NTT INDYCAR SERIES
News Conference

Friday, May 16, 2025

Indianapolis, Indiana, USA

Steve Holman
Darren Sampson
Matt Niles
Rupert de Salis
Raul Fernandez

Press Conference

THE MODERATOR: One of the many traditions at the Indianapolis Motor Speedway is the Annual Louis Schwitzer Award, now in its 59th year. For those of you that don't know, it's an award sponsored by our friends at Valvoline and presented by the Indiana Section of the Society of Automotive Engineers International. It honors and celebrates the engineering behind developing new and innovative concepts annually ahead of the Indy 500.

To do the honors, once again this year Steve Holman, the Louis Schwitzer Award Committee Chairperson for the SAE Indiana Chapter. Steve, good morning to you, sir. Welcome back.

STEVE HOLMAN: Thank you for hosting our 59th, as you said, annual presentation of the Louis Schwitzer Award presented by SAE Indiana Section and sponsored by, as you said, Valvoline.

Our committee members this year are Aaron Quinton, Steve Whitmer, Jim Bailey, Clay Dunbar, Sam Bedwell, Jim Wood, Myron Rickard, and Pat Wildaman, who is not with us today.

The winning engineers of the 2025 Louis Schwitzer Award are the key players who turned the INDYCAR hybrid unit into reality. From about a dozen proposals submitted to INDYCAR in 2019, only one had the required attributes.

Safety was paramount. Hence, a unit that was completely enclosed in the bell housing with no battery packs located throughout the car, a low voltage system, 48 volts versus the more common 400 or 800 volts, no flammable batteries, just an advanced super capacitor. All combined to operate with an MGU motor generator unit in a simple in-line installation. Nowhere else has such a compact system in a race car.

But, of course, there were engineering obstacles. Heat dissipation, vibration, shock loads, packaging, energy management, software. One of our engineers wondered during development, Maybe we bit off a little bit more than we should have.

Very difficult engineering job, but they persisted with engineering solutions that are, again, the perfect example of our award criteria to show the courage and conviction to explore new ideas.

I would like to introduce our 2025 Louis Schwitzer Award winning engineers. Darren Sampson, Raul Fernandez, Matt Niles, and just joining us here, Rupert de Salis. Gentlemen.

I want to introduce them in a little more detail here. Darren is with INDYCAR and was one of the individuals that set up some of those parameters that the unit needed to be able to have on the race car and was the strong proponent along with Bill Pappas for this safety requirements that are so keen in INDYCAR.

Raul Fernandez, he is from Skeleton Technologies. He flew in all the way from Estonia in the last 16 hours. Make sure you understand how important this award is to our engineers.

Matt Niles from Honda Racing, in charge of several areas in the hybrid system and was probably best described as the overall sort of program manager. Kind of helped coordinate things among all the different countries around the world that were involved in this.

And I've saved the best for last here. Rupert de Salis, he's kind of the father of the hybrid unit. Remember I said there was one proposal that had all the attributes? That design, that idea, that was Rupert's. This is the reason the whole system exists. So we want to make sure we definitely honor Rupert in that regard.

I'm going to turn it over I think first to Darren here to give us

a little bit more background on the beginning, and then we'll kind of probably go down to Matt for some of the overview, and then Rupert can talk about his initial design, and then Raul can talk about our Skeleton super capacitors.

I'm sorry I've missed two other individual winners that are not here today. John Martin and Thomas Williams. They're both in the U.K., and they will not be joining us today, but they are also very important winners. We have six winners this year of our Louis Schwitzer Award.

Darren, go ahead.

DARREN SAMPSON: From INDYCAR's perspective when this journey began in 2019, as Steve said, we put out an RFP. I think we had 11 people come back for quote. It was a pretty general request in terms of our requirements: safety, power, and some cost requirements as well.

Out of the 11 that came back, the MAHLE Company with Rupert as their employee, they came back with a concept of the super capacitor and the low voltage system. That was a unique system. So Rupert was really the guy that came up with the concept. As soon as we saw that concept, we were, like, That's the one, that's the one we want to do.

We realized that it was quite a challenge. No one had done this technology in a race car. I was certainly one of those engineers along the way that was, like, Man, I think we've bitten off more than we can chew here. There have been changes of vendor, changes of personnel, and changes of direction, but we got there eventually.

I would say that the project, it's hard to pick the individuals that should be sitting at this table because there are companies that were involved that are not even mentioned in this list of companies, let alone the individuals. There's literally hundreds of people involved in the project.

It was multi-national, across the ocean, so we had the challenge of time zones and also companies that were competing on the racetrack, but now also working on the product at the same time.

Eventually Honda took over the role of the lead of the project, and Matt Niles led that project, and he did an outstanding job for us. I'll hand it over to Matt now.

MATT NILES: Thank you. Matt Niles. Yeah, taking over the project was definitely a challenge. As Darren mentioned, working with INDYCAR, but also with Ilmor and General Motors was a challenge. Thankfully we've worked with Ilmor in the past for racing here back in the 2000s.

But getting everyone together, I mean, it's sort of an honor to be part of that sort of part of that team of individuals all around the world and then bringing in Skeleton and Raul and his whole team and then working with John Martin at EMPEL and, yeah, Tom Williams in the U.K. with Ilmor Ltd. and everybody at Ilmor, Inc. It was definitely a challenge, but it was a fun challenge because it's something new.

It's new technology, new things to put on a racetrack and make survive. It's really exciting to be here at the Indianapolis Motor Speedway, to have it running, racing here for the first time.

Yeah, just on behalf of all the engineers that did the work at Honda and Ilmor and Skeleton and EMPEL and MAHLE, it's just a great honor to be chosen for this award.

I guess I'll pass it off to Rupert.

RUPERT de SALIS: So Darren Sampson is quite a good poker player or he would be quite a good poker player because the way he just put it like, Yeah, that's the one, we didn't kind of sense that when we made the proposal. So we still kept really working to make it better and better and better.

He had proposed a 30 kilowatt power limit, and we had a couple of key sort of insights into what are we going to do. One of them was the whole industry believed at the time that 30 kilowatts was all you could get from 48 volts. It was kind of an unspoken belief. It really arose from having a battery in the trunk and the motor in the front of the vehicle and having long cables in between and lots of current.

But if you've got your power source right beside your motor, then you can get a lot more than 30 kilowatts out of 48 volts. We made a proposal, first of all, with more power than he had asked for. Secondly, when we realized they wanted a squirt of power that was maybe 8, 6, 10 seconds long, that kind of spoke ultra caps immediately rather than batteries.

So we were the only one of I think 11 companies who suggested an ultra cap solution. The reason we were able to think of that is because in a previous job I happened to have dealt with Skeleton Technologies, and I happened to know that they had a much better performance ultra cap than anything you could find online about them. It was a really high-performing product.

Then there was a motor company out of Munich called Malabo, who had a 48-volt motor that looked really good as well. At the time they were like the only game in town. So putting all that together, it became like kind of a systems

integration project, and we really stuffed everything into it. We tried to make it as well-performing as possible.

It was probably a little overambitious. There was very little space left. Very, very difficult to take it apart and put it back together every time you had to do it.

Anyway, it was a real honor to be approached for the project. It was an even bigger honor to be selected and to be allowed to work on it. MAHLE Powertrain, my then employers who are now part of Dumarey, Inc., played a big part in that too. Now it's an even bigger honor to be here. Thank you.

THE MODERATOR: Raul.

RAUL FERNANDEZ: It's an honor to be here besides all of you and to be selected, of course, as a recipient of the award, on behalf of all of our phenomenal engineers and scientists at Skeleton Technologies.

As Rupert did mention, we do have a lot of products and bits of it which we could put together to provide this cell, which is at the heart of the energy storage system, which is custom for INDYCAR. That packs a lot of power in there.

It was a pleasure working alongside Indy and Matt at Honda Racing Corporation along with their entire team of engineers where we kind of worked very closely together on the pack design and distillation of it.

Overall, of course, thanks to the committee as well for selecting Skeleton and our team of engineers for the award. Thank you.

STEVE HOLMAN: Darren, can you comment on some of the other aspects besides the extra boost of power? For example, the restart and the safety implications there.

DARREN SAMPSON: In addition to extra power, which some of it is kinetic energy recovery, then the hybrid can also start the engine, which is a first for the INDYCAR SERIES.

It also provides reverse, so the reverse gear has been taken out of the transmission. We have electric reverse now, which again, is a first for obviously INDYCAR.

MATT NILES: I remember when we first started it. We were at Ganassi's shop starting it up, and I remember someone had a Honda key fob in their pocket, and we took a video of pressing the start button, start, start, and then kept the video going. Then the car just started. There was no external starter. It was very strange. If you are around these cars, it's very strong strange to see one start all on its own.

THE MODERATOR: Some of that will come into fruition on race day here. Some teams chose to use the hybrid start, which is unique certainly for the Indianapolis 500. What else, Steve?

STEVE HOLMAN: I believe that's all we've got. We're open for any follow-up questions.

THE MODERATOR: Any questions?

Q. I have a question to the gentlemen from Honda. You said it was a challenge designing this for INDYCAR. Before you just built it and it was installed in INDYCAR, could you do it, like, in standard for automotive design, design it in CAT CAMS and see if it's working in a computer? The second question is, how engineering-friendly is the hybrid in case there's a problem? Do you need special engineers or highly-trained engineers, or is it relatively easy?

MATT NILES: I think for the first question, I think it was sort of based around we were able to simulate. Yeah, we were able to simulate the capacitors and the MGU in the car and use that on our lap simulators just on our computers, but also we were able to use our driver in the loop simulator here in Indianapolis, and I believe Dallara used their driver in the loop simulator for some work to try to understand because when we started, we had no idea how this was going to work. How are the drivers going to use this? What's the impact on track?

We spent a lot of time doing that. We also used the simulation to understand how the capacitors would live over a season and how the motor would operate and temperatures. So that was 100% a huge part of the design process.

Then the second question, what was the second question? Sorry.

Q. (Off microphone)

MATT NILES: Right, working on it. Because of how it is here at the speedway, you have cars rolling in and out through the crowds. People have a lot of access to the cars throughout the circuit around the country, and I think that's a really an important thing that INDYCAR wanted to keep. That's why their requirement was to stay below 60 volts for the system so that it's relatively safe to work on.

I think with some brief training, the engineers here at the track are able to work on the systems, pull the capacitor pack out, do maintenance as needed. Generally that's

done back at the shops, but it's possible to do here. It's nuts and bolts. There's a lot of mechanical things going on as well.

There's some familiarity for people that are used to working on internal combustion engines, but then there's also some new things, which that's kind of the exciting part about the whole system.

Q. Speaking to engineers of Firestone yesterday, they told me special tires had to be designed because the hybrid adds more weight to the car. When you were planning or designing or building the hybrid, did you have the cooperation or communication with Firestone?

DARREN SAMPSON: The communication was done through INDYCAR, so we were in constant conversation with Firestone and other vendors on the car as well, like the brake vendor, for example, because it has an impact on them.

Obviously Dallara were a part of the program. They did some of the simulation work for INDYCAR in order to predict the performance and the affect on cooling and the affect on brakes, the affect on suspension and the overall car dynamics.

THE MODERATOR: Congratulations. It's going to be interesting. I know all the drivers are excited to see how the power unit adds to the racing coming up. Congratulations to everyone involved with this project. Thanks, guys.

FastScripts by ASAP Sports