a single embodiment, and is not invalid for lack of enablement simply because it reads on another embodiment of the invention which is inadequately disclosed.” *Spectra-Physics*, 827 F.2d at 1533 (cleaned up).

The undisputed record evidence shows that the ’705 patent discloses the information a person of ordinary skill needs to perform the steps recited in claim 1 without undue experimentation. *See* RIB at 164 (SGRE conceding “the ’705 [p]atent describes a software solution to do zero voltage ride through”); *see also id.* at 164-71. Indeed, GE’s expert Dr. Habetler testified that the ’705 patent specification teaches how to perform zero voltage ride through, including “how to synchronize to the grid during the fault by using a very particular system with a set of gains and limits,” “how to very quickly resynchronize to the grid after the fault using a different set of gains in the – the PLL controller,” and how to disconnect the grid-side converter in order to prevent the voltage on the “DC link from getting too low[.]” *See* Tr. (Habetler) at 1132:9-1133:9. GE engineer Einar Larsen also testified that the ’705 patent specification teaches a person of ordinary skill how to configure a wind turbine generator to perform zero voltage ride through. *See* Tr. (Larsen) at 142:21-146:12.

Despite this undisputed evidence, SGRE argues that the ’705 patent fails to teach other engineering approaches to achieve zero voltage ride through, such as the brake chopper hardware approach used in the Guggisberg reference that SGRE relies upon for anticipation. *See* RIB at 165-67. Section 112 requires enablement of “‘only the claimed invention,’ not matter outside the claims.” *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 959 F.3d 1091, 1100 (Fed. Cir. 2020) (citing cases). Above, I determined that the Guggisberg reference does not comprise a device that “remains electrically connected to the electric power system during and subsequent to the voltage amplitude of the electric power system decreasing,” as required by claim 1 of the ’705 patent.

Thus, it is immaterial that the '705 patent does not enable brake chopper technology because that technology is not covered by claim 1.

SGRE also postulates that the '705 patent fails to teach the use of “phase compensation capacitors” that provide “reactive current” to achieve zero voltage ride through. RIB at 165. But SGRE has not shown “concretely and not just as an abstract possibility” that such a design is within the scope of claim 1, dooming this argument as well. *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 959 F.3d at 1100.

Viewing the record evidence as a whole, SGRE has failed to show by clear and convincing evidence that claim 1 of the '705 patent is invalid for lack of enablement.

VIII. ECONOMIC PRONG OF THE DOMESTIC INDUSTRY REQUIREMENT

As noted above, I issued an initial determination on April 26, 2021, granting GE's motion for summary determination that the economic prong of the domestic industry requirement has been satisfied. Order No. 23. On May 26, 2021, the Commission affirmed my finding on summary determination that “GE has shown, with respect to products alleged to practice the asserted '985 and '705 patents, a significant investment in plant and equipment and a significant employment of labor and capital.” EDIS Doc. ID 743363 at 2 (quoting Order No. 23, at 5).

IX. CONCLUSIONS OF LAW

1. The Commission has subject matter, personal, and *in rem* jurisdiction in this investigation.

2. The importation requirement has been satisfied.

3. Claims 1, 6, 12, 29, 30, 33-35, and 37 of the '985 patent have been infringed by the importation, sale, and use of all Accused Products.

4. Claim 1 of the '705 patent has been infringed by the importation, sale, and use of the Accused DFIG Products.

5. The technical prong of the domestic industry requirement has been satisfied with respect to the '985 and '705 patents.

6. The economic prong of the domestic industry requirement has been satisfied with respect to the '985 and '705 patents.

7. Claims 1, 6, 12, 29, 30, 33-35, and 37 of the '985 patent have not been shown invalid in view of the prior art.

8. Claim 1 of the '705 patent has been shown to be directed to ineligible subject matter under 35 U.S.C. § 101.

9. Claim 1 of the '705 patent has not been shown invalid in view of the prior art.

10. Claim 1 of the '705 patent has not been shown invalid as failing to satisfy the enablement requirement of 35 U.S.C. § 112.

11. A violation of 19 U.S.C. § 1337 has been shown by the importation and sale of articles that infringe claims 1, 6, 12, 29, 30, 33-35, and 37 of the '985 patent.

12. A violation of 19 U.S.C. § 1337 has not been shown based on allegations of infringement of claim 1 of the '705 patent.

X. RECOMMENDED DETERMINATION ON REMEDY AND BOND

The Commission's Rules provide that the administrative law judge shall issue a recommended determination concerning the appropriate remedy in the event the Commission finds a violation of section 337 and the amount of bond to be posted by respondents during Presidential review of the Commission action under section 337(j). *See* 19 C.F.R. § 210.42(a)(1)(ii).

A. Limited Exclusion Order

The Commission has broad discretion in selecting the form, scope, and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. U.S. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986). A limited exclusion order directed to a respondent's infringing products is among the remedies that the Commission may impose. *See* 19 U.S.C. § 1337(d).

With respect to a limited exclusion order, GE argues:

GE requests a permanent limited exclusion order excluding from entry all variable speed wind turbines and components thereof that infringe the Asserted Patents and that are imported, sold for importation, or sold after importation by a named respondent. Specifically, GE requests that the exclusion order exclude the Accused Products [] and imported components thereof (as identified in SGRE's United States inventory data as of February 19, 2021, *see* JPX-00001C) that are found to infringe at least one claim of at least one of the Asserted Patents. The exclusion order should extend to each of the named Respondents, as SGRE has admitted that each plays a role in importing, selling for importation, or selling after importation the Accused Products and product components. JX-0157C.00007-.00008, .00010-.00011 (Marcucci Depo. Tr.) at 25:20-26:19; 34:8-39:12.

CIB at 90.

Although SGRE does not dispute that a limited exclusion order would be an appropriate remedy for a violation of section 337, *see* RRB at 47-52, it argues that any remedial order "be tailored to permit SGRE to: 1) continue with its lawful activities with respect to the installation, service and repair of licensed products, 2) continue selling and importing products for which GE

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has failed to prove infringement, 3) service and repair products having Converteam power converters, and 4) complete its obligations under sales, service and warranty agreements entered before the issuance of the exclusion order.” RRB at 47.

The record evidence shows that certain SGRE Accused Products imported into the United States before July 14, 2020, were licensed under an agreement between GE and Gamesa Eólica, S.A. (“Gamesa”). JX-0050C.0010, .0041. GE terminated this license on July 14, 2020, following SGRE’s merger into Gamesa. *See* RRB at 6, 32; JX-0050C.0010, .0041. SGRE argues that “any remedial order issued in this Investigation should include an exemption or certification provision allowing for the completion of installation and commissioning of these licensed wind turbines and for the continued service, repair, and importation of replacement parts for them.” *See* RRB at 47. GE argues that such an exemption or certification provision is not warranted because “not all of such products [sold before July 14, 2020] are licensed, including wind turbines that were sold and/or commissioned by Siemens Wind Power prior to Siemens Wind Power’s merger with Gamesa Eólica.” CIB at 90-91.

If the Commission determines that a violation of section 337 has occurred and if consideration of the statutory public interest factors does not require that remedies be set aside or modified, I recommend that the Commission issue a limited exclusion order barring entry of products that infringe the Asserted Patents. I do not recommend a warranty and repair exception to the limited exclusion order. Such exceptions may be made if a respondent establishes that its customers expect or require exact replacement parts or will be detrimentally affected by using non-infringing alternatives. *Certain Optoelectronic Devices for Fiber Optic Commc’ns, Components Thereof, & Prods. Containing the Same*, Inv. No. 337-TA-860, Comm’n Op. at 31-33 (Apr. 17, 2014). Here, SGRE has not provided any such evidence from its customers—whether they are

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customers for licensed products sold before July 14, 2020, customers with Converteam converters, or other customers. *See Certain Magnetic Data Storage and Tapes and Cartridges Containing the Same (II)*, Inv. No. 337-TA-1076, Initial Determination at 174, *aff'd*, Comm'n Op. at 61-62 (denying exception because respondent failed to provide sufficient evidence). Nothing in the record suggests that SGRE's products cannot be serviced by third parties or with domestic components, or that they could not be repowered and installed with another manufacturer's generator, power converter, or other parts. *See* JX-0157C.00014-.00015 (Marcucci Depo. Tr.) at 53:12-54:10.

I also do not recommend an exception for Future Products that have not been expressly found to be infringing in this investigation. Limiting a remedy to specific models adjudicated for infringement is contrary to long-standing Commission practice. "[T]he Commission's long-standing practice is to direct its remedial orders to all products covered by the patent claims as to which a violation has been found, rather than limiting its orders to only those specific models selected for the infringement analysis." *Certain Hardware Logic Emulation Sys. and Components Thereof*, Inv. No. 337-TA-383, Comm'n Op., 1998 WL 307240, at *9 (U.S.I.T.C. Mar. 1, 1998); *see also Certain Road Milling Machines & Components Thereof*, Inv. No. 337-TA-1067, Comm'n Op., 2019 WL 8883974, at *6 n.4 (U.S.I.T.C. Aug. 7, 2019) (collecting cases in support of proposition). A carve-out should not be granted simply because certain models were not adjudicated in this investigation. *Certain Robotic Vacuum Cleaning Devices*, Comm'n Op., 2019 WL 1292948, at *37 ("[T]he Commission cannot find at this time that the aforementioned products are exempted from the limited exclusion order because they have not been adjudicated in this investigation.").

B. Cease and Desist Order

Section 337 provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order as a remedy for a violation of section 337. 19 U.S.C. § 1337(f)(1). The Commission may issue a cease and desist order when it has personal jurisdiction over the party against whom the order is directed. *Gamut Trading Co. v. U.S. Int’l Trade Comm’n*, 200 F.3d 775, 784 (Fed. Cir. 1999). Under Commission precedent, “[c]ease and desist orders are generally issued when, with respect to the imported infringing products, respondents maintain commercially significant inventories in the United States or have significant domestic operations that could undercut the remedy provided by an exclusion order.” *Certain Air Mattress Systems, Components Thereof, and Methods of Using the Same*, Inv. No. 337-TA-971, Comm’n Op. at 49 (May 17, 2017) (citations and footnote omitted).

GE requests that the Commission issue a cease and desist order “prohibiting SGRE from importing, selling, offering for sale, using, demonstrating, promoting, marketing, and/or advertising in the United States the Accused Products and components thereof.” CIB at 95. GE cites a stipulation between the parties about SGRE’s domestic inventory. *See id.*; CX-0387 (Stipulation Regarding Importation and Inventory). GE then relies on a statement in *Certain Hardware Logic Emulation Systems* that a single article in inventory can be commercially significant and argues under that standard SGRE’s domestic industry is commercially significant. *See id.* (citing *Certain Hardware Logic Emulation Systems*, Comm’n Op., 1998 WL 307240, at *25-26).

GE’s conclusory argument fails to demonstrate how SGRE’s domestic inventory of Accused Products and components is commercially significant. SGRE stipulated to a certain quantity of articles in inventory; it did not stipulate that such a quantity was commercially

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significant. *See* CX-0387. As for the citation to *Certain Hardware Logic Emulation Systems*, that decision affirms that the Commission relies upon record evidence of a commercially significant inventory when entering cease and desist orders. *See* 1998 WL 307240, at *25-26 (“The Commission traditionally has issued cease and desist orders when ‘commercially significant’ inventories of infringing goods are present in the United States.”). *Certain Hardware Logic Emulation Systems* did not announce a policy that any inventory, no matter the context, will justify a cease and desist order. GE has not adduced any evidence to provide a context for determining whether or not SGRE’s domestic inventories are commercially significant. Under the Administrative Procedure Act, the Commission makes decisions “based on the record in the proceeding,” and the record here does not show commercial significance. *See* 19 C.F.R. § 210.45(c); *see also id.* § 210.49.

On the facts of this record, it is my recommendation that no cease and desist orders issue if the Commission determines that a violation of section 337 has occurred and if consideration of the statutory public interest factors does not require that remedies be set aside or modified.

C. Bond During Presidential Review

In the event that the Commission determines to issue a remedy, the administrative law judge and the Commission must determine pursuant to section 337(j)(3) the amount of bond to be required of a respondent that imports during the 60-day period Presidential review. The purpose of the bond is to protect the complainant from any injury. 19 U.S.C. § 1337(j)(3); 19 C.F.R. §§ 210.42(a)(1)(ii), 210.50(a)(3).

When reliable price information is available, the Commission has often set the bond by eliminating the differential in sales prices between the domestic product and the imported, infringing product. *Certain Microsphere Adhesives, Process for Making Same, and Products*

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Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, Comm'n Op. at 24, USITC Pub. No. 2949 (1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a reasonable royalty rate could be ascertained. *See Certain Integrated Circuit Telecommunication Chips and Products Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41-43, USITC Pub. No. 2670 (1995). A 100% bond has been required when no effective alternative existed. *Certain Flash Memory Circuits and Products Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (a 100% bond imposed when price comparison was not practical because the parties sold products at different levels of commerce, and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

GE failed to argue that a bond is appropriate in its post-hearing brief. *See* CIB at 90-95. In accordance with my Ground Rule 14.1, I therefore find that GE has abandoned any contention that a non-zero bond is warranted in this investigation. *See* Order No. 2 at Ground Rule 14.1.

Therefore, because GE has failed to demonstrate the necessity of a bond, it is my recommendation that the Commission, in the event it finds a violation of section 337 has occurred, set a 0% bond for any importations of infringing products during the Presidential review period.

XI. INITIAL DETERMINATION ON VIOLATION

For the reasons set forth above, it is my initial determination that a violation of section 337 of the Tariff Act, as amended, has occurred in the importation into the United States and the sale within the United States after importation of certain variable speed wind turbine generators and components thereof based on infringement of U.S. Patent No. 6,921,985.

I hereby certify to the Commission this Initial Determination and the Recommended Determination.

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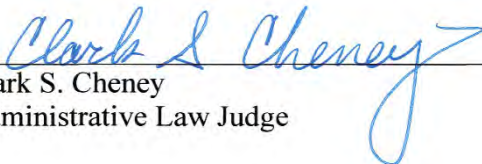
The Secretary shall serve the confidential version of this Initial Determination upon counsel who are signatories to the Protective Order (Order No. 1) issued in this investigation. A public version will be served at a later date upon all parties of record.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion a review of the Initial Determination or certain issues therein.

XII. ORDER

Within seven days of the date of this document, the parties shall jointly submit a single proposed public version with any proposed redactions indicated in red. If the parties submit excessive redactions, they may be required to provide declarations from individuals with personal knowledge, justifying each proposed redaction and specifically explaining why the information sought to be redacted meets the definition for confidential business information set forth in 19 C.F.R. § 201.6(a). To the extent possible, the proposed redactions should be made electronically, in a single PDF file using the “Redact Tool” within Adobe Acrobat. The proposed redactions should be submitted as “marked” but not yet “applied.” The proposed redactions should be submitted via email to Cheney337@usitc.gov and not filed on EDIS.

SO ORDERED.



Clark S. Cheney
Administrative Law Judge