

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASCEND ELEMENTS, INC.,
Petitioner,

v.

DUESENFELD GMBH,
Patent Owner.

IPR2024-00948
Patent 11,050,097 B2

Record of Oral Hearing
Held: August 22, 2025

Before MEREDITH C. PETRAVICK, CHRISTOPHER M. KAISER, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

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The above-entitled matter came on for hearing on Friday, August 22, 2025, commencing at 1:00 p.m., via video teleconference.

P R O C E E D I N G S

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JUDGE KAISER: This is a hearing in IPR 2024-00948, captioned Ascend Elements Incorporated v. Duesenfeld Gesellschaft mit beschraenkter Haftung, challenging Patent Number 11,050,097.

I'm Judge Kaiser, and the panel also includes Judges Petravick and Cherry.

Let's start with the roll call. Who's here today, starting with anyone representing Petitioners? Is there anyone representing Petitioner?

MR. GISH: Yes, Your Honor, but Mr. Schenker is speaking for us and I think he's on mute.

MR. SCHENKER: Oh, apologies, Your Honor. I did not realize that I was muted there. Good afternoon. My name is Josef Schenker with the law firm Gish PLLC. I'll be arguing on behalf of Petitioner, Ascend Elements, Inc. With me today are lead counsel Andrew Gish and my colleague Conor McDonough.

JUDGE KAISER: Okay. Thank you. Welcome. Anyone here on behalf of Patent Owner?

Seems like we might have the same muting problem. I think Mr. Carlson is on mute. Anyone here for Patent Owner?

MR. SMITH: Yes, Your Honor. This is Matthew Smith for the Patent Owner. I'll be arguing the motion to amend today. And also here is Steve Carlson to argue the petition track, and he has with him a number of associates and representatives of Duesenfeld. Thank you.

JUDGE KAISER: Okay. Thank you very much, and welcome to you, as well. All right. So, each side will have a total of 90 minutes today

1 to present its arguments. Petitioner has the burden of proof and will present
2 its arguments first. And of course, Petitioner may reserve some of its time
3 for rebuttal argument. Patent Owner will present its arguments after
4 Petitioner's initial presentation and may also reserve some of its time for
5 surrebuttal.

6 A couple of reminders before we get started. First, this is a public
7 hearing and so it's possible that members from public will listen in or view
8 the hearing on the public line. I'll note there is some confidential material in
9 the record of this proceeding, so please be mindful of the public nature of the
10 hearing when you're referring to the record.

11 Also, the panel has access to the demonstrative exhibits that both
12 parties have filed, as well as all the papers and the exhibits filed in the
13 proceeding. If you would, please, in order to make the record clear, when
14 you refer to a demonstrative exhibit or anything in the record, please just
15 state the number of the slide you're referring to, or the exhibit and page
16 number or something similar if you're referring to something in the record.

17 With those preliminaries out of the way, I think we're ready to get
18 started. Petitioner, how much time would you like to reserve for rebuttal?
19 And then you can begin when you're ready.

20 Petitioner, you might be back on mute.

21 MR. SCHENKER: Yes, I was. I apologize. Trying to minimize
22 the noise on your end. I'd like to reserve all the remaining time that I have
23 for rebuttal. I believe we've got 90 minutes and up to 45 minutes for
24 rebuttal; is that correct?

25 JUDGE KAISER: Yes, that's fine. Okay. We'll try to give you a
26 warning after, you know, when you hit about 45 minutes remaining and you

1 start to go into your rebuttal time. I believe there's a clock on the wall in the
2 Alexandria hearing room. If you see where Judges Cherry and Petravick
3 are, that clock should be the official time, but I'll also try to keep track of it
4 here in Denver.

5 MR. SCHENKER: Thank you, Your Honor.

6 And just to be clear, it seems like there's some bit of an echo here.

7 JUDGE KAISER: It definitely was. I'm not hearing it now, so
8 maybe it's fixed.

9 MR. SCHENKER: Okay. Thank you again, Your Honors. Again,
10 my name is Josef Schenker from Gish PLLC on behalf of petitioner Ascend.
11 I'd like to call up and share and with the Board, starting with our
12 demonstratives. That's - it was Exhibit - submitted as Exhibit Paper 53 -
13 sorry. Submitted as Paper 53, also labeled Exhibit 1039. And when I refer
14 to Petitioner's exhibits, I'll be referring to this. To the extent that I refer to
15 Patent Owner's exhibits that was submitted, I believe, as Paper 51 and not
16 labeled as an exhibit number.

17 So, starting actually with Petitioner's Slide 5, there really are two
18 grounds of invalidity that we're going to be discussing here. Both of these
19 grounds, Your Honor, rely on Hanisch, that's Exhibit 1004, as the primary
20 reference. And so I'd like to begin today by discussing Hanisch briefly, then
21 covering three or four key disputes that are at issue here. And just to
22 preview those, there's an issue of claim construction around the term,
23 inactivated. There's an issue with respect to Hanisch about Hanisch's low-
24 temperature drying and why that teaches inactivation, and then there's the
25 issue of the vacuum pressure levels or the pressure levels of under 300 hPa
26 and why Hanisch, alone or in view of the secondary references, teaches

1 those limitations. And those three issues, Your Honors, go to the heart of
2 the matter here. Those are the issues that were raised during briefing and, as
3 pointed out in our reply, that was Paper 31 at page 4, Patent Owner's
4 arguments were limited to these limitations and the limitation of Claim 9.
5 They didn't dispute in their POR or their surreply any other locations, any
6 other claims. And so really that's what's at issue at this point.

7 So, turning then to the, you know, the patent at issue here we're
8 talking about as noted, we're talking about the '097 Patent. That's Exhibit
9 1001, which I've got here up on the screen. And the inventors here are
10 Christian Hanisch, Bastian Westphal, Wolfgang Haselrieder, and Martin
11 Schoenitz. And the reason I flagged these inventors' names is because as we
12 know, and as we see, Christian Hanisch, the first named inventor of the '097,
13 is also the first named inventor of Exhibit 1004, the Hanisch reference as
14 we've been calling it during the proceedings here. And if I'm opening up
15 1004 for the Board on the cover page as well, the inventors of Exhibit 1004,
16 what, again, I'll call Hanisch throughout this proceeding is -- are Christian
17 Hanisch, Wolfgang Haselrieder, and Arno Kwade.

18 And I think this is a key point, you know, that Patent Owner has
19 glossed over and glosses over throughout its briefing and throughout this
20 proceeding is the fact that the primary prior art reference here was already
21 taught by, disclosed by, comes from the same first named inventor. Why?
22 Because he already invented and disclosed everything that's in the claims of
23 the '097 Patent. And I'll take you briefly to the '097 Patent, column 1, about
24 line 43, and you should see it here on the board, DE102011110083A1. And
25 that's the reference to the Hanisch's priority application. That's the German
26 application to which Hanisch at issue that the U.S. '419 Patent claims

1 priority to. It's the same disclosure. And Hanisch, or the German
2 application, describes a method for recovering active material from a
3 galvanic cell in which the galvanic cells are initially mechanically
4 comminuted, then pre-dried and subsequently shifted - sifted. Finally, the
5 binder is broken down in an oven. This type of device is very well suited to
6 the efficient recycling of larger amounts of galvanic components. All right.

7 The '097 Patent itself tells us that Hanisch is well suited to the
8 efficient recycling of electric batteries. There's no dispute about that. And if
9 we actually take a look at it and if I draw your attention to Patent Owner's
10 demonstratives, and in particular Patent Owner's Slide 2, so that's Slide 2 of
11 Paper 51, Patent Owner is going to start with presentation, laying out the
12 advantages of the invention, namely, it's got inactivation without addition of
13 materials, suppresses the formation of hazardous materials, and material is
14 safe for transport as they've laid out. And these are quotes from columns 1
15 and 2 of the '097 Patent. And I submit to you that all of these quotes are
16 equally applicable to Hanisch. All of these quotes are equally applicable to
17 Hanisch's prior disclosure and Hanisch's prior industrial process, where they
18 admit they already mechanically comminute these batteries and dry these
19 batteries.

20 Now, again, taking a look at, and if I draw your attention back to
21 the Hanisch reference - sorry, the '097 reference where these quotes come
22 from, I'll flag that nowhere in this discussion, so it is in the summary of the
23 invention, the invention aims to reduce disadvantages of the prior art, and it
24 goes through these supposed disadvantages, all of which are tied to the idea
25 that you're drying the material. So, inactivation occurs at least by way of
26 drying, and then according to that, the activation device which comprises a

1 drying device. And the advantage is the amount of electrolyte that can be
2 obtained through drying is such that electrochemical reaction is no longer
3 possible. If you tried it, it's no longer possible or only to a negligibly small
4 extent. No flammable gas can form above it. Why? Because organic
5 carbonates of the electrolyte have been removed by drying. The
6 comminuted material is therefore largely inert because it was dried. It's
7 therefore largely inert and can be transported safely. Because it was dried, it
8 is now able to be transported safely. So these elements all result from
9 drying. And there's no dispute. In fact, as I pointed out in column 1, the
10 '097 Patent admits the Hanisch references prior invention already disclosed
11 drying.

12 The other point just to make here, when it talks about these
13 advantages, at no point do these advantages tie back to or require low-
14 temperature drying. And at no point do these advantages - does it say these
15 advantages are tied to vacuum drying, even. The vacuum drying is not
16 something that drives these supposed advantages. In fact, if you are looking
17 down on column 2 of the '097 Patent around line 59, the drying may occur
18 by way of vacuum drying, contact drying, convection drying, and/or infrared
19 drying.

20 So, while the claims are limited to drying under certain pressures,
21 of drying under vacuum, the advantages of the invention, that which comes
22 from - that, which, you know, which they rely on as these advantages,
23 comes from the drying. And the drying that was unambiguously and clearly
24 disclosed even in this prior Hanisch disclosure that, as the '097 Patent
25 admits, starts with comminution and then inactivation - comminution and
26 then drying before sifting it out.

1 So, turning back to Petitioner's slides, and I'm going to turn to
2 Slide 3, we have '097 Claim 1, the primary claim at issue here, there's also
3 Dependent Claim - sorry, Independent Claim 12 which is similar. But
4 Independent Claim 1, as we look at it, the process is fairly simple. There's
5 really only three steps in this process: comminuting the batteries,
6 inactivating the comminuted material, and then filling a transport container.
7 There's three steps to this process. There's two wherein clauses that tells you
8 some specifics on how that drying or that inactivation has to happen,
9 namely, it has to happen through drying and it has to happen at a maximum
10 pressure of 300 hectopascals, hPa, but the invention is as simple as these
11 three steps: shredding the batteries, drying the batteries to inactivate, and
12 then filling it in transport container. And I'll note Patent Owner doesn't
13 dispute that Hanisch teaches most of this.

14 Really the disputes come down to - what do the disputes come
15 down to? The disputes come down to whether or not Hanisch's drying is -
16 also teaches inactivation and whether or not Hanisch's drying vacuum, and
17 Hanisch unambiguously discloses heated drying or heating the material, so
18 drying the material under vacuum and whether that happens at a maximum
19 pressure of 300 hectopascals. And I submit to you, again, both Hanisch as -
20 in and of itself, under the skill - the knowledge of a person of skill in the art,
21 and the implicit teachings of Hanisch, teach you that as well as under
22 Ground 2, as we've laid out, Hanisch in combination with the secondary
23 references, in particular Hayashi and Shin, teach that limitation. And I'll just
24 note quickly on that point, in the petition, we had three secondary references
25 Meador, Hayashi, and Shin. At this point, to streamline the proceeding and
26 to - for purposes of, you know, this hearing and going forward, we've

1 dropped the Meador grounds, as we've noted in our reply. And so, we are
2 still relying on, believe the claims are invalid under Hanisch in view of
3 Hayashi and Hanisch in view of Shin.

4 So, if I can turn to Hanisch quickly, and I'll draw your attention to
5 Hanisch, that's Exhibit 1004, Figure 1, which I'll pull up on the screen here.
6 I'd just like to walk you through what is Hanisch teaching here? What is
7 Hanisch doing? And just point out a few key pieces of this, and hopefully
8 the annotations for this work that you can see it on the board, but you've got
9 here the - what's labeled as 12 over here, and that's the comminution device.
10 That's a cell-crushing device. After that comes what's labeled as 28, and this
11 is what the Hanisch calls, the pre-dryer. Circle it this way, you might see it a
12 little better. This is what Hanisch also calls the pre-dryer, this 28, and here
13 it's designed to be dried at temperatures below 80 degrees, and as we'll
14 discuss going forward the purpose of that is to dry it so that dry material and
15 drying vapors come out of it.

16 And after the dripping pre-dryer comes what's labeled here as 38,
17 which is a separator, also called a magnetic separator in Hanisch, and then
18 follow that by a classifier, also called a zigzag classifier. The magnetic
19 separator separates out materials, the metal materials, using eddy currents,
20 for example, and magnetic forces. And then the zigzag classifier uses air to
21 blow the material in order to separate out non-metallic material coming out
22 of the pre-dryer.

23 And finally, after all of that, we then have what's labeled here as
24 44, the oven, which is the, also called the decomposition oven throughout
25 the briefing, or the pyrolysis oven. And the purpose of that then is to break
26 up, as Hanisch further teaches, is to break down the support foil and the

1 columnar binders that are still sticking to the cathode and - the anode and
2 cathode materials coming out of this whole process. So, as Hanisch explains
3 in its disclosure, you still have those materials and it's unexplained why the
4 support material, after the decomposition, still seems to stick to the - what
5 he has called the active material, the anode and the cathode, and therefore it
6 uses, following that, it uses this next step and air jets in order to then shatter
7 and separate those support coils that didn't decompose like the binder
8 decomposes from the black mass material.

9 So, as I previewed earlier, and as I've helpfully noted - as Patent
10 Owner has helpfully noted, that they don't actually dispute the majority of
11 the claim limitations. So, which brings us back to these three key disputes
12 that I mentioned earlier, which is namely the construction of inactivation, the
13 - whether or not, you know, what is actually happening and what's coming
14 out of this pre-dryer, what's labeled 28 in Hanisch, and then finally the fact
15 of or the arguments as to whether Hanisch discloses alone or in combination
16 with the prior art - with the other prior art discloses doing this drying under
17 vacuum at, specifically, at levels of under 300 hPa.

18 So, turning to Petitioner's Slide 6, very briefly, on the claimed
19 construction of inactivated, really, it's a little bit, it's an odd position that we
20 are all in here because, with respect to the motion to amend, we do have, and
21 I'll raise it later, we do have an indefiniteness argument, and that stems from
22 the fact that PO's constructions and PO's arguments and, as I suspect we'll
23 see throughout this hearing today, really showed that the understanding of
24 inactivation comes all over the place. The Board-formulated construction
25 was an electrochemical reaction being no longer possible or only to a
26 negligibly small extent. PO came back and said, well, no. No particular

1 metric of drying should be applied. Rather it's just the endpoint result of
2 drying, which really begs the question of anything that comes out of the
3 dryer, isn't that the endpoint result of drying?

4 It says, dry does not mean inactivated. That was what PO argued
5 in its surreply, but then if dry doesn't mean inactivated, then what does
6 inactivated mean and what does dry mean? Like, it's somewhat
7 incompatible and it's really, as we'll see, it is just a way to avoid the
8 disclosures of Hanisch. But importantly, as we've also noted, the Board,
9 with respect to the patentability of these claims under Hanisch, both for the
10 petition and for, frankly, the motion to amend, because the amended claims,
11 as we'll see, are still invalid over Hanisch as the other prior art. But the
12 Board doesn't actually need to resolve the indefiniteness question for the
13 petition, because as the PTAB has recognized before and as the Federal
14 Circuit has recognized, it's not always impossible to adjudicate the prior art
15 challenge, just because some aspect of the claim may be indefinite.

16 So really it's only if it's logically impossible for the Board to reach
17 such a such a decision. And here, the indefiniteness issue is that the outer
18 boundaries, if you will, of inactivation are very unclear. There's no
19 reasonable certainty. There's no clear guidance because again, PO is
20 eschewing all metrics. There's no clear guidance of when you've gone from
21 activated to inactivated. But there doesn't seem to be any dispute that if
22 there's no liquid electrolyte remaining that the material is electrochemically
23 inactive because it can't have a chemical - electrochemical reaction. And
24 that, there seems to be no dispute, or there shouldn't be a dispute, that if you
25 ride it to the end point of drying that there's no liquid left, then that under
26 Patent Owner's construction as well, you've reached inactivation because

1 you've reached the end point of drying. So, given that those are clearly
2 within the boundaries of inactivation, the fact that the outer boundaries are
3 ambiguous doesn't preclude the Board from finding inactivation here.

4 So, turning to Slide 9 very quickly, again, these are the Slide 9 of
5 Petitioner's deck, these are the disputed limitations. Again, these all go to
6 those key concepts that we talked about, whether there's inactivation through
7 drying and the drying, whether that's occurred at the maximum pressure of
8 300 hPa.

9 So, if the Board likes, I'd like to first start with the Hanisch's
10 disclosures of drying and inactivation through drying. I'll note, just very
11 briefly, Patent Owner has stated, and they stated in their slides, they don't
12 contest that the high temperature decomposition oven discloses inactivation.
13 Like, that's not in dispute here, and so we don't have to discuss this at this
14 point, but what is in dispute, and shouldn't be, but is in dispute is Hanisch's
15 low temperature pre-dryer as the, it's called at one point during the
16 specification, but it's a low-temperature drying.

17 Now Hanisch teaches, and this comes from Exhibit 1004, column
18 3, line 64 - 65, excuse me, through column 4, line 4, that the method
19 preferably comprises the step that before heating the cell fragments up to the
20 decomposition temperature, the cell fragments are dried at a drying
21 temperature so that dry cell fragments and drying vapors are formed. And I
22 apologize, and I actually think that I - that citation might be slightly off.
23 Hanisch, that's from the top of column 3, excuse me, column 3, lines 4
24 through 6. So, the heating up of cell fragments is understood in particular to
25 mean heating up in a gasproof container so that oxygen is prevented from
26 entering. In particular, the heating up takes place - oh, no, I apologize.

1 Again, I misspoke. Yeah. The cell fragments are dry at a drying
2 temperature so that dry cell fragments and drying vapors are formed,
3 wherein the drying vapors are at least partly condensed.

4 So again, Hanisch tells you exactly what is coming out of its pre-
5 dryer. What's coming out are dry cell fragments and drying vapors. And
6 that's a key point. And again, Claim 5 claims that, that the step of drying the
7 solid cell fragments at a drying temperature to form dry cell fragments. It
8 doesn't say to form partially dry cell fragments. It doesn't say to form, you
9 know, moist cell fragments or cell fragments from which some electrolyte
10 has been removed. It says to form dry cell fragments.

11 So, it tells you what it wants to come out of there. And Patent
12 Owner's arguments effectively ask the Board to ignore Hanisch's explicit
13 disclosure and to find, really, without basis, that when Hanisch says dry cell
14 fragments, it doesn't really mean dry cell fragments, it means something
15 else. We don't know what it means, but it means something else.

16 But as Dr. van Schalkwijk, Petitioner's expert explains, that that's
17 just not the case. As he says here, a POSITA would have understood that
18 forming dry cell fragments, especially ones that have to go through the
19 separators and classifiers, we talked about earlier, I pointed out in Figure 1
20 that after the pre-dryer with those separators and the classifiers, that forming
21 dry cell fragments necessarily means all the volatile electrolyte solvents, i.e.
22 the bulk liquid components of the electrolytes has been removed. Right. So,
23 when Hanisch teaches you dry cell fragments, as Dr. van Schalkwijk
24 explains, that means they're dry. They're the endpoint.

25 JUDGE CHERRY: I did have a quick question. When someone
26 -

1 JUDGE KAISER: Are we good?

2 JUDGE CHERRY: Can you hear me?

3 MR. SCHENKER: Yes.

4 JUDGE CHERRY: Sorry. I had a quick question. When the
5 items leave the pre-dryer, is it still under inert gas, or what's the atmosphere
6 like?

7 MR. SCHENKER: So, that's a -

8 JUDGE CHERRY: Sorry. Go ahead.

9 MR. SCHENKER: That's a great question. So actually Hanisch
10 discloses both, and I'll take you back to Hanisch for a moment there. And
11 Exhibit 1004, where I mistook - where I misstated that, my original
12 misstatement, Hanisch teaches - so I'll actually start at the bottom of column
13 2. In the context of the present, the description that's column 2, line 65, the
14 crushing of the cells is understood in particular to mean cutting, shattering,
15 chaffing, or squashing.

16 This can take place at temperatures between negative, let's call it
17 approximately 200, negative 200 Celsius and 100 Celsius. Then the very
18 next paragraph, the heating up of solid cell fragments, so after the crushing
19 comes the heating up of solid cell fragments in the pre-dryer, the heating up
20 of solid cell fragments is understood in particular to mean heating up in the
21 gasproof containers so that oxygen, for example, is prevented from entering.
22 In particular, the heating up takes place under inert gas or in a vacuum.

23 So, what you've got, and I'll just bring you very quickly also to
24 Claim 1 of Hanisch, where crushing the galvanic cell under inert gas or in a
25 vacuum to form solid cell fragments, and then heating up the cell fragments.
26 So, if we then go back up to and look at Figure 1 of Hanisch, that means that

1 you can, and Hanisch discloses, using a vacuum both here for 28, the pre-
2 dryer, and using a vacuum over here for the cell-crushing device.

3 And I know this because we'll see some slides later from Patent
4 Owner where they focus very heavily on the fact that there's inert gas tank
5 here being flooded into the cell-crushing device, and therefore the cell-
6 crushing device must be overpressure. In which case because the cell-
7 crushing device is overpressure and connected to the pre-dryer, it necessarily
8 must be overpressure in their view. But that all assumes that the - in that
9 you're looking at the embodiment where the cell-crushing device and the
10 pre-dryer are flushed with inert gas as opposed to the other embodiment,
11 which I just showed you in Hanisch, that says both of those can be done
12 under that. So what would be coming out of Hanisch's pre-dryer would be
13 materials that were dried, that are dry materials dried under that.

14 JUDGE CHERRY: Okay. That's helpful. I was just wondering
15 about when it enters that zigzag thing and the - sorry, I'm sorry, I wish -- I
16 would -

17 MR. SCHENKER: The separator -

18 JUDGE CHERRY: You explained what it was, but I - it's
19 escaping at the moment, but my question was, it seems like it's being
20 transported there and I just wondered, is that under, still under vacuum or,
21 that seems like it would probably have to be safe to transport if it's going on
22 all these conveyor belts and being, put through this sorter. So, I wondered if
23 you could clarify, what is the atmosphere there and is that - would that be
24 considered safe for transport?

25 MR. SCHENKER: It's a great question. And I would say that safe
26 for transport, if you look it that way, that the material would have to be safe

1 in the same manner because, and you know, turning back to Petitioner's
2 slides, I'll direct you to Slide 16. And this is a portion of Dr. van
3 Schalkwijk's declaration, where he talks about the classifiers and the
4 separators and how they operate. And the fact that safety is a concern for
5 those, so that's part of why you know and expect that what's coming out of
6 the pre-dryer, and frankly, that's why it would be called a pre-dryer, to do
7 that drying before it goes into these.

8 It's both safety is a concern and also the efficiency and the
9 effectiveness of those systems is a concern, that if material is spilled down, it
10 still has moisture in it and it's clumping together, then the magnetic
11 separators and the classifiers - the air classification of trying to blow
12 different size fragments and different mass and different pieces. If they're
13 clumping together, then it's not going to work efficiently. It's not going to
14 work effectively. It's not going to do what it's designed to do, which is,
15 again, how you know and understand that what's coming out of the pre-dryer
16 is fully dry, as it says, dry cell materials.

17 In terms of the atmosphere for these, I don't believe that Hanisch is
18 specific as to whether the separator and the classifier could or would be run
19 under a vacuum to the extent it leaves it open.

20 I suppose it, you know, you could have a vacuum running
21 throughout the entire procedure, but just as easily and more likely, when it's
22 going through it, I suppose it also - again, the - actually, I mean, to the
23 extent the zigzag classifier is designed to work by blowing air back and
24 forth, then I would actually presume that that's not being done under vacuum
25 at that stage because you don't want the vacuum suction to be interfering
26 with the blowing of particles.

1 So yes, I think that's exactly the point that what's coming out of
2 that pre-dryer has to be safe in order to go through these processing steps,
3 and that's a key, I think that's a key point. And I'll direct you to Petitioner
4 Slide 15, because, again, as I noted, one of Patent Owner's primary
5 arguments against Hanisch was this idea of dry doesn't mean dry. So, just
6 because it says dry material comes out, well, it doesn't mean dry,
7 necessarily. It doesn't mean inactivated.

8 Again, what the distinction is, especially if an activation is the
9 endpoint result of drying, it's very unclear. But the other argument that they
10 make and this is from their Patent Owner response and citing their expert,
11 who just has a fundamental misunderstanding or mischaracterization, if you
12 will, of Hanisch's operation. They say Hanisch is not concerned with an
13 activation at the pre-dryer, because the battering material goes from the pre-
14 dryer to the decomposition oven.

15 In other words, they're viewing - they're looking at - if I continue
16 to annotate this, they're looking at this pre-dryer over here and they're saying
17 it's going straight from here all the way down there to the inactivation oven,
18 and they're ignoring everything that's going on here in the middle.

19 So, Patent Owner wants you to say, forget the processing steps that
20 happens in the middle, forget that you need it to be happened efficiently and
21 effectively. Forget that you want it - that you need safety for those steps.
22 Let's pretend it doesn't happen. Why would we dry anything in the pre-dryer
23 to the point of an activation if it's just going into the decomposition oven
24 afterward?

25 And the answer to their own question is because there are these
26 steps in the middle that they want the Board to ignore.

1 JUDGE CHERRY: Thanks. That was very helpful.

2 MR. SCHENKER: And so again, how do we know that Hanisch
3 teaches us dry materials? Again, as I said, because Hanisch tells you what it
4 does. It tells you it's going from - I'm sorry. I'm turning back to Slide 13 of
5 Petitioner's deck. Hanisch tells you that there's dry cell fragments coming
6 out. Hanisch is telling you that it's got to go through or it's supposed to go
7 through these other processing steps before it goes to the decomposition
8 oven.

9 And, again, I'll remind the Board that, under Hanisch, the point of
10 that decomposition oven wasn't simply an activation for the sake of an
11 activation. It was, as Hanisch describes, it's in order to separate out the - to
12 decompose the binder, to decompose the polymer binders so then you can
13 then separate out the - select the aluminum foils, the separator foils and the
14 cathode and anode from one another.

15 So, the fact is that if there is, by some chance, if you didn't run it
16 through the pre-dryer and you did go straight to the decomposition oven, and
17 you did all that, the electrolyte also would decompose, as the Board and
18 Patent Owner agrees, but the purpose of that decomposition oven is to get
19 rid of those other binders, and then to allow you to separate out the foil.

20 The purpose of the pre-dryer, on the other hand, is to remove the
21 liquid electrolyte so it can go through these processing steps.

22 And I'll point out, as well, Hanisch, and we've got this here on
23 Slide 13 from Hanisch, column 4, line 63 to 67, it's talking about a stirred
24 reactor for the retrieval of conducting salt, which is connected to the cell-
25 crushing device, and which at least partly removes the liquid fraction from
26 the cell-crushing device.

1 And, again, I'll take you back to Figure 1 of Hanisch, we're looking
2 at here on the screen. That's Exhibit 1004, Figure 1. That's - the stirred
3 reactor is this here labeled 26 on the left side of the screen, and that's coming
4 in between or after the 12, the cell-crushing device, and 28, the pre-dryer.

5 And what's the purpose of that is to partly remove the electrolyte.
6 So, if the purpose was just to get rid of some electrolyte, when it wanted to
7 only get rid of some, and it was talking about getting rid of some of the
8 liquid, it said, as I noted, it said to partly remove the electrolyte. Going back
9 to Slide 13 where we got the quote there, which at least partly removes the
10 liquid fraction, right? It removes some of that.

11 So, we can retrieve some of that that way. The rest of that is being
12 retrieved from the pre-dryer through evaporation, and that's why we then
13 have the condenser going on there in order to get the rest of it. So, what is
14 coming out, then, of the pre-dryer is dry cell fragments and then the drying
15 vapors, which are then condensed to retrieve the rest of the electrolyte.

16 Now, in terms of the Board's construction or the Board's proposal
17 for, that it's got to be electrochemically safe, that the material, you know,
18 can't form an electrochemical reaction, I'll again point to, number one, Dr.
19 van Schalkwijk, as he explained, and that was paragraph 10, again, from his
20 second declaration, as I pointed out, that the fact that it is dry cell fragments
21 necessarily means all the volatile electrolyte solvent, i.e. the bulk liquid
22 components of the electrolyte has been removed. There's no liquid
23 remaining.

24 And as the Board already acknowledged and the Board already
25 agreed in the context of the decomposition of it and the institution decision
26 is that if there's no electrolyte remaining, the quote was none would remain,

1 and that came from Mr. Dantam, Patent Owner's expert in its Patent Owner
2 Preliminary Response. The Board looked and said that there would be,
3 under the - in the decomposition of it, there would be no liquid electrolyte
4 remaining because it would all be composed, and because it - there's none
5 remaining, we determined that the Petitioner has sufficiently - has shown
6 sufficiently that Hanisch teaches removing enough solvent in its
7 decomposition of it to make an electrochemical reaction either no longer
8 possible or only possible to a negligibly small extent.

9 And I submit to you, Your Honors, that the same applies here in
10 the pre-dryer. The fact that it's dry cell fragments coming out, not partially
11 dry, not partly dry, not somewhat moist, but dry cell fragments that need to
12 be dried for the subsequent processing steps means that you've removed
13 sufficient solvent. All of it, basically. None remains. So, there can't be an
14 electrochemical reaction.

15 Unless the Board has any other questions on the pre-dryer, I'll
16 move on to the next limitation and the next issue.

17 JUDGE CHERRY: We don't have questions.

18 JUDGE PETRAVICK: No.

19 MR. SCHENKER: So, I'd like to turn -- turn you next to Petitioner
20 Slide 20, and we're going to talk about the vacuum pressure level for drying
21 under 300 hectopascals from Hanisch and also the secondary references.

22 Now, again, both the low temperature and high temperature drying
23 processes in Hanisch are disclosed as occurring under a vacuum. I showed
24 you that for the low temperature, and Patent Owner doesn't dispute that the
25 high temperature happens also under a vacuum. It says - I mean, that
26 language that I pointed to at the top of column 3 happens - is stated, I think,

1 two or three times in Hanisch, and at least one of them is explicit to the
2 decomposition oven, as well as Patent Owner has pointed out in its briefing.

3 The parties also agree that it's been well understood for decades as
4 we see here that one can reduce the boiling point of compound by lowering
5 ambient pressure, and that's something that we all implicitly understand,
6 especially the folks in Denver. When it comes to boiling water at different
7 atmospheric levels, the temperatures are higher or lower and so on, so, you
8 know, how I might boil water in New York would differ from how, you
9 know, how long it might take water to boil in Denver. These are known
10 concepts. These are known ideas.

11 And in the reply, we explained and as further explained in the
12 petition, it's been well known for decades that the evaporation of these gases
13 can be facilitated at lower temperatures. That's not in dispute. Patent
14 Owner's expert also agrees that the '097 Patent did not purport to have
15 invented that scientific principle that liquids evaporate at lower temperatures
16 under partial vacuum pressure.

17 So, as we pointed out in our briefing, and that, given these known
18 scientific principles, a POSITA would have appreciated that to quickly
19 vaporize the electrolytes and produce dry cell fragments, as Hanisch wants
20 to produce, dry cell fragments at 80 degrees Celsius or lower, vacuum
21 pressures well below 300 hPa, actually, are desirable.

22 And that's just something that would be implicitly understood. A
23 POSITA knows and can determine the boiling points of EMC, DMC. A
24 POSITA understands that you're looking at and Hanisch tells you to do it
25 under vacuum, so the exact number a POSITA understands and implicitly
26 recognizes that you would get to a more efficient and very efficient number

1 by going and driving that vacuum pressure considerably lower than 300 hPa,
2 which is, frankly, one third of an atmosphere and not as strong of a vacuum.

3 But even if Hanisch didn't implicitly - even if a POSITA wouldn't
4 just implicitly understand that from Hanisch, we also then have the
5 secondary references which teach you these limitations. And specifically
6 Hayashi, for example, teaches you the use of reduced pressure well under
7 300 hPa. Frankly, it tells you 1 kPa, which, assuming I get my conversions
8 correct, 1 kPa is 10 hPa or 100 hPa, but either way, pressure levels
9 considerably below those 300 hPa required from the '097 Patent.

10 And I'll note just briefly on that point, and we note it here on Slide
11 21, that Patent Owner hasn't presented any arguments of a combination of
12 Hanisch's low temperature drying with Hayashi, and instead addresses only
13 the combination of Hanisch's high temperature drying embodiment with
14 Hayashi.

15 And that's in its POR at page 31. It says, you know, because it
16 assumes that Hanisch's low temperature dryer doesn't inactivate, it didn't
17 bother to dispute this aspect of the claim. And I submit to you, again, you
18 know, the Board recognizes, as it should, that Hanisch's low temperature
19 dryer which produces dry material, therefore it produces inactivated
20 material, then really at this stage, there should be and is no further dispute on
21 this limitation.

22 But just to address briefly the high temperature drying in Hanisch
23 in combination with Hayashi. So, I'll ask the Board to turn to Slide 23 of
24 Petitioner's deck. And, again, Hanisch discloses high temperature drying at
25 between 350 to 600 degrees, and, again, a POSITA, a person - excuse me. I
26 tend to talk quickly, and when I do, I stumble over myself.

1 Patent Owner acknowledges that allowing oxygen to enter that
2 paralysis chamber would run counter to the goals of Hanisch to exclude
3 oxygen and to avoid oxidizing the copper and the aluminum coils, and the
4 Patent Owner - that's in the Patent Owner Response, page 41. Hanisch
5 discloses that specifically in column 4, where it talks about, again, the
6 purpose of the decomposition oven is to get rid of these, the support coils, to
7 separate them, and it teaches that you want to avoid as best as possible
8 copper oxidation.

9 And point, turning to Slide 24, Dr. van Schalkwijk explains this
10 somewhat quickly, that you've got this thermally labile LiCO_2 which then,
11 during the chemical reaction, when it's heated up to these temperatures, can
12 produce and let out a lot of oxygen. And so a POSITA would understand
13 that if you're trying to avoid copper oxidation, as Hanisch tells you you want
14 to do, you want to get rid of as much oxygen as possible, then you want to
15 run that vacuum at as high a level as you can to eliminate as much of the
16 ambient oxygen that's in there.

17 And more oxygen is going to be formed during this oxidation
18 process, and so you keep drawing out as much of the air to create as strong a
19 vacuum as possible to minimize and limit the oxidation and to therefore
20 avoid the copper oxidation that Hanisch tells you you want to and need to
21 avoid.

22 If I can ask you to turn to Slide 26, I'll then just point out again,
23 you know, to the extent the Board wants, you know, further disclosure that
24 Hanisch's implicit teachings are insufficient, together with the skill of the
25 person - knowledge of a person of ordinary skill in the art, that's, again, why
26 round 2 brings in, for example, Hayashi and Shin as these additional

1 references that teach you that these lower vacuum levels, you know, well
2 below 300 hPa, are possible, are favorable, and are something that a
3 POSITA would understand and be motivated to insert in there.

4 And so, what's Patent Owner's argument in response to that? And
5 they'll present their argument, but just, you know, to pre-rebut somewhat
6 quickly, a lot of what they rely on is this idea that - and here we've got it on
7 the top of Slide 26. Patent Owner argues that Hanisch is a continuous
8 process, and therefore he's got to look for conditions compatible with the
9 continuous process. Hayashi, on the other hand is a batch process, and a
10 POSITA would not look to the batch process levels in order to figure out
11 how to deal with the continuous process.

12 But, again, as the Board already recognized with respect to its
13 preliminary guidance on the Motion to Amend, Hanisch teaches expressly
14 the method is preferably performed as a continual process and not in
15 batches. That's Hanisch, columns 3, lines 27 to 28. Hanisch implicitly
16 recognizes and the Board has acknowledged that Hanisch teaches that both
17 are possible, both are known by a person with skill in the art, and either one
18 of those could and would be used.

19 But even if Hanisch, turning to Slide 27, even if Hanisch were -
20 actually, let's - if I can jump you back to Slide 22, the other aspect that they
21 point to when we look at all of this, Patent Owner argues that Hanisch
22 doesn't disclose any of the sealing mechanisms needed to run a continuous
23 process on their vacuum.

24 So, even if Hanisch was a continuous process, you still could do it,
25 and Patent Owner hasn't given a credible reason why you could or wouldn't
26 do it. Why? Because Patent Owner admits that these seals exist, and this

1 comes from, the bottom half comes from the Patent Owner Response. A
2 POSITA would know there are mechanisms that can be employed to
3 maintain a vacuum in a continuous manufacturing process. They are known.
4 He admits they are known.

5 Hanisch doesn't depict it directly, but Hanisch doesn't depict a lot
6 of pieces of the invention in its figures. Hanisch depicts the process flow as
7 a whole, and namely that you want to dry at low temperatures, you want to
8 dry at - you want to decompose at high temperatures, and you want to do
9 both of those under vacuum. These systems may exist in some form but are
10 generally limited in their functionality and are generally leaky, according to
11 Patent Owner.

12 But, again, turning to Slide 27, then, I submit that even if Hanisch
13 were a continuous process alone, a POSITA still would have had reasonable
14 expectation of success, as Dr. van Schalkwijk has explained, and Patent
15 Owner's expert's own admissions that these rotary air locks are known and
16 that they've worked with Hanisch's method basically killed their arguments
17 with respect to obviousness and motivation to combine, because these exist.

18 And what they haven't showed you, and what they need to show
19 you under the Federal Circuit law -- and that's the Juniper case law - excuse
20 me. The Juniper Networks case, for example, that we cite in our reply, is
21 that it's not simply that it's difficult, that it's challenging, that it's not the best
22 method, that it's not an ideal method, but you've got to - they've got to show
23 that it's beyond the skill of a person of ordinary skill in the art, and they
24 haven't done it. Because they've acknowledged that these exist, these are
25 known how to work with them, and that these are possible mechanisms to do
26 it.

1 And finally, on that point, Dr. van Schalkwijk explains, for
2 example, one way how you could do it with these supposedly leaky seals,
3 something that they have never addressed, which is the fact that you could
4 use a series of such airlocks, for example, where you don't have this giant
5 pressure differential between the chamber and the other side of the airlock.
6 But if you've got two or three airlocks in a row, then you effectively have a
7 - you effectively - each of those air locks minimizes the leakiness because
8 you don't have a giant pressure differential.

9 Patent Owner doesn't address any of the ways that you would
10 actually, a person with skill in the art would actually try to implement these,
11 and they don't explain why they would have been beyond the skill of
12 POSITA, and that just, you know, that completely undermines their
13 indefinite - their - sorry. Their - that completely undermines their attacks
14 against the obvious miscombination here.

15 Unless the Board has any further questions on this front, I'll
16 reserve the rest of my time for rebuttal.

17 JUDGE PETRAVICK: No questions.

18 MR. SCHENKER: Sorry?

19 JUDGE CHERRY: Oh, no questions here.

20 MR. SCHENKER: Thank you.

21 JUDGE KAISER: Okay. Thank you, Mr. Schenker. That was
22 very helpful.

23 I guess, Mr. Carlson, do we have you off mute now?

24 MR. SMITH: Judge Kaiser, I think they may need a few minutes
25 to log out to log back in. Could we take a short break?

26 JUDGE KAISER: Of course.

1 MR. SMITH: Thank you so much.

2 (Whereupon, the above-entitled matter went off the record and
3 resumed following a brief recess.)

4 JUDGE KAISER: All right. Okay. So, I think you got - to the
5 extent we went off the record, I don't know whether we did or not, but we're
6 back on.

7 And, Mr. Carlson, if you would just let me know how much time
8 you'd like to reserve for rebuttal before you begin.

9 MR. CARLSON: I'd like to reserve 15 minutes for rebuttal,
10 please.

11 JUDGE KAISER: Okay. And give us a minute to get the clock
12 set up. That's - I think you're ready to go.

13 MR. CARLSON: May it please the Board, Steven Carlson for
14 Patent Owner Duesenfeld GmbH.

15 I'd like to confront head on the meaning and the importance of the
16 term, inactivation. I'd like to turn to Slide 35 of our presentation.

17 May we - there we go. Thank you, Your Honor.

18 So, Slide 35 is an excerpt from Exhibit 2022, the Dantam
19 Declaration at paragraph 85. And what Mr. Dantam said, and this is not
20 rebutted, is that during the drying process, as more electrolyte is extracted it
21 becomes progressively harder and harder to extract additional electrolyte.
22 There's an inverse relationship here where the less electrolyte that's
23 remaining, it becomes harder and harder to extract that next bit of electrolyte
24 salt.

25 And the analogy here is very simple. It's like ringing out a wet
26 towel. That first turn of the towel, a lot of water comes out, and maybe the

1 second turn, but to really get it dry, it takes more energy, it takes more force.
2 It takes more power to really get the water out of that towel. And getting
3 that last bit out, that's an activation. And this is the nature of the Duesenfeld
4 invention, and it's quantified.

5 Now, we'll turn now to Slide 8. The '097 Patent provides metrics
6 of how much drying needs to be done in order for the material to be
7 inactivated. Now, on the screen from the '097 Patent, columns 3 and 4, are
8 six metrics. Now, what these are are methodologies of measuring the
9 material to determine if it's been dried long enough to be inactivated.

10 Some of these require months of observation. Some require weeks
11 of an application - of observation. Some require more straightforward
12 chemical analyses, either by measuring residual cell by weight or by volume,
13 et cetera. But all these metrics point to the same thing: has the material
14 been dry sufficiently that it's inactivated, i.e. that it's now safe for transport?

15 Now, the construction of the word, inactivated, that's already been
16 litigated. I'm going to turn to Slide 7 here, Exhibit 2023. This is the order
17 (INDISCERNIBLE) report. And we agreed with Ascend. We both agreed
18 that the plain and ordinary meaning of inactivated should control.

19 In particular, we discussed the term drying device configured to
20 inactivate the comminuted material. And we agreed that it should be
21 governed by its plain and ordinary meaning. That that is a device configured
22 to produce inactivated comminuted material as a result of drying.

23 So, what this means is, we've agreed with Ascend that inactivating
24 and drying are not the same. We agree that inactivating is a result of drying.
25 It's the end point when the drying is done. And we submit this is the proper
26 construction for this proceeding.

1 However, we have heard the Board's concerns on Tuesday, and I
2 want to go back now to Slide 8. And we submit to the Board - we
3 understand the Board sought to bring - to tighten up the meaning of
4 inactivate, and what the Board had proposed in its proposed construction in
5 the Institution Decision was essentially the lines from the second metric, the
6 be dried until an electrolyte content is so low that electrochemical reaction is
7 impossible.

8 And we did have concerns with claim differentiation in light of
9 that, but we submit, make a proposal that inactivating, we would have no
10 objection if the Board were to construe inactivating to be satisfied if at least
11 one of these metrics is satisfied. Particularly, we would suggest that
12 comminuting that material is inactivated when the batting material is dry to
13 an extent that at least one of the metrics of columns 3 and 4 of the '097
14 Patent are satisfied.

15 We believe that would address the Court's - the Board's concerns
16 about the breadth of the term inactivating, and would address our concerns
17 about claim differentiation.

18 Now, if there's no questions on that subject, I want to turn now --

19 JUDGE CHERRY: Mr. Carlson, is that the construction you
20 advocated in your briefs?

21 MR. CARLSON: No. We argued for the plain meaning, and we
22 note the Court's -

23 JUDGE CHERRY: Okay. Okay.

24 MR. CARLSON: Well -

25 JUDGE CHERRY: We're not going to have new claim
26 constructions here. This is way, way, way past the moment for that. So

1 you've got your construction.

2 MR. CARLSON: That's -

3 JUDGE CHERRY: It's the plain meaning. We're not going to
4 have new constructions now.

5 MR. CARLSON: That's fine, Your Honor. We are very - just
6 fine with that.

7 So, if there's any more questions, I'll move on to the Hanisch
8 reference.

9 Next slide, please.

10 So I turned to Slide 15, and now next slide, 16. This is the Hanisch
11 reference, as Petitioner pointed out. Slide 17, the process of Hanisch begins
12 with a crush, and that's Element 12.

13 Next slide, please. 18.

14 This is done under an inert atmosphere where the inert gas tank
15 puts the nitrogen blanket over the crushed material.

16 Next slide, please, 19.

17 Now, the point of novelty of Hanisch concerned the extraction, the
18 attempt to extract more precious metals out of the crushed batteries. And
19 this happens in the oven where the precious metals are bound to the structure
20 of the battery by a polymer, polyvinylidene fluoride. And that decomposes
21 it at high heat. That's why this is called a decomposition oven.

22 Now, what Mr. Hanisch realized is that the metals didn't fully
23 come off the structures in the decomposition oven, despite being heated to
24 the high heat.

25 So next slide, please, 20.

26 The point of novelty of the Hanisch Patent is using an air jet sieve

1 to forcefully impact the particulates against a sieve and smash them with a
2 collision that then liberates the metals from destruction.

3 Next slide, please.

4 Now, in the process, this is an attempt to recycle batteries. And so
5 the goal of recycling in that vein, Mr. Hanisch sought to recover some
6 quantity of the electrolyte, and he proposed a pre-dryer that would remove
7 some quantity of the electorale.

8 And this talks about dry cell fragments being formed. And
9 importantly, the language itself says, whereby the drying vapors are at least
10 partially condensed. That is, there is no concern here about condensing it
11 all, recapturing it all. They want to at least partially condense the
12 electrolyte.

13 Next slide, please.

14 And importantly, the teaching of Hanisch is that this is done - is
15 taught. The actual teachings are to do it in a continual process and not in
16 batches. This is a straight shot through from the comminution unit to pre-
17 dryer to the various separators to the oven and the air jet sieve. It is a
18 straight shot through with no air locks or blocks or segmentation. It's a
19 straight shot through.

20 Next slide, please. Let's move forward.

21 So, turning to Ground 1, we don't contest that the decomposition
22 oven results in inactivation of the battery material. Everything's pyrolyzed.
23 It's done. We do contest that there's any kind of inactivation of the pre-
24 dryer, and we contest that throughout the system, there is no disclosure of
25 300 hectopascals.

26 Next slide, please.

1 Now, the evidence for inactivation is essentially this clause, this
2 passage on the screen. This is the Hanisch patent, Exhibit 1004 at column 3,
3 line 65, 4 at line 5, where the dry cell fragments that - the supplements are
4 drying at a drying temperature, so dry cell fragments and dry vapors are
5 formed. This says dry. It doesn't say dry for what purpose. The purpose
6 here is to move the material through the system, through the classifiers and
7 to the furnace, the pyrolytic furnace, where the metals be - will be captured.
8 This is not drying for the purpose of inactivation to be safe for transport.
9 That realization did not happen until the '097 Patent. Here, they're trying to
10 move material along through the system, under vacuum, under nitrogen.
11 They're doing it under safe situation, under nitrogen here, to move materials
12 through the system to the furnace. And again, they're not trying to condense
13 everything, they want it since the vapors are at least partly condensed.

14 Next slide, please. Next slide, please.

15 So, now we're on Slide 34.

16 JUDGE KAISER: I - I'm sorry -

17 MR. CARLSON: These notes -

18 JUDGE KAISER: Okay. Before you move on -

19 MR. CARLSON: Yes.

20 JUDGE KAISER: - to that next line, let me just ask you one
21 question there. Are you equating drying vapors being at least partly
22 condensed with solvent or whatever it is that's being evaporated out of the
23 cell fragments being at least partially collected?

24 MR. CARLSON: Yeah. Your Honor -

25 JUDGE KAISER: Or at least partially evaporated?

26 MR. CARLSON: I wouldn't give it a one-to-one, but what it says

1 is they're not that concerned about capturing everything. I think that
2 statement is fair to say they're not concerned about making sure that every
3 drop of electrolyte solvent has been captured. And so the - this suggests
4 that they're not concerned with having every drop of electrolyte evaporated
5 out of the battery material.

6 JUDGE KAISER: Okay. Thank you.

7 MR. CARLSON: So the - there is - would there be no point in
8 trying to wring out the towel to extract out every last bit of electrolyte
9 solvent, because that material is going to be obliterated in the pyrolytic
10 furnace. After it goes from the pre-dryer through some classifiers, it then
11 goes to the pyrolytic furnace, where everything is destroyed. So, there will
12 be no need to expend the energy to wring out that towel and get out every
13 last drop of electrolyte.

14 Next slide, please. Slide 35.

15 And I want to revisit this concept that it becomes progressively
16 harder. I'm citing now the Dantam Declaration, paragraph 85. It gets
17 progressively harder to wring out more electrolyte as each amount of
18 electrolyte is extracted. And so there's no need to expend that, essentially,
19 it's exponential effort to extract more electrolyte.

20 Next slide, please, 36.

21 And the Hanisch system is concerned with speed. It's a throughput
22 process. It's a straight shot through. There are no blocks, there's no air
23 locks, there's no segmentation. Everything moves through the system from
24 the crusher to the pre-dryer to the classifiers into the oven. And you don't
25 want crushed materials sitting around. You try to get it through because
26 crushed material is not safe.

1 Next slide, please.

2 And that's - I'm citing there Exhibit 2022 at paragraph 78.

3 Next slide, please.

4 And most importantly, there is no technical guidance in the
5 Hanisch '419 Patent as to what would need to happen to ensure that the
6 material is actually dry, to ensure that that towel is wrung out to get every
7 last drop. There's no discussion of the duration the material must reside in
8 the pre-dryer, there's no discussion of pressures in the pre-dryer. You don't
9 talk about what benchmarks to hit to try to inactivate the material and they
10 don't address the complications, such as the different solvents that are in the
11 battery and the different kind of batteries you might - you may be
12 processing. Next - and that is Dantam Declaration, Exhibit 2022 at
13 paragraph 83.

14 Next slide, please.

15 Now, the Board found its institution ruling that Petitioner had not
16 carried its burden to show that there has been inactivation in the pre-dryer.
17 So, for the first time on reply, they now raise the issue of the zigzag
18 classifier. And we object to this. They are now pointing to a new
19 instrumentality inside the Hanisch system to try to carry their prima facie
20 burden of proof. And we cited case law in the papers.

21 JUDGE CHERRY: Yes.

22 MR. CARLSON: And I also want to point -

23 JUDGE CHERRY: Yes, but they're still relying on the pre-dryer
24 and they're allowed to put into other evidence that would suggest why the
25 pre-dryer accounts for this limitation. They're not saying now the zigzag
26 classifier needs it, they're just saying that because there's this zigzag

1 classifier, that that indicates that it has been inactivated under the
2 construction that we adopted, which wasn't the construction that they relied
3 on in the petition. So, I don't see how that falls into those cases. This seems
4 exactly like the Axonics case where we have a different claim construction
5 and they're allowed to point to evidence that shows why the same element,
6 the pre-dryer, meets the limitation. I guess why isn't that the case?

7 MR. CARLSON: Well, Your Honor, I might have said a case, the
8 MModal case at 846 Fed, Appendix 900 at pincite 906 Federal Circuit 2021.
9 That case says that, it holds when a petitioner attempted to show how a prior
10 reference teaches a particular limitation, but did not rely on a particular
11 aspect of that prior art reference, the petitioner could not later assert that
12 particular aspect of the prior art for the first time on reply. And we believe
13 this course - -

14 JUDGE CHERRY: They're just saying - they're just using that as
15 evidence to show why the exact same element, the exact same, the pre-dryer,
16 the exact same instrumentality that they relied on before meets the - this is
17 just circumstantial evidence why the - why that would meet the inactivation
18 limitation. They're not saying that the zigzag classifier, at least as I
19 understood what they're arguing, they're not saying the zigzag classifier
20 meets this inactivation limitation, that it's inactivated by the zigzag classifier,
21 right?

22 MR. CARLSON: Correct. They're - but the Hanisch '419 Patent
23 does not say inactivation and they're now pointing to a - they're trying to
24 infer inactivation, initially, in the petition, by the pre-dryer alone. And now,
25 in the reply, for the first time, they're using a different instrumentality to
26 now try to draw that inference, and we submit that's improper and we've

1 been prejudiced. We have not had an ability to submit our own evidence in
2 rebuttal. We would love to. We believe we would say, for example, zigzag
3 classifiers were routinely used to process grain and flour, which are moist.
4 We would say that the zigzag classifier does not run under vacuum as they
5 say it must here. And we've been prejudice in not being able to submit that
6 evidence.

7 Next slide, please.

8 JUDGE CHERRY: I'm going to push back on that because I don't
9 understand how grain materials are equivalent. You've told us again and
10 again, I mean, I've got to say I'm a little frustrated because the presentation I
11 heard on Tuesday, you know, kind of ignored this Hanisch reference and
12 everything that was taught by it, and making all kinds of assertions about
13 the, you know, what was done in the '097 Patent. And it kind of frustrates
14 me when people, I feel like, aren't taking their duty of candor very seriously
15 and make assertions that, you know, aren't supported by the full prior art. So
16 I guess I'm - can you explain to me how the grain that you've - the grain
17 example that you've cited is somehow relevant here?

18 MR. CARLSON: Absolutely, Your Honor. Grain has a moisture
19 content above 50 percent bar, 20 percent bar, whereas the metrics of the '097
20 Patent say that to be dry, you need to get down to about 3 percent moisture.
21 So, the grain is being - is - that's being processed is wetter than what the
22 '097 Patent says is the proper metric of dryness for that -

23 JUDGE CHERRY: But is the grain safe to transport at that
24 moisture level?

25 MR. CARLSON: Grain is, but that's not shredded battery material
26 with toxic salts.

1 JUDGE CHERRY: Okay. Then I don't see how they're
2 equivalent. The fact that the zigzag classifier cannot be operated safely with
3 grain, which isn't as dangerous, which everybody agrees isn't as dangerous
4 as these battery fragments, I don't understand how that's relevant here.

5 MR. CARLSON: Well, the argument was that material could not
6 move through the zigzag separator if it's moist, but moist material routinely
7 moves through zigzag separators, i.e. grain and flour.

8 JUDGE CHERRY: Yes, but can move safely?

9 MR. CARLSON: Yes, because it's grain and it's not shredded
10 battery material.

11 JUDGE CHERRY: Okay. So it's -

12 MR. CARLSON: And on the safety point, the next slide, please,
13 Mr. van Schalkwijk backed away from the notion that would be dangerous
14 to move shredded battery material through the zigzag separator. And I'm
15 citing Exhibit 2061 at page 20, 8 through 17, page 25 of the deposition, lines
16 13 to 19. So, if I might move on?

17 JUDGE KAISER: Actually, let me just push you one more point
18 there. I mean, it seems to me that what that what Petitioner was arguing here
19 is not that the fact that there's a zigzag classifier means that the fragments
20 must be dry because zigzag classifiers can't operate with moist fragments. It
21 seems like what they're arguing is the - is that the Hanisch reference teaches
22 that the fragments are dry, it describes them as dry cell fragments. Before
23 they go into the zigzag separator, they have to have been dried somewhere.
24 And so somewhere upstream of that point, they became dry. Isn't that -

25 MR. CARLSON: Right. And the question is - well, the question
26 is, dry for what purpose? In the '097 Patent, the '097 Patent was the first to

1 realize that you can dry for the purpose of inactivation to be safe for
2 transport. That is the first time that realization was made. Here in Hanisch,
3 they use the word dry, but it's dry for a different purpose. It's dry to first
4 extract some amount of electrolytes for recycling and then dry to move it
5 through the process to the furnace where it is pyrolyzed. It's a different
6 concept of the word dry.

7 JUDGE KAISER: Okay. And how do you square that with the
8 description earlier in the process of the fragments that is partly dry?

9 MR. CARLSON: Well, I - so that - first, I forget the name of it,
10 but right after the crusher, there is a trap that will collect some amount of
11 solid, sure. It's the first wring of the towel, sure. A lot of solvent just came
12 off immediately without any other effort to dry it. Then in the pre-dryer, the
13 towel is wrung a little more to get some amount of solvent out, but it's not
14 wringing the towel all the way to go down to the level of inactivation,
15 they're simply getting out what they can as a convenient way to achieve
16 some level of recycling.

17 If I may, I'd like to move on. So, as for the pressure limitation,
18 there is no doubt the 300 hectopascals is not mentioned in the Hanisch
19 reference, and they've relied on the knowledge of one with skill in the art.
20 But you - the law does not allow us, and I want to cite the Himpp case at
21 751 F.3d 1362 and the - that Unified Patents case at 2019, Westlaw
22 6999079 and Star 5. We can't substitute these core limitations merely
23 through the assertion of one with skill in the art, the knowledge of one with
24 skill in the art. We need to point to patents and print publications to identify
25 these core claim limitations.

26 Next slide, please.

1 What they try to do, now, again, for the first time on reply, is to
2 say, and this is a - layers on layers of expert conjecture, that you would need
3 a vacuum of a certain level to prevent the oxidation of copper. Now, again,
4 this is late. We contested, we object, on the same rationale before, the
5 MModal case at 846 Federal Annex at 906. Furthermore, it's - so we're
6 prejudiced because we've not been able to respond. What - if we did have
7 the opportunity to respond, what we'd say is this: in the pyrolytic furnace,
8 what's going to get pyrolyzed first is the polyvinylidene fluoride polymer
9 that holds the metals to the structure and that flooring will decompose in an
10 HF and it'll destroy the vacuum pumps. So, the notion suggested by mister
11 - Dr. van Schalkwijk that you're going to use this very strong pump to get
12 down to 0.0000133 hectopascals, it's just not going to work. And we would
13 love to put in the evidence, but we are prejudiced by not being able to do
14 that.

15 Furthermore, the argument by Dr. van Schalkwijk collapsed upon
16 itself because he acknowledges that the concern of thoroughly labile lithium
17 cobalt oxide goes - it's greatly reduced, at least, if you discharge the
18 batteries. And the reason for that is the lithium goes back to the cathode, it
19 is intercalated in the cathode, and it forms a crystalline structure that's stable.
20 And so the issue, the suggestion that the lithium cobalt oxide will
21 decompose and release oxygen that would then oxidize the copper, that is
22 greatly reduced, if not gone, if you discharge the batteries, but a person
23 skilled in the art would know -

24 Next slide, please. Next slide, please. Next slide, please.

25 That a person skilled in the art would know you have to discharge
26 the batteries before shredding because otherwise we'll have fires. And that's

1 the van Schalkwijk deposition, Exhibit 2061, at 15, lines 3 through 8. So, I'd
2 like to move on. If there's no questions, I'd like to move on.

3 Next slide.

4 Okay. I want to turn now to Claim 12. And again, we don't
5 contest the decomposition that there's inactivation in the decomposition of it,
6 but we do contest, there is no vacuum installation anywhere to be found in
7 the Hanisch '419 Patent.

8 Next slide, please.

9 This is the structure that Petitioner identifies as being the vacuum
10 installation. They identify a circulation pump, and I've cited the van
11 Schalkwijk Declaration, Exhibit 1003 at paragraph 136.

12 Next slide, please.

13 This is not a vacuum installation. The Hanisch reference itself
14 confirms it's not. What it is, as it says, is a circulation pump, and this Figure
15 E7, and what it does is it pulls air out of the top of the pre-dryer, brings it
16 down through the circulation pump, routes it through the condenser, and
17 then there's a return, that's the red arrow shown here, that returns the air back
18 to the pre-dryer.

19 And that's exactly what Hanisch says where it says that the pre-
20 dryer is suddenly gas proof and then is flushed with inert gas by the
21 Circulation Pump 32. That's citing Hanisch at column 5, lines 59 to 63. So,
22 this is not a vacuum, it's not withdrawing air, it's recirculating air. That's not
23 a vacuum installation.

24 Next slide, please. So, now, we're at Claims 2 and 7. These recite
25 particular metrics of drawing. And the Board, for example, thought in its
26 preliminary construction - suggested that the language of Claim 2 should

1 define inactivating. Furthermore, there was another metric in Claim 7 that
2 defines inactivating.

3 Next slide, please.

4 The evidence they presented is the same evidence from above that
5 you've got this disclosure of drought - dry cell fragments coming out of the
6 pre-dryer. That disclosure in Hanisch does not say that the metrics of
7 Claims 2 and 7, and also Claim 13, have been met. It's simply not there.
8 They try to make the case through expert conjecture, but it's layers upon
9 layers of it, and that's simply not proper. And I'll say again, the K/S Himpp
10 case at 751 F.3d 1362 and Unified Patents at 2019, Westlaw 6999079 and
11 Star 5.

12 Next slide, please.

13 Likewise, with Claim 13, same deficiency of proof, and I'm citing
14 -

15 It's Slide 68, please. Okay. Next slide, please.

16 So turning now to Ground 2, the only prior art reference that - the
17 secondary reference that's still in play here is Hayashi, briefly with Meador,
18 it's been dropped because we demonstrated during discovery that the actual
19 pressure inside Meador is about 1,000 hectopascals because it's a relative
20 pressure, not an absolute pressure. That's thoroughly written. And the Shin
21 reference likewise does not have a vacuum in a drying process if the vacuum
22 had been flooded with nitrogen. Therefore, the Shin reference also does not
23 come from that. So now with Hayashi, on Slide - let's turn to Slide 80,
24 please. Hayashi is a very different system than Hanisch. Hayashi deals with
25 solid batteries that are not commutative. Here, Figure 10 is the battery. It's
26 been heated. They've removed the safety seal. They pour in water or

1 mineral acid to hydrolyze the lithium hexafluorophosphate. Then there's a
2 vacuum pump that draws off - it evaporates that mixture to try to pull off
3 and sequester away the hydrogen fluoride, trying to remove that toxin.

4 Next slide, please. I would - wait. Back up one. And the pressure
5 here in Slide 80 is very strong. It's a very strong vacuum. And I'm citing the
6 van Schalkwijk Decl. at paragraph 179, that's Exhibit 1003, where they cite
7 to the pressure level here being 10 hectopascals. It's a very strong vacuum.

8 Next slide, please.

9 Now, this is very different than the Hanisch system where you
10 have first comminuted material, which then, moving through them in a
11 straight shot through all these different systems, which ends up then in the
12 oven and the air jet sieve.

13 Next slide, please.

14 Now, what we know, of course, is that we want to avoid conditions
15 that could lead to explosion, or fire, or release of toxic compounds. And
16 that's the van Schalkwijk Declaration at paragraph 68. So with a
17 combination, we wouldn't want to make a combination if we're going to
18 have hazards.

19 Next slide, please.

20 And first, Dr. Dantam has said you would have indeed an
21 explosion hazard if you applied the strong vacuum levels of Hayashi to the
22 system of Hanisch, because there are no blocks, there are no air locks, there
23 are no segments here. It's a straight shot through. If you put a strong
24 vacuum in the pre-dryer, there's going to be a leak somewhere. And if
25 there's a leak, that oxygen will come in from the ambient atmosphere, make
26 its way to the shredder, and there you've got sparks and fuel and oxygen and

1 that's the recipe for explosion. So you would not want to apply the strong
2 vacuum of Hayashi to that system.

3 Next slide, please.

4 And Dr. van Schalkwijk admitted that you don't want the vacuum
5 to be intense because you can have a problem with particulates and the
6 particulates, if they're flying around, they will damage your equipment. So
7 you want a vacuum that moves air, but not particles. And I'm citing Exhibit
8 2024 at page 107, lines 5 through 19.

9 Next slide, please.

10 And as Dr. van Schalkwijk said at paragraph 71 of Exhibit 1003,
11 when you have a comminution system, you have particulates, and these
12 particulates are toxic. You have cobalt, you have nickel. And if these are
13 fine particulates, they can enter the air circulation if sufficiently disturbed,
14 and these - you must take care to prevent dust and particulates from entering
15 air circulation, given the potential health risks from inhalation or soft tissue
16 exposure. So you do not want to apply a strong vacuum because you'll go -
17 you'll render that particular matter airborne and that's toxic.

18 Next slide, please.

19 Now, the Board identified three factors why you might combine
20 Hanisch and Hayashi.

21 Next slide, please. 87.

22 First, the Board identified the advantages of improved electrolyte
23 evaporation at a given temperature with lower ambient pressure used. Now,
24 the problem here is this supposed advantage is actually a disadvantage if you
25 use the strong vacuum levels in Hayashi. You want to avoid these hazards,
26 the hazards of explosion. You want to avoid the hazards of particulates

1 going airborne. And I'm citing the van Schalkwijk Declaration at paragraph
2 68 and 71, and the van Schalkwijk Deposition at line 69, line - page 69, line
3 20 through page 70, line 19, and page 107, lines 5 to 19. Furthermore, in the
4 decomposition oven, there is no need for a further nudge from the pressure, a
5 low pressure in a vacuum to drive the evaporation because you're in a
6 pyrolytic furnace. So you don't want - you don't - there's no need to add a
7 vacuum when all the solvent will be pyrolyzed in the high temperatures
8 there. And I'm citing the Dantam Declaration, Exhibit 2022 at paragraph
9 164.

10 Next slide, please.

11 Second, the Board identified the attenuation of toxic hydrogen
12 fluoride production during the heating process. And - but in this situation,
13 that directly contradicts a motivation to combine Hanisch and Hayashi
14 because Hayashi is actually provoking the formulation of hydrogen fluoride.

15 Next slide, please.

16 Now, the third factor identified by the Board is the control over
17 potentially flammable compounds and gas generated during such a heating.
18 But again, as said before, you want to avoid the hazards of the particulates
19 and the explosion hazard from the oxygen coming in the system.

20 Furthermore, in the decomposition oven, there's a very different way in
21 Hanisch for controlling potentially flammable compounds, i.e. Hanisch
22 pyrolyzes them. So you're not going to learn - you're not going to take
23 teachings from Hayashi to try to control the flammable compounds in
24 Hanisch, with materials all been pyrolyzed.

25 Next slide, please.

26 And there's no motivation opined here where you've got all the

1 teachings in Hanisch or the continual process with no blocks, no air locks,
2 no segmentation, is a straight shot through. And that simply does not
3 combine with the batch nature of Hayashi, with a single uncomminted
4 battery. And I'm citing the Dantam Declaration, Exhibit 2022 at paragraph
5 162.

6 Next slide, please.

7 Now, lastly, secondary consideration of non-obviousness, we had
8 - we discussed with Petitioner's counsel, we've agreed there's confidential
9 material and we agreed to rest on the briefing, so I won't address that here.
10 But we do ask the Court - the Board to consult the briefing on secondary
11 considerations of non-obviousness. And with that, I will pass it to co-
12 Counsel, Matt Smith.

13 MR. SMITH: Thank you. Your Honor, may it please the Board.
14 Matt Smith for the Patent Owner, Duesenfeld, on the Motion to Amend.
15 And I want to do two things with the time here. You know, one is I'll focus
16 on the narrowest claims and the proposed substitute claims. Because of the
17 overlap and the limitations, I think it will pick up everything we need to
18 discuss in the final written decision. First, talk about the Petitioner's
19 obviousness case and some of the hurdles that that faces, and then roughly
20 divide the time with the in-depth of those arguments as well.

21 And to start off on the Petitioner's obviousness case, I think there
22 are a number of things this case leaves open that, if the final written decision
23 were to find the proposed substitute claims unpatentable, would need to fill
24 in in some way. And starting off with the notion of drying or dryer
25 operating in batch mode, to which all of the proposed substitute claims has
26 elicited.

1 This is the Petitioner's argument from the opposition of the Motion
2 to Amend. When they say, as explained in Petitioner's concurrently filed
3 reply, and Hanisch, in fact, discloses a drying device operating in batch
4 mode, citing the reply. And I think that's just a factual mistake.

5 If we could go down to Slide 101, which shows the text from
6 Hanisch '419 on which the Petitioner is relying. All Hanisch '419 says about
7 batch processing is shown on this slide. And it says, "The method according
8 to the invention is preferably performed as a continual process and not in
9 batches." And then there's a discussion of air jet sieving where the prior air
10 jet sieves were known to be processing small samples in batches and not
11 necessarily appropriate for commercial scale.

12 This, you know, just quite straightforwardly does not teach a dryer
13 operating in batch mode, and I don't think you can take that out of the word
14 "process" either. Hanisch is referring, I think, to the entire process. And the
15 entire process can be operated in batch in the sense that you can take that
16 entire Figure 1, for example, from Hanisch '419, and have a batch come in -
17 if you modify, of course -- have a batch come in one side and a batch come
18 out the end. But that doesn't necessarily say that any process or any sub-unit
19 of that process is not operating continuously. It just depends on how you
20 arrange the components and how fast they roll off one another and things
21 like that.

22 So I don't think there's necessarily a way to say that's extremely
23 apparent from this statement, that there would be a dryer operating in batch
24 mode. So I think if you are writing the final written decision, you're going
25 to have to consider, at that point, where does that actually come from? And
26 I actually don't think there is any prior art, and you can probably extend that

1 to the other co-pending IPR as well, that teaches a dryer operating in batch
2 mode to dry comminuted material, period, much less drying it to inactivation
3 in the way that Mr. Carlson was talking about.

4 So that's a gap that has to be filled here. If you were to fill that
5 with some sort of reasoning in the final written decision, of course, we want
6 to reserve our rights to be able to respond to that.

7 But let me talk also about the motivation in this case to use a dryer
8 operating in batch mode. And when I do that, I'll get to, you know, the
9 question of the teaching way and the case law, like In re Mouttet and In re
10 Fulton, I promise. But let me talk about it in general as well. The
11 motivation that's being offered, if we could go to Slide 102, first - this is just
12 what the Petitioner -

13 Sorry. Slide 102, please. Slide 103, please. Thank you.

14 This is what the Petitioner actually says.

15 JUDGE CHERRY: Mr. Smith, one second.

16 MR. SMITH: Yes, Your Honor.

17 JUDGE CHERRY: You're not saying that a person of ordinary
18 skill wouldn't have known how to do it in batch mode, or are you saying
19 that?

20 MR. SMITH: Yeah. I'm saying a number of things, Your Honor.
21 Thanks for the question. And I think maybe implicit in your question is, you
22 know, do we know about batch drying in general? And I think, you know,
23 it's fine, I can certainly acknowledge that, as a hypothetical matter, people
24 know that you can dry stuff, not necessarily batteries, but stuff in batch
25 mode, like your home laundry dryer operates in batch mode, right. But what
26 we don't have prior art confirmation of is the existence of a dryer operating

1 in batch mode to dry commutative battery material. I don't think that's in the
2 prior art and I could be wrong about that, but I don't think it is. Nor do I
3 think, for this particular application, this being the post-substitute claims of
4 the '097 Patent, I don't think there is a showing of people using a batch mode
5 dryer to dry commutative material to the point of inactivation and, you
6 know, as that point is defined in the proposed substitute claims.

7 So I don't think that is out there. I also - to just answer your
8 question a little bit more directly, think there probably is an issue about a
9 person of ordinary skill in the art knowing how to do this, given the
10 complexity of the subject matter that we're dealing with. And in particular,
11 you know, whether there's unreasonable expectation of success here. Like,
12 do you know as a person of ordinary skill in the art a priori going into it, if
13 you make the decision to say, I'm going to modify Hanisch '419 and change
14 that continuous dryer to a batch dryer. Do you know that you are going to
15 be able to produce a material that is useful coming out of that? And let's
16 say, you know, you're accidentally going to meet the language of the claims
17 coming out of that.

18 Do you know that's going to happen? Do you know it's going to
19 happen with requisite safety. Do you know it's going to happen without
20 producing so much hydrogen fluoride that it disturbs the seals on the batch
21 dryer. Do you know that it's going to work? For example, if you start
22 spilling material on the seals or something like that, you just - I don't think
23 you know a lot of these things. And most importantly, the Petitioner hasn't
24 made a case for it. So we don't see, for example, a declaration laying out
25 while all of this would've been within the skill, a person of ordinary skill in
26 the art. And we see no argument or evidence for the proposition that there

1 would've been a reasonable expectation of success here. And again, I guess
2 we covered this on Tuesday as well. I think this is a major problem for the
3 Petitioner in an art like this to not even address reasonable expectation of
4 success on a claim limitation like without trying. So I think you have both
5 the combination of, you know, this being a complex process -

6 JUDGE CHERRY: I guess -

7 MR. SMITH: I'm sorry, please go ahead.

8 JUDGE CHERRY: I guess where I'm struggling a little bit though
9 is, you know, I look at cases like In re Epstein, where they talk about - you
10 know, we kind of judge - you know, we kind of - if you didn't put a lot of
11 disclosure in your specification and then you're complaining about the prior
12 art's disclosure, that's not a very effective argument.

13 And I'm struggling because I'm looking at your specification, and
14 I'm - besides I see one mention of batch drying that is preferred, but I don't
15 see very much discussion of a - I mean, it looks at least the process in
16 Figure 1. I mean, correct me if I'm wrong, but it looks continuous. And so I
17 guess I'm struggling a little bit with, you know, you're saying that it is very
18 difficult, but I don't see a lot of - a lot of disclosure of the dryer or, you
19 know, anything beyond just saying that is preferred.

20 MR. SMITH: Okay. I think there's probably a couple of questions
21 in there, but let me attack the In re Epstein angle versus to this. And this is
22 In re Epstein being the case where -

23 JUDGE CHERRY: Yeah, MR. SMITH: - when examinee - I'm
24 sorry, what?

25 JUDGE CHERRY: Go ahead.

26 MR. SMITH: I - I'm sorry. I said In re Epstein.

1 JUDGE CHERRY: I know. I -

2 MR. SMITH: That's what you were talking?

3 JUDGE CHERRY: Sorry. But -

4 MR. SMITH: Oh.

5 JUDGE CHERRY: But go ahead. Sorry.

6 MR. SMITH: I like it make you curious of a motive, too. I

7 understand that. So, for In re Epstein, a different Epstein, I - and this is the
8 case where the examiner, I think, you know, issued a rejection. The inventor
9 came back and said, well, I don't think this is enabled. And the examiner
10 said, well, you know, there's not that level of detail that you're demanding
11 from the priority and the specification, right? And so I would say a couple
12 of things to that here.

13 First, I don't know that case law has been extended to reasonable
14 expectation of success. And I think that makes a difference. And I think it
15 makes a difference because in reasonable expectation of success, you are
16 talking about the perspective of a PHOSITA at the relevant timeframe for
17 determining obviousness, right? And that PHOSITA can be wrong, okay?
18 That PHOSITA can say, Okay. I don't necessarily know that I can expect
19 this process to work.

20 And then the '097 Patent did come along and just tell you that it
21 works and tell you that it is a preferred embodiment. So, I'm not sure the
22 case law necessarily applies here, but more importantly, this is a burden
23 toward the Petitioner to do - to undertake, right? This is something that the
24 Petitioner needed to formulate an argument on. And if the argument was,
25 hey, this is all real easy. Let's look at Henry Epstein, too, and just show that
26 you could sort of back it out of the '097 Patent in that way. You know,

1 maybe that argument could have been made, and maybe we would've
2 responded to it, but it wasn't made. And I think, as you pointed out, it's very
3 late to be introducing new arguments. This was a burden they had initially,
4 it's an absolutely necessary part of the obvious in this case. And I think just
5 given the nature of the argument, it's something that I personally would be
6 hesitant in inner place to insert on that. Could we go up about three slides,
7 maybe Slide 100?

8 This is going back to the question of motivation. As the Petitioner
9 wrote in the reply - sorry. In the Patent Owner opposition to the motion to
10 - and as an aside, I will say that I don't think there was a sur-reply filed by
11 the Petitioner here. So, a number of the Patent Owner arguments made in
12 the reply are sort of not responded to - is just in case of any confusion on
13 that. The argument that the Petitioner is putting forward on motivation
14 comes entirely from the statement in Hanisch that batch processing is not
15 used.

16 And I'm not really sure what the Petitioner is thinking there. And I
17 don't really want to sort of flesh out whatever thoughts they might be having.
18 But it does seem to be entirely based on the state, right? Not using batch
19 processing effectively acknowledges the existence of batch processing,
20 which is the same as batch drying or, you know, equivalent or somehow
21 implied. I don't know what they're saying, but that's really what it comes
22 down to.

23 If you look at the section that they cite in the reply, and this is
24 incorporating material over from the Petitioner track, it's on the next page, I
25 believe, Slide 101. You could move to that. Oh, sorry. Slide 102, 103.
26 Actually, it might be Slide 100. Okay. Yeah. Sorry. This is the reply. If

1 you look at the section in the reply, it was on this slide. Sorry.

2 All they say in the reply is Hanisch thus implicitly acknowledge
3 that its system could be runs a batch process. So it is sort of already having
4 backed off from a batch dryer to an overall batch process. But that's it,
5 there's another motivation that's being put forward there, such as a person of
6 ordinary skill would've known that a batch process runs better or something
7 like that. Even if you look at Shin and Hayashi - if we could go forward
8 with slide --

9 JUDGE CHERRY: I guess I'm going to push back on that, Mr.
10 Smith. I mean, isn't this a case where there's a limited number of options? I
11 mean, you know, it's kind of - I don't want to quite say obvious to try, but
12 what - you know, we have a very - you can either do this continuously or
13 you can do it in batch. There's two options. Hanisch acknowledges the
14 existence of both options. It says, I'm - this continuous is preferred, but
15 doesn't that suggest to a person of ordinary skill that you can also do it?
16 This other - the other alternative way.

17 MR. SMITH: Okay. So I sort of perceived two questions there.
18 One is, you know, in the -

19 JUDGE CHERRY: Well, I'm sorry. I - no. So I'll try to do more
20 question.

21 MR. SMITH: No. No, it's fine. Try to - I think I can sort this out
22 and if I don't catch what your drift was you just let me know.

23 JUDGE CHERRY: I'm still waiting on an answer to my question
24 about what - whether the figures in the '097 Patent show a continuous or
25 batch process. But I'll table that for a moment. Like you answer this one,
26 these two, I guess.

1 MR. SMITH: Okay. Okay. So going back to the question of, you
2 know, is this effectively a case we have a limited number of options, and,
3 you know, the statement not run as a batch process, doesn't that imply the
4 existence of batch processing, so to speak? The limited number of options
5 says to me KSR. And there is a case that, you know, one needs to make
6 under KSR, which involves more than just a limited number of options.
7 You know, there's various phrases for this case - casing, but where you have
8 identified and predictable options that lead to the anticipated success, I think
9 it's the obvious to try the standard. There's also things like, you know,
10 where you have design needs and market forces that lead you to known
11 equivalents and modifications within ordinary skill. None of that is a case
12 that the Petitioner has actually made. So this is something you would have
13 to fill in in the final written decision.

14 You know, if you want to, you have to make that kind of case. Of
15 course, we reserve our rights to respond to that, but it is not the case that the
16 Petitioner has made. The Petitioner's argument is based solely on this
17 question of, you know, the sort of the second part of your question is the
18 statement in Hanisch that's not run as a batch process. And that's sort of like
19 saying if I say, you know, there's not an animal in the corner in the room,
20 you know, doesn't that imply that animals exist? Because otherwise I
21 wouldn't bother saying it, right? I don't have to rule out, you know, using
22 witchcraft or something like that, because we all know it doesn't exist. And
23 so I would acknowledge it, you know, to that extent, that saying batch
24 processing is not used means that batch processing is enough of a
25 hypothetical option to merit the four or five words to rule it out.

26 Okay. But I would say a bunch of things to that, too. First, they

1 are in fact ruling it out. I mean, it is - if batch processing is not used means
2 anything, it means that batch processing is not used, okay? So I think there's
3 a need to contend with this statement, and this is where the sort of In re
4 Fulton and In re Mouttet case law comes in, but I'll put a pin in that for a
5 second.

6 The second thing is there's a reason batch processing is not used.
7 And we explained this in the reply, and we covered it a little bit last week,
8 too, which is that batch processing brings with it. This penalty - where you
9 have to load and unload the dryer and that sort of thing. And it's not really
10 suitable for running fast. And this is why I'm including the language in
11 Hanisch '419 at column 3, lines 29 to 33, which we showed on the slide
12 earlier.

13 JUDGE CHERRY: I'm going to push back. I'm going to push
14 back on that because, that those seem like economic considerations, and, the
15 Federal Circuit said in grid energy that the - how do I say this? You know,
16 where the fact that something might cost more doesn't necessarily mean that
17 it's not obvious, right? And so the fact that, yes, this might be a more costly
18 way to do it. Does that make that - that doesn't mean that it's not obvious,
19 right?

20 MR. SMITH: So I would respectfully disagree with that statement,
21 as absolutely as you have stated it. I think that the role of the fact finder
22 here in determining whether there's motivations take all of these things into
23 account. And if there is a teaching in the reference that leaves a person of
24 ordinary skill, even for economic factors, especially when those economic
25 factors turn out to be wrong, which I think they probably are in this case.
26 But even for economic factors, you should take that into account, and you

1 should take this discussion in Hanisch '419 into account. Even if you think
2 that there's a sort of threshold for teaching delay and it doesn't meet that
3 threshold for teaching delay, you should take that into account, and you
4 should put yourself in the perspective of a person of ordinary skill in that
5 time and ask. Yeah, you know, really, why would I want - sorry. Modify
6 Hanisch '419. What would be the incentive for doing that? Especially
7 where I know I'm going to incur some sort of penalty as explained in the
8 reply and not rebutting the surreply.

9 And I think this does sort of lead into the In re Fulton and In re
10 Mouttet cases, because those are the ones where we have this notion of, you
11 know, maybe where you have a known alternative in the prior art that is not
12 the best alternative or maybe even fought in the prior art to be somewhat
13 inferior. You know, can you use that as an obvious alternative? And I do
14 want to address those cases because I don't think they apply here. I mean, I
15 think it is good to be mindful of what they're saying, but I don't think they
16 apply in the way the Petitioner thinks they apply. And the main reason is
17 both of those cases, In re Fulton, In re Mouttet had actual motivations.

18 In other words, there was a motivation to use the prior embodiment
19 that was effectively undisputed in those cases. So Fulton, for example, was
20 about shoes. We were talking about the shape of cleats. That's what was
21 claimed in the early 2000s and late 1990s. Of course, every possible shape
22 of cleat on a shoe had already been published, and the inventor's argument
23 against the examiner's rejection was, you know, something along the lines
24 of, well, why do I pick, you know, one shape of cleat out of this sort of
25 ocean of prior art when the prior art doesn't recognize it as being
26 advantageous in any way? And the Board's conclusion and the Federal

1 Circuit's at that point was: you don't have to, because there is a specific
2 motivation to combine here. And the specific motivation to combine was
3 the claims' cleat shape in the prior art. Actually, had a statement that it was
4 good for traction and good for cuts.

5 We don't have that in this case. We don't have anything like that.
6 All we have is the Petitioner's argument that the statement made in Hanisch
7 that batch processing is not used can be sort of transformed into batch
8 processing is used. Processing can be transformed into dryer. And
9 therefore, you would know that it could be run that way, but there's no other
10 evidence showing that it could be run that way or that anybody had thought
11 of running it that way. And so I think that the Board, again, would have to
12 sort of fill this in in a final written decision. And movement PTAB was
13 quite similar, which had an optical circuit in the prior art - the principal
14 prior art, whereas the claim was directed to an electronic circuit. This is
15 actually fairly instructive for this case. The optical prior art said, Hey,
16 optical could be faster than electronics. They're fundamentally different -

17 JUDGE PETRAVICK: Counsel -

18 MR. SMITH: - but there was no dispute - yes, please.

19 JUDGE PETRAVICK: Could you just clarify one thing? I'm
20 looking at your Slide 100. How much does it say batch processing is not
21 used? It's silent; is that correct? Hanisch says that continuous processing is
22 a preferred embodiment, but it doesn't say that batch processing - like, it's
23 not explicit, but it doesn't say batch processing is not used.

24 MR. SMITH: Oh, I'm sorry. Yes, it's the wrong -

25 JUDGE PETRAVICK: I mean, your argument is slightly
26 different. When there's two binary choices and one is called preferred, and it

1 doesn't say it's not used. It's silent. Silent is not the same as saying it's not
2 used.

3 MR. SMITH: Yeah. Thank you for bringing that up, Judge
4 Petravick. The exact sentence is, the method according to invention is
5 preferably performed as continual process and not in batches. And that's
6 what I'm characterizing as not used.

7 JUDGE PETRAVICK: Yeah. I don't think that -

8 MR. SMITH: I think that -

9 JUDGE PETRAVICK: I don't think those are the same. I don't
10 think those are equivalent things. I think a preference for one thing does not
11 necessarily mean one embodiment, and a preferred embodiment does not
12 necessarily mean not used. Not -

13 MR. SMITH: And I would say -

14 JUDGE PETRAVICK: It's a much more stronger statement if you
15 were to characterize it other - than I prefer this.

16 MR. SMITH: Okay. And I would say to that, Your Honor, that -

17 JUDGE PETRAVICK: I mean - here's another - in the '097
18 Patent doesn't it say continuous is preferred and not batch?

19 MR. SMITH: No, I'm sorry, Your Honor. It says the reverse. It
20 says, processing is - the batch is proposed. In Hanisch '419 it says - it -
21 this sentence of it has two components, right? Preferably perform this
22 continual process, which you pointed out, and not in batches. And I think
23 the normal way for patents to disclose something like this, you know,
24 roundabout to why this means - what I think it means.

25 But the normal way for a patent to disclose something like this
26 would be the way the '097 Patent does it, for example, to say, batch is a

1 preferred embodiment or, you know, you would have figure one is a
2 preferred embodiment and figure two is a normal embodiment, but you don't
3 take the time to rule out the alternative, which they do here, right? It's not
4 just preferably performed as a continual process period. It's preferably
5 performed as a continual process and not in batches. Why do you have to do
6 that if batch processing is not in some way ruled out?

7 JUDGE PETRAVICK: I'm sorry. And not in batches. That's the
8 statement.

9 MR. SMITH: You cut out there for a second for me, Judge
10 Petravick. What is -

11 JUDGE PETRAVICK: I'm sorry. Okay. So it's not preferred. It
12 is preferably performed as a continual process and not in batches.

13 MR. SMITH: Exactly right. Yes.

14 JUDGE PETRAVICK: But it doesn't say it's just preferred.

15 MR. SMITH: Well, the continual process is preferred, but batches
16 is not -

17 JUDGE PETRAVICK: And not in batches sort of implies that
18 that's the unpreferred embodiment.

19 MR. SMITH: So in other words -

20 JUDGE PETRAVICK: I mean, that could read that as the method,
21 according to the convention, is preferably performed as a continuous process
22 and not in batches because continual and batches are the two binary choices
23 we have. And they inserted the word preferably. It doesn't say the method
24 according to the invention is formed as a continuous process and not in
25 batches, which is kind of how you were asking me to read that, but it's
26 preferably.

1 MR. SMITH: So I think what you're saying is the word preferably
2 could effectively be implicitly transferred to that second clause, not in
3 batches. So would we preferably run as a continual process and preferably
4 not in batches, right?

5 JUDGE PETRAVICK: Well, I'm reading it as written. The
6 method according to batch is preferably performed as continual process and
7 not in batches. It's not the same thing as the method, according to the
8 mentioned, is performed as a continual process and not in batches, which is
9 kind of what you're arguing.

10 MR. SMITH: Yeah. I definitely agree with the word preferably is
11 there, right? Obviously, and I think there's some ambiguity as to how that
12 extends to the rest of the clause. That's all we have now, aside from the text,
13 which comes afterward, which I don't think helps the Petitioner, and it's
14 reading an awful lot into that phrase, which at the end of the day is phrased
15 in the negative to say that provides you the disclosure, you know, not only of
16 the unnegated batch process but also of the batch dryer. And it also provides
17 the motivation, and it also provides the reasonable expectation of success.

18 That seems extremely thin to me. I think the Petitioner's case in
19 this sense is really based on hindsight, particularly when there's no other
20 arguments in the record showing that there are other batch dryers out there
21 operating on comminuted material to inactivation and no argument about
22 how this particular combination would be implemented at all, right?

23 It's simply relying on this word batch that appears in this sentence,
24 which I think, as your questioning is drawing out, is somewhat unclear. If
25 you sort of accept all that, though, if you say, Okay, this, you know, implies
26 a batch dryer, it implies a motivation --

1 JUDGE CHERRY: I guess - if we can pause for one moment. I
2 guess at this point, I need to go back to my question that I, kind of, tabled.
3 You know, I'm looking at the figures in the patent, and I - are any of those -
4 I mean, as best as I can determine, they look like they're all continuous
5 processes. Are they continuous, or are they batch? The embodiments that
6 are shown in the figures of the '097 Patent.

7 MR. SMITH: The '097 Patent? So the question is, if we move
8 away from that disclosure in column 6, that's, you know, says it's preferably
9 batch, and we just look at this figure. I actually don't know, Your Honor.
10 I'm sorry. I just don't want to answer that off the cuff.

11 JUDGE CHERRY: Okay. No, that's fine. I mean, I guess why I
12 asked that, and setting aside the Henry Epstein issue - I guess why I'm
13 struggling with that is because you're kind of building this castle on top of -
14 well, it only says this, and we - and a person of ordinary skill, we don't have
15 evidence about any batch dryers, and I guess why I'm kind of struggling with
16 that, particularly that one link there, is that if I look at your figures, I don't
17 see a batch dryer. I mean, I see this one statement, which is also kind of,
18 you know, just the only mention of batch.

19 And so I guess I'm - what I'm struggling with is if the inventors of
20 the - if Mr. Hanisch is also the inventor of the '097 Patent in this - in the
21 reference, you know, if you didn't include a disclosure of that, then, you
22 know, I guess I don't have any -- it gives me pause about your particular link
23 there that you're postulating between, oh, well, you know, this was so
24 unknown.

25 I mean, it - and what - I'm sorry. I'm rambling a bit, but the issue
26 is that I - you know, I guess I'm having trouble, like, if you didn't think that

1 it was necessary to disclose in the '097 Patent, then why should we draw this
2 inference that you want us to draw in your logical chain about why we
3 shouldn't look at Hanisch? So -

4 MR. SMITH: Oh, okay. Yeah. So I've been known to ramble,
5 too.

6 JUDGE CHERRY: Sorry.

7 MR. SMITH: So it is disclosed in the '097 Patent, of course. It
8 says drying is done in batch mode, which represents the preferred
9 embodiment, and I just looked it up as you were talking. So it is quite
10 clearly disclosed. And, you know, if you contrast that to the statement in
11 Hanisch '419, it's very, very different. And as we explained on Tuesday, it -
12 there's an evolution between the earlier Hanisch work and the '097 Patent,
13 where they go from having these statements like and not in batches in
14 Hanisch '419 to having batch mode drying in particular, be disclosed - and
15 disclosed as a preferred embodiment. The reason for that being, of course,
16 was they found that the throughput penalty effectively, which is, I think,
17 discussed in Hanisch '419 in relation to the air jet sieves. But, you know,
18 again, we'll acknowledge some lack of clarity in that.

19 I think the person of ordinary skill looking at that would say, okay,
20 they don't think batch processes, the air jet sieve is ready for the big time.
21 And that's what we're trying to do here. That's what I think a person of
22 ordinary skill will take that. But, so, we go from that to the '097 Patent
23 where they're taking on that penalty, they're taking on this dryer, which they
24 thought was, you know, maybe something you would do in, you know,
25 strange other contexts, but not in drying of comminuted material, and
26 realizing that this actually works better because you can depress the

1 pressure. And when you depress the pressure, you can depress the
2 temperature, and then you get the benefits of not producing hydrogen
3 fluoride. And you can dry to an activation, which we've talked about sort of
4 ad nauseam already.

5 And so there is this realization that happens with the '097 Patent,
6 and I don't think it's found anywhere else that provides you with an
7 advantage to batch drying. And I don't think you can get that out of the
8 claim. Let me talk for a second about this idea of the combination and how
9 much can we really read into the statement in Hanisch '419 that's not
10 processed in batches. Of course, we talked about this before the reasonable
11 expectation of success, but you have to read into the entire combination, the
12 entire structure of the hypothetical combination, and how that would work or
13 trust that somehow within the skill and person of ordinary skill have these
14 expectations of success. But you don't - even if you read all that into it, you
15 still don't really know what it is. And you don't know that it meets the other
16 elements of the claims.

17 So for example, Claims 24, 28, 29, and 31 of the proposed
18 substitute claims have been limited to, you know, the Board's construction in
19 the institution decision of inactivation, which the Board already found is
20 unlikely to be taught in Hanisch '419, and the Petitioner's argument against
21 that is simply to incorporate the material in the Petition. So I don't think the
22 Petitioner - Mr. Schenker might know. He can correct me if it's wrong, but
23 I don't think the Petitioner is using the argument with respect to the zigzag
24 dryer or anything else like that in the motion to amend track. And there
25 really is no - for the reasons that Mr. Carlson presented no reason to think
26 that Hanisch '419 would be drying to that level of inactivation where you are

1 removing the possibility of electrochemical reactions set, to an extent. And
2 that's because Hanisch '419 wasn't drying to transport off-site.

3 It was drying to send to the classifier incentive to be a composition
4 of it. They were just facing a fundamentally different problem. With
5 respect to the pressure optimization. I just want to point out that for - I
6 think the odd number Claims of 23, 25, 27, 29, and 31, the claims have been
7 limited to the ability to recover by condensation, and electrolyte solvent
8 produces. That rules out, I think, the decomposition of it in Hanisch '419,
9 it's literally talking about the pre-dryer. And I understand the Board's
10 reasoning with respect to the pre-dryer operating under vacuum and the
11 statement of column 3 and the statement of column 4 that are being tied
12 together. But I do want to present, you know, sort of the strongest version of
13 the counterargument against that so you can take that into account in the
14 final decision.

15 And that is Hanisch '419 is very, very expressed about the vacuum
16 applying to the decomposition of it in the alternative. It mentions it's five or
17 six times. In Claim 1 of Hanisch - actually, could you bring up Hanisch
18 '419 and just include the Claim 1? This is something Mr. Schenker talked
19 about.

20 In Claim 1 of 4 in Hanisch '419, it talks about the shredder. We're
21 actually going to wait until this comes up because the language is - okay. In
22 Hanisch '419, you have not only clear mention of the decomposition of it
23 being made from a vacuum, but you also have references to heating where
24 it's pretty clear they're talking about the decomposition of it. What I was
25 going to show you in Claim 1 is that second limitation that Mr. Schenker
26 pointed out, is actually talking about the decomposition of the heating to the

1 decomposition temperature. Same thing happens in the abstract. And in the
2 abstract, the Hanisch '419 is pretty clear when they say heating, they're
3 talking about the decomposition temperature.

4 So although I think, you know, it's possible to say the pre-dryer is
5 being heated, you still have to tie, you know, these two sentences together
6 through the word heat to understand that there is some sort of notion that the
7 pre-dryer might be using a vacuum, which I think is already kind of flimsy.
8 But especially when you compare it to the disclosures about decomposition
9 of it is clearly being operated under vacuum. And then having those two
10 statements about the pre-dryer being linked by the word heating, where the
11 word heating in other context is pretty clearly talking about the
12 decomposition of it. In other words, heating to the decomposition
13 temperature like it says here.

14 JUDGE CHERRY: Well, I don't agree with that.

15 MR. SMITH: This is the '09 -- sorry, can we pull up Hanisch
16 '419?

17 JUDGE CHERRY: I'm looking at the '419 and I kind of go - if
18 you go down to - still column 3, line 19, the crushing of cells and/or heating
19 up of solid fragments, that takes place under inert gas. For example, under
20 nitrogen, is favorable for crushing the cells --

21 MR. SMITH: Yep.

22 JUDGE CHERRY: -- that take place in ambient temperature. In
23 particular, as the temperature is almost - at almost 30 degrees. I'm assuming
24 Celsius, wherein it can be advantageous for the crushing device. You know,
25 it seems like - that clearly heating up seems to be referring to the pre-dryer,
26 right?

1 MR. SMITH: I'm sorry. Let me -

2 JUDGE CHERRY: We're looking at column 3, line 19 to 21 -

3 MR. SMITH: Line 19.

4 JUDGE CHERRY: - of the '419.

5 MR. SMITH: And what is it in there that signals to you, if you
6 don't mind me answering your question with a question, that it is pretty
7 clearly referring to the pre-dryer so I can address that?

8 JUDGE CHERRY: Well, I'm looking at - well - so - well, it
9 seems to be referring generally to heating up. I think we all agree that
10 Figure 1 shows the inert gas kind of also the pre-dryer and the crusher being
11 connected to the inert gas tank. I thought that was the argument, right? So I
12 guess -

13 MR. SMITH: Yeah.

14 JUDGE CHERRY: - it seems to connect those together. Also just
15 - heating up is -clearly the pre-dryer is doing heating up, correct? And the
16 generic -

17 MR. SMITH: Yeah, the pre-dryer is doing heating and I tried to
18 acknowledge that at the outset. The strength of that argument is the word
19 heat, right? And this text in column 3 and the text at the bottom of column
20 4, but if you look, for example, at the abstract of Hanisch '419, this is the
21 bottom of the abstract. They're talking about heating the solid cell
22 fragments. So the same language you just read from column 3 up to the
23 decomposition temperature. So I think that those two facts, right, are sort of
24 what we would juxtapose with the tying together the two statements from
25 column 3 to column 4.

26 The other side of that case is Hanisch '419 is talking about heating

1 up the solid self, right? And is often to the decomposition temperature in a
2 way it never does with the pre-dryer. And also, there are express disclosures
3 in the decomposition very express disclosures in the decomposition of an
4 operating in a vacuum where there really isn't that for the pre-dryer.

5 And then the final part of your question, I think is you said that the
6 shredder and the pre-dryer are linked in Figure 1 in terms of their nitrogen
7 line. That's true. But this is the - this is the inert gas embodiment, if you
8 will. What that looks like under vacuum, I don't know. It's a different - it's
9 a different figure, right? So - and whether you - when you can do those
10 both under vacuum, I don't know.

11 Let me talk about the limitation --

12 JUDGE CHERRY: Oh, you're down to 13 minutes.

13 MR. SMITH: Yeah. Okay. I'll finish this up relatively quickly.
14 Let me talk about the limitation almost no hydrogen fluorides on the
15 obviousness side of this. I don't think this is taught anywhere in the prior
16 art. That this is something that the person of ordinary skill would have to,
17 you know, once they've created in the process of stepping through the
18 obviousness ground, you have to first create the hypothetical embodiment
19 and then you have to optimize that.

20 And then you back into this claim limitation or on the other claims
21 that expressly recited Hanisch that's taught in the '097 Patent without the
22 person of ordinary skill in the art necessarily even realizing it. It's not in
23 Hanisch. It's not in Hayashi. It's not in Shin. The only reference that the
24 Petitioner has pointed to throughout this process was the Lane reference,
25 Exhibit 1005. And Lane - what Lane is doing is washing out the battery
26 with solvents. We asked the expert, Dr. van Schalkwijk thought this news

1 was in our favor so I won't belabor it, but he said, you know, Lane is doing
2 something completely different here. So the connection of that to saying a
3 person of ordinary skill in the art would have known that when drying
4 comminuted battery material, that one could do it in a certain set of
5 conditions that would produce almost no hydrogen fluoride is extremely
6 tenuous.

7 Lastly, let me just mention a couple of things on indefiniteness.
8 First of all, on the inactivation point, because Claims 24, 28, 29, 31 build in
9 in effect the end point, which is the Board's destruction of the institution
10 decision, it actually says inactivating by drying where the drying is carried
11 out to the end point. I think that takes care of the problem, because the
12 argument on the indefiniteness of inactivation is what separates that from
13 drying. Where's the end point of drying you have to get to in order that it
14 becomes this inactivation thing. And I think it specifies that right there in
15 the claim. So if you meet the claim language, otherwise, you're obviously
16 inactivated as well.

17 And then on the almost no hydrogen fluoride point. If you look at
18 the disclosures in the '097 Patent, this is at columns 3, 11, 17, and columns
19 5, 1, 7, 10, they talk about presenting the projection of hydrogen fluoride in
20 order to spare the equipment and personnel. And this is exactly the
21 limitation that Dr. van Schalkwijk instinctively applied. If you look at the
22 deposition testimony that we cite, on page 152, line 15 through 155, line 22
23 in Exhibit 2061, he walks through this. He does say there, I think it is
24 indefinite, and these are legal words, but then he instinctively says, almost
25 no hydrogen fluoride means you're not interfering with your plant systems.
26 You're not poisoning people. You're not poisoning the environment.

1 I think this is relatively easy to see in practice. Do you have to
2 take steps because the hydrogen fluoride coming out of your gas stream, is a
3 high enough level that it's a threat to something or do you not? Now, there's
4 probably hydrogen fluoride floating around in the atmosphere. You know, if
5 you're home, you've used a Teflon pan, you're going to get some hydrogen
6 fluoride, but it's just not a threat. And the '097 Patent's process eliminates
7 the threat in that way. You're not going to have to use subsequent measures
8 to take the hydrogen fluoride out of the system.

9 And with that I'll reserve the rest of the time for rebuttal if there
10 are no further questions.

11 JUDGE KAISER: Thank you very much both to Mr. Carlson and
12 Mr. Smith. Those were very helpful as well. I guess we'll hear now from
13 Petitioner on rebuttal, and you've got, Mr. Schenker, around 45 minutes to
14 slightly less. You can begin when you're ready.

15 MR. SCHENKER: Thank you, Your Honors. And I've got 45
16 minutes and I can assure you I don't plan to use nearly close to that. A few
17 points that I do want to address from just Mr. Carlson's argument. He had
18 pointed out and he said, inactivation was litigated and construed by the
19 district court. And I think he put up a slide with the district court's definition
20 of drying and drying device. And in fact, that would be Patent Owner Slide
21 7. That was a district court order for the meaning of the term drying the
22 comminuted material and drying device configured to inactivate. So the
23 verb to dry something.

24 The district court never construed inactivate, and to the extent the
25 Patent Owner has suggested that the district court has, that's just plain out
26 wrong. And again, even within that, I'll just point out the district court - the

1 term there was drying and drying device. And again, it goes to the verb.
2 You know, what does it mean to dry, to do something? Is the agreed to
3 construction was removing at least one solvent from the comminuted
4 materials. So pulling the solvents out, for example, through heat. It doesn't
5 construe and they haven't construed what something means to be dried. And
6 that final, what they're calling out, the end point of drying, which, again,
7 they're suggesting, and I heard in the motion to amend, that it's not indefinite
8 because it tells you what the end point of drying is, but that's one claim in
9 particular.

10 But other than that, Mr. Carlson's analogy of a towel that you keep
11 wringing out and the longer you wring it, the harder it is to dry. None of that
12 changes that Hanisch teaches dry cell materials. It doesn't - there's no
13 distinction on that front. Hanisch tells you what its intended outcome is,
14 something that is dry.

15 There was a question, I believe, and a discussion on the condenser
16 and what was going on in Hanisch when it came to evaporation versus
17 condensation. I think this was Patent Owner Slide 32. And I believe the
18 question was asked, and I agree that Patent Owner seemed to be conflating,
19 you know, the partial condensation and collection of the vapors that have
20 come out. So the electrolyte substance, so to retrieve some of that, versus
21 the evaporation, and I would argue the full evaporation of those vapors, to
22 separate out the dry materials and the drying vapors.

23 And the fact that they aren't, that Hanisch isn't able to efficiently or
24 effectively collect and reach -- I apologize. I'm talking quickly. I know that.
25 The fact that Hanisch isn't able to fully and completely pull out and
26 condense - not pull out, but not fully condense all the vapors back into a

1 liquid form, doesn't mean that it's not pulling all the vapors and all the liquid
2 out of the material. And again, Hanisch tells you what it's resulting in. Its
3 result is dry material.

4 On Slide 36, Patent Owner argued that - again, that they agreed.
5 Patent Owner admitted that crushed material is dangerous, which is exactly
6 what we've gotten to in the point of why Hanisch would dry to the point of
7 the end point result of dry cell fragments, because going through the
8 subsequent steps could import - could impact a measure of danger. And I
9 think Patent Owner's admissions on that front, you know, is helpful. When
10 it comes to the circulation device and it comes to the vacuum device within
11 Hanisch, again, Hanisch teaches you to do these under vacuum implicitly.
12 And necessarily, that requires some kind of device that is pulling that
13 vacuum, that is forming that vacuum.

14 And again, the - they admitted that the circulation pump during his
15 argument would pull gas out and then recirculate it back in if you were using
16 the inert gas embodiment. But, of course, that's the inert gas embodiment.
17 If you're under the vacuum embodiment, which is undoubtedly disclosed by
18 Hanisch, and again, that device would be pulling a vacuum and acting as a
19 vacuum device.

20 Turning now to the motion to amend. So that's all the points on the
21 -- on Petitioner's -- sorry, Patent Owner's rebuttal to the Petitioner argument.
22 Turning to the motion to amend. I think there were a couple of points that
23 some of which were raised or need to address. One question was again on
24 the, I guess, the indefiniteness or the disclosure of Hanisch and the fact that
25 the inactivation device that's coming out in the pre-dryer, which is acting as
26 the inactivation device, whether we are relying on the zigzag classifier, as -

1 of course, in our opposition to the motion to amend, we cite back to the
2 Petition.

3 And again, the drying device is very - I mean, both the high
4 temperature decomposition of it and the low temperature pre-dryer are
5 inactivation devices and are drying the material and would serve to
6 inactivate the material. But beyond that, the low temperature pre-dryer is
7 what we're relying on as the inactivation device, and what's coming out of
8 there are dry materials. As the panel rightly recognized, the zigzag classifier
9 is not a new device that's forming a new basis for inactivation. It's
10 circumstantial evidence. It's additional evidence that what we said in the
11 Petition, namely, that what comes out of the pre-dryer is dry material.

12 And, actually, before I continue on motion to amend, I do want to
13 jump back for a moment to Slide 66, 67, and 68, Patent Owner's argument.
14 And those were the Dependent Claims 2, 7, and 13. We filed and we lost
15 objections on those slides as the Board, I believe, saw. Again, if you look at
16 the Patent Owner response and if you look at our reply and then the surreply,
17 those claim limitations were not addressed in any of Patent Owner's briefing.
18 Patent Owner did not challenge those limitations.

19 In our reply, we pointed out on page 4, we said, okay, here's what
20 they - here's what they have addressed. They addressed the inactivation
21 limitations on drying. They addressed the vacuum pressure levels of Claim
22 1. And they addressed Claim 9. And everything else they didn't address,
23 and we actually made a waiver argument there with respect to the
24 inactivation device.

25 Patent Owner addressed that paragraph from our brief in its
26 surreply, and it challenged only that we then waive - that they waived any

1 argument with respect to Claim 12. They did not address their waiver on
2 any other dependent claims. They didn't raise those arguments. But beyond
3 that, even if the Board were willing - were interested and were going to take
4 up those arguments now, at this stage, I would submit that the evidence from
5 the Petition, none of which is rebutted, and that's Dr. van Schalkwijk's
6 declaration on those fronts, which still show that those claims are invalid
7 under the prior art, under Hanisch.

8 And again, I would point to my earlier discussion of what the '097
9 actually teaches on the supposed benefits of the invention, and that was
10 columns 1 and columns 2. Those benefits were reached. Those levels were
11 reached by the fact that the liquid electrolyte is removed. So there is no - if
12 there's no liquid electrolyte remaining, then you can't have an
13 electrochemical reaction, for example. There's no liquid electrolyte
14 remaining, then you can't have the formation of the gases that they were
15 concerned of. And that's what the '097 itself teaches. That's a fundamental
16 principle that's there.

17 And I think that fundamental principle, turning again back to the
18 motion to amend, that same fundamental principle underlies the argument
19 that was presented by my colleague, Mr. Smith, at the end of his argument,
20 with respect to the indefiniteness of almost no HF, almost no hydrogen
21 fluoride being formed. He hasn't given a reason and an explanation how a
22 POSITA, how a Person of Skill in the Art, how a practicing entity,
23 somebody who wants to do recycling but doesn't want to infringe on this
24 patent is going to know when the HF being formed versus - or some HF
25 being formed versus the almost no HF being formed border. So the outer
26 boundaries of that term, there is no reasonable certainty.

1 However, Dr. van Schalkwijk did explain why a Person of Skill in
2 the Art would understand that to the extent there can be any meaning or to
3 the extent almost no HF is effectively zero or close to zero, which is not
4 clear from that plain language or claim. But to the extent it is, he gave
5 explanations and reasons why that would still be met by the claims. And I
6 submit that under those same reasons, the claims are invalid.

7 On the motion to amend, again, I didn't see here any argument or
8 any explanation why inactivation should not be indefinite. Again, the outer
9 boundaries of that are unclear. And I think this hearing has sort of played
10 that out where it's very - where Patent Owner has suggested that various
11 metrics could be used and they argued that they wanted to choose one metric
12 now. And as the Board rightly pointed out, it's a little late to now choose
13 that. But at the same time, the fact that there are all these different metrics
14 and they want to say, as long as any one of these metrics is met, then you've
15 inactivated, it just underscores the fact that inactivation really has no
16 meaning outside of these claims that it's this amorphous entity.

17 And finally, with respect to batch drying and the batch dryer as
18 disclosed in Hanisch, there was a lot of discussion. And I agree with the
19 panel, frankly, that Hanisch is - Hanisch '419's disclosure is as good as the
20 '097 disclosure on that front. It was suggested that there really is no
21 discussion and it would be too complex and a POSITA wouldn't understand
22 how to build this dryer in such a batch dryer mode. But I was rightly
23 pointed out, the '097 doesn't give any more detail on that other than saying,
24 it's preferred to do it in a batch drying mode.

25 There was discussion on that front of, well, it doesn't disclose all
26 the seals necessary and how to deal with those seals and what you would do.

1 Respectfully, I, you know, would ask the Board to take a look at the '097
2 Patent and any discussion of seals there. The only discussion of seals in the
3 '097 Patent comes out when you're sealing the transport container after the
4 fact. There is no discussion on how to seal a device to turn it into a batch
5 drying device, on how to seal a device to turn it into a vacuum sealed device,
6 and so on. Given those disclosures, I, again, submit to the Board that
7 Hanisch discloses all the locations as it - as would be expected considering,
8 as I started with earlier, it's coming from the same inventor who's doing
9 fundamentally to a large degree, the same process as what's listed in these
10 claims.

11 Unless the Board has any other questions, I will rest.

12 JUDGE KAISER: All right. Hearing none, thank you again, Mr.
13 Schenker, and we'll hear again from either Mr. Carlson or Mr. Smith, I'm not
14 sure who wants to go to first.

15 MR. CARLSON: Thank you, Your Honor. I will. First, can you
16 hear me?

17 JUDGE KAISER: Yes. And I understand that you've got about 11
18 minutes left.

19 MR. CARLSON: Okay. Very good. Thank you. Let me put on
20 my clock. One second. Okay. Thank you very much. May it please the
21 Board.

22 So first point I want to address is this alleged waiver regarding the
23 dependent claims. I was quite surprised when they made this objection.
24 Turn to page 21 of our Patent Owner response. We said, quote, "Because
25 the Petition fails to meet its burden for Claim 1, the Petition further fails to
26 meet its burden to show that Hanisch '419 alone teaches all the limitations of

1 any of the challenged claims, that depend Claim 1, namely, Claims 2, 3, 7, 8,
2 9, and 10." And on page 24, we make the same argument with respect to
3 Claim 13. So we expressly call this out to say that they failed to carry the
4 burden of proof as to the (INDISCERNIBLE), not only the independent
5 claims, but the dependent claims.

6 And, indeed, we don't even need to say anything. It is their burden
7 to prove on patentability. They need to come forth. They need to show that
8 each limitation is met, and they haven't done that. And we set that forth by
9 showing that inactivation is not shown in the Hanisch '419 Patent at any
10 level, least of all, with respect to the particular metrics called out in Claims 2
11 and 7 and 13. So I respectfully submit that that objection does not hold.
12 You know, it's not well-founded.

13 As to the Hanisch '419 and whether or not it inactivates, the -
14 considering the zigzag separator, Counsel again suggests that the presence of
15 the zigzag separator confirms that the material must be safe. That if it is wet
16 at end level, it would be unsafe to run the zigzag separator. But Dr. van
17 Schalkwijk expressly backed away from that position. I'm talking about
18 Slide 46. Can you pull up Slide 46, please?

19 So we said - he was asked, it's your opinion that passing wet and
20 active battery fragments through the de-classifier would be dangerous; right?

21 The answer, I didn't say they would be dangerous. And then he
22 further says, they're not likely to generate the heat to cause the kind of
23 reaction to take place since they're wet particles. They're not going to create
24 static electricity. You need to generate the heat - the heat. And then finally
25 it says, generally, even if materials are active enough, because of some wet
26 material, there's not enough to support an electrochemical reaction that'll go

1 beyond a few seconds. And I'm citing now Exhibit 2061 at page 20, pages
2 17, page 25, 13 to 19, and page 33, 14 to 18. So Dr. van Schalkwijk directly
3 backed away from that position. It's simply not supported.

4 Now, as for the vacuum installation of Claim 12, if you turn to
5 their exhibit - Exhibit 1003 is the original van Schalkwijk deposition
6 -- declaration. Every disclosure talking about the vacuum installation talks
7 about the circulation. There is no vacuum installation. Every disclosure is a
8 circulation pump. That's the structure they pointed to, it's simply not a
9 vacuum pump. In any mode, there's simply - they - they've made some
10 suggestion there's some other mode. There's no other mode. The circulation
11 pump circulates.

12 And I will pass it now to Mr. Smith to address a few of those
13 points.

14 MR. SMITH: Thank you. May it please the Board. I just have
15 three points to talk about. The question of whether the '097 Patent in Figure
16 1 is a continuous process or batch process. I did have a second to look at
17 that during the break, Judge Cherry, and I think it actually is a batch process.
18 And this is based on the disclosure that column a starting about line 12
19 where it is talking about an airlock between the shredder and the dryer, and
20 then the dryer being lowered down to pressure. So I think that is a batch
21 process. There isn't - you know, the word batch doesn't show up there, but
22 it makes sense to me that it is not a continuous process.

23 The second point I wanted to make was to answer Mr. Schenker's
24 statement that we haven't said how a person of ordinary skill in the art or a
25 practicing entity would know when no hydrogen fluoride is being produced
26 as opposed to some hydrogen fluoride. And I think I did, but I'll say it again

1 just in case it got lost.

2 I think it's quite simple. If you are practicing the process -
3 otherwise practicing all of the claim elements of the '097 Patent and
4 understanding that they're - in 2025, we know other ways to inactivate these
5 things. There's plenty of scope for people to do other stuff. But if you're
6 otherwise processing the claims of the '09 patent - '097 Patent and you have
7 to deal with hydrogen fluoride coming out of your gas flow in some way,
8 like using a gas washing column that we see in Hanisch '419 or something
9 like that, then you're not producing almost no hydrogen fluoride. The
10 process of the '097 Patent really produces negligible amounts. And there's
11 almost no language. It's just to account for the fact that hydrogen fluoride is
12 present in the atmosphere, even without a process like this creating it.

13 The last thing I wanted to say is, especially on the motion to
14 amend, the Petitioner's obviousness arguments really depend on a very long
15 daisy chain of places where I think the Board would have to fill in the gaps
16 for the Petitioner where there are deep inferences being made. Deep,
17 meaning we are finding sort of very, very subtle clues in the prior art and
18 piecing them together to resolve the teaching or motivation or where we are
19 just taking presumptions at the case law.

20 And I would ask you to think about that when you're drafting the
21 final written decision, just how many of these things there are and whether
22 that makes the overall claim to obviousness untenable.

23 Thank you, Your Honors.

24 JUDGE KAISER: All right. Thank you again to all three of the
25 folks who argued today, as well as to your teams. I know there are people
26 both visible on camera and off camera who have contributed a lot to this.

1 And I have to say you've all served your clients extremely well. I think
2 we're done with the proceedings for now. The case is submitted and we will
3 issue final written decision in due course.

4 Let me just ask, before people leave the line, if there's any
5 information that our court reporter needs from you. And, other than that, I
6 believe we're adjourned.

7 (Whereupon, the above-entitled matter went off the record.)

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