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# Rebecca Warden

*This senior research engineer with Chevron Oronite discusses electric vehicles and mechanical engineering.*

**By Rachel Fowler**

*Publisher/Editor-in-Chief*



**Rebecca Warden**

## **Rebecca Warden**

*The Quick File:*

Rebecca Warden graduated from Rose-Hulman Institute of Technology in 2009 with her bachelor's degree in mechanical engineering. After Rose-Hulman, Warden joined Southwest Research Institute (SwRI) in the Fuels and Lubricants Research Division. She started her career designing, building and installing test stands for unique applications such as military tanks and helicopters. From there, she moved into lubricants testing, first as a test engineer for axle lubricants, then moving up to managing the Advanced Drivetrain Lubricants Section. The section focused on lubricant evaluations for electrified vehicles, automatic transmissions, axles, tractor hydraulic systems and gear/hydraulic systems in industrial applications. Warden

was the co-founder and co-project manager for the Advanced Fluids for Electrified Vehicles (AFEV) consortium, which exists to better understand the unique interactions of electric vehicle lubricants with the rapidly growing and changing electric vehicle market.

In May 2022, Warden joined Chevron Oronite as a senior research engineer. At Oronite, Warden is a test engineer and OEM liaison for driveline and hydraulics, with a focus on next-generation electric vehicle lubricant development. Throughout her career, Warden has been involved with SAE, ASTM and STLE committees. Additionally, she promotes women in engineering through various community engagement activities.

**TLT:** How long have you worked in a lubrication-related field, and how did you decide to pursue a career in the lubricants industry?

**Warden:** I have been involved in this industry for more than 13 years, and I would say I didn't find it, it found me! I graduated college with a passion for the automotive industry that was unfortunately during one of its most challenging times. I got involved on the lubricant side as a mechanical engineer supporting lubricant testing. As I have grown and most recently moved to Chevron Oronite, I like being a link between what the chemistry can do and the appetite of the mechanical devices. While I can't even play a chemist on TV, I do enjoy working with the team to figure out how to develop the next generation of lubricants. Then I get to figure out how we

can performance test the lubricants, which is a lot of fun!

**TLT:** What got you started in mechanical engineering?

**Warden:** The college I graduated from had a brochure that had kids playing with LEGO® sets, and the tagline was, "When you always knew." I was always that kid who liked to take things apart and could hopefully put them back together again after. I was always building and tinkering, so mechanical engineering just made sense.

**TLT:** What made you decide to join Chevron Oronite?

**Warden:** After nearly 13 years as a test engineer, I saw how two different lubricants that look the same can sometimes perform very differently. This made me want to

know more about what's going on inside the can. While I won't pretend that I understand all the chemistry that's going on inside the oil, it's been a fun new challenge for me to work with the team to figure out what kind of product we want to develop, and how we're going to ensure it's optimal for the applications and that it meets our customer's needs. It's a fun team environment where everyone brings a unique perspective to brainstorming sessions, which has yielded exciting results.

**TLT:** Historically, what has your group focused on?

**Warden:** Historically our driveline and hydraulics team has focused on additive technology development and support for off-road vehicles and industrial hydraulics. We have been in the off-road lubricant



additives market for decades, and we've had some involvement in gear/axle oils and automatic transmission fluids for specialty applications. Recently, we have begun expanding our portfolio to include and expand more on-road applications such as axle oils, automatic transmission fluids and electric vehicle transmission fluids.

**TLT: How has this changed with the increased activity in electric vehicles?**

**Warden:** Electrification has impacted all parts of our business: on-road passenger car vehicles, medium- and heavy-duty trucks and even off-road vehicles like tractors and heavy equipment. However, the way the different industries use electrification and the requirements they have from the lubricants they are using is going to vary. We are using our knowledge of lubricating individual components like bearings, gears, etc., in different vehicle types and merging that with the unique requirements that come with electrification to develop lubricants that will help take our industry into the future.

**TLT: What makes the electric vehicle lubricant industry different?**

**Warden:** The electric vehicle market is growing and changing so rapidly. The one guarantee that I can make is the vehicles we have on the road today are not what the vehicles will be in 10 years. Historically, the lubricants industry loves standardized test methods that have well-documented historical ties to field performance. For electric vehicle lubricants, in most cases, we're missing both good relevant standardized test methods as well as their tie to field performance. There's no question that next-generation electric vehicle lubricants will help enable the next generation of vehicles to do more than they're capable of today. What we don't know is what the next generation of vehicles is going to look like, which makes developing for the future that much more challenging.

**TLT: What's the most exciting part of working in electric vehicle lubricants right now?**

**Warden:** I'd say it's the unknown. Right now, I feel a bit like a detective trying to

gather as much information as I can from the industry, OEMs, Tier 1 suppliers and our oil company customers. Some people have a fear of the unknown and spaces that are not well-defined, but I think of it like solving a big puzzle. I'm picking up little pieces in everything I do and am fitting them together to get the big picture. In some cases, we may be missing large sections of the puzzle, and that's when I get to really have fun and try and make them ourselves.

**Keep your communication lines open because that might just be the line that's key to your success in the future.**

**TLT: What has been your most rewarding accomplishment throughout your career in the lubricants industry?**

**Warden:** When I was at SwRI, I was the co-founder and co-project manager for the Advanced Fluids for Electrified Vehicles (AFEV) consortium. We took this project from an idea to a funded project with 23 global members and a significant working budget yearly. It was a lot of work and wasn't easy, but it was extremely rewarding to see an industry need come to life and become successful. Now, in my current position, I still get to interact with this group and help drive the research as a member.

**TLT: What is the No. 1 piece of advice you would give to a person who might be interested in starting a career in the lubricants industry?**

**Warden:** This is a very complex industry, and there's room for everyone—you just need to know what kind of work you enjoy. The lubricants industry supports jobs from the hardware side such as OEMs and Tier 1 suppliers, to the oil marketers, additive companies and test laboratories. Each brings unique requirements and perspectives to the industry, so understanding where your passions and experience lie will help guide you to the right place. One thing I like about my job is it engages my extroverted side as well as my intellectual side. I get to spend a lot of time talking to people both inside my own compa-

ny as well as externally through industry groups or one-on-one with OEMs, Tier 1s and oil companies. With so many changes coming our way in the years ahead, like new engine technologies and alternative fuels, there are many opportunities and challenges that make this an exciting career choice!

**TLT: Throughout the different segments within your career, which one has been the most interesting, challenging and/or rewarding?**

**Warden:** Being an engineering manager was the most interesting, challenging and rewarding point in my career. People management is not something they really teach in engineering school. Working to understand individual personalities, and how you can uniquely support them in delivering results and advancing their careers, is interesting and challenging at the same time. Math and science are predictable—people are not! However, it's been rewarding to see the folks who worked for me grow and develop into amazing engineers making their mark on this industry. I can only hope they are not cringing reading this article!

**TLT: What is the one thing you wish you would have learned earlier in your career?**

**Warden:** The importance of growing your network! I've had some strange technical problems creep up in this industry, and you never know when you'll need to phone a friend to help you out. Having a strong and diverse network has helped me countless times technically to solve problems and tackle new projects. Just as critically, I've leaned on other parts of my network when I need advice or guidance both professionally and personally. Just as important as growing your network is sharing that network with others to help them grow theirs. Keep your communication lines open because that might just be the line that's key to your success in the future. You never know where your career will lead you, and sometimes knowing someone is better than knowing something to get the problem solved. 🌍

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