
November 15, 16 & 17, 2022 • Detroit, Michigan



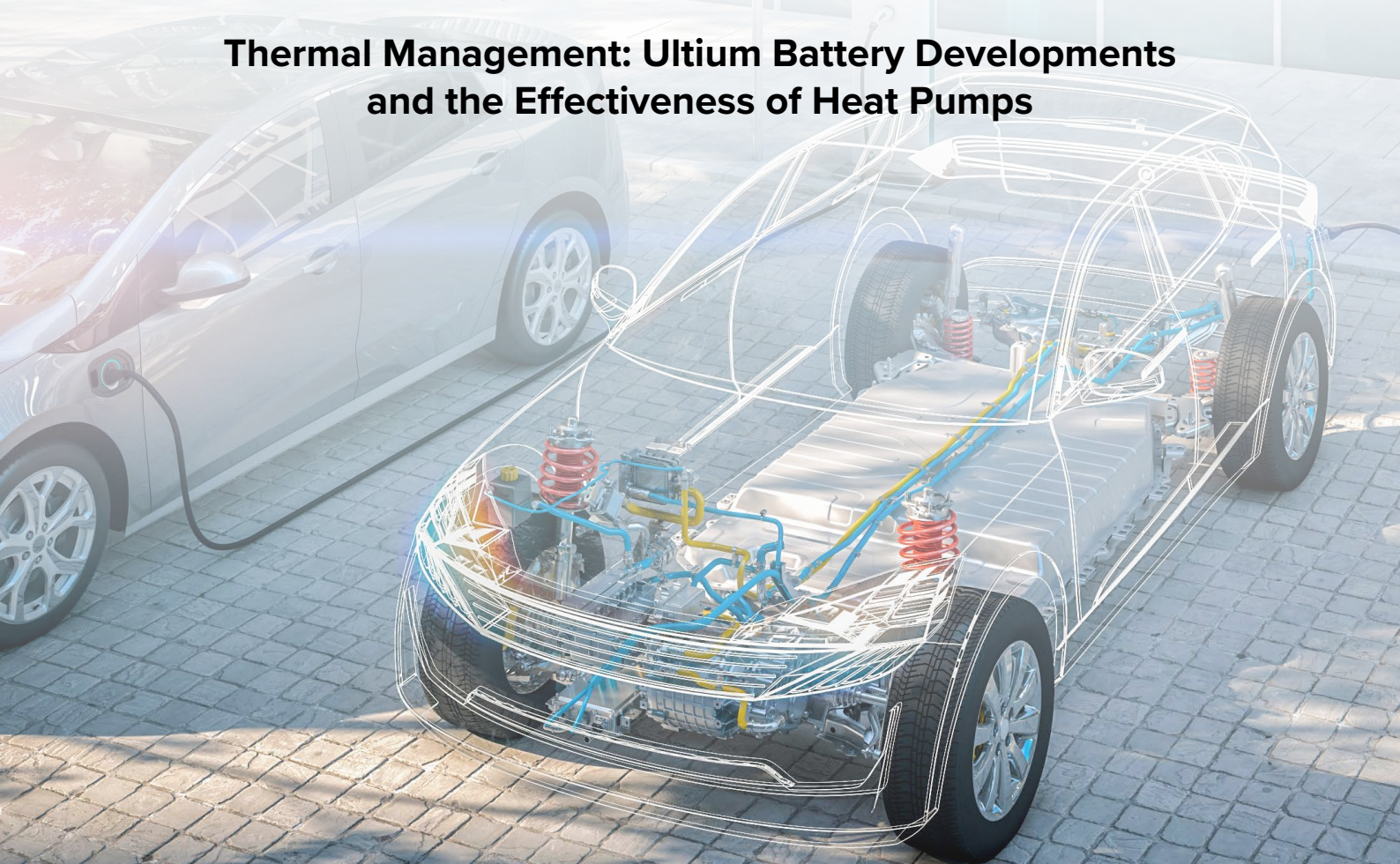
INTERVIEW

— WITH —

LAWRENCE ZIEHR

AT GENERAL MOTORS

**Thermal Management: Ultium Battery Developments
and the Effectiveness of Heat Pumps**





This November Automotive IQ hosts [Thermal Management USA for EV/HEV 2022](#), which will be held in Detroit, Michigan, November 15-17. Ahead of the conference, we spoke to Lawrence Ziehr at General Motors to learn more on the Ultium battery and the effectiveness of heat pumps. Ultium is an electric vehicle battery and motor architecture which is developed by General Motors, something that as an Ultium Energy Recovery Project Manager, Lawrence specializes in.

Lawrence will be at the conference giving a presentation on The Effectiveness of Heat Pumps to Increase Battery Range & Reduce Depletion, which has focus points of:

- How to balance the higher cost of having a heat pump with increase in battery range
- How low the ambient temperature can go before the heat pump becomes ineffective
- The advantages of a heat pump in cold weather
- The technologies and novel concepts that have the potential to make a heat pump more efficient/effective

[Register for Thermal Management USA for EV/HEV 2022 November 15-17 2022, Detroit, Michigan](#)

Q: So, Lawrence, we'd love to know more about your working day, can you tell us a little bit about your role as a Ultium Energy Recovery Project Manager at GM?

Lawrence – As the Ultium Energy Recovery Project Manager I am leading one of GM's most exciting technologies aimed at improving the overall vehicle efficiency and giving our customers more. Internally, this feature was recognized as one of GM's top 5 technologies.

Q: Earlier this year, GM revealed plans to fit its Ultium-based EVs with heat pump technology that will help boost performance, range, and charging speed. Could you tell us more about these latest developments?

Lawrence – These new systems have much more capacity and performance compared to the heat pump systems in the past. First and most, our heat pump is designed to work in all operating conditions. Prior heat pumps were limited to above zero-degrees C.

Q: How do you assess how to balance the higher cost of having a heat pump with increase in battery range?

Lawrence – Cost is unquestionably an important piece to consider, however the balance is often based on the total value to the customer of things like range, features performance, warranty, safety, and cost.

The primary benefit of our system is more about connecting existing hardware in a smarter configuration and eliminating extraneous hardware, as opposed to just adding new hardware. This approach has allowed our system to be cost competitive with other heat pump systems.

Q: Are there any technologies or novel concepts that have the potential to make a heat pump more efficient/effective, and if so, what are they?

Lawrence – Connected systems and controls are where the real advancements have been made. The hardware is not all that different then systems of the past.

Q: Ahead of your presentation on ‘the effectiveness of heat pumps to increase battery range and reduce depletion’, can you give us a sneak-peak into what you will be presenting?

Lawrence – Ultium energy recovery is a GM-designed, ground up, advanced automotive heat pump system. It can provide our EVs with up to 10% more range in certain driving conditions.

Q: Finally, what are your top reasons why the industry should attend the conference in Detroit on November 15, 16 and 17?

Lawrence – By coming, you’ll get the experience and the opportunity to learn the latest in advanced automotive heat pump systems.



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