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# Innovation

## Innovation is making a difference

In this week's Thought Leadership Roundtable, executives at AES and Cummins discuss the importance of innovation and cite examples of its impact on our environment.

### Q: How do you define innovation at your company and why does it matter?

**Kristina Lund:** An inclusive, clean energy transition will only be achieved through innovation. That means a smarter approach, new thinking informed by past experiences, and stronger collaboration between regulators and innovators, between old systems and new technologies.

Innovation is about introducing and implementing new technologies to better meet our customers' needs today and tomorrow. At AES, we focus innovation on the core, where we are using new technologies and

ways of working to improve day-to-day outcomes for our customers.

**Srikanth Padmanabhan:** We win in the marketplace by seeing the future first and beating the competition to it. This is what I call "innovation you can depend on." If we cannot come up with solutions that solve problems for our customers and how they do their jobs, innovation is meaningless.

I have been with Cummins Inc. for over 30 years now—almost one third of our company's existence. Since the days of Clessie Cummins, we've revolutionized the industry and led the way.

When the world was big-bore gasoline engines for medium-duty trucks, we

understood that the torque and power requirements wouldn't be met by gasoline engines. We debuted diesel engines for medium-duty trucks, and this has grown to a multi-billion-dollar business. Forty years later, we are introducing our fuel agnostic platform that can use gasoline, natural gas or hydrogen as well as diesel. This is an industry first and innovation you can depend on.

### Q: How do you encourage innovation at your company?

**Srikanth Padmanabhan:** People need to feel safe to take risks and try new things. Some of those risks will be successful, and many will fail. Throughout my career I've experienced this safety net at Cummins—filtering through risk, experimenting freely and then discarding what's not working. It is critical to our culture.

Within that safety net, innovation needs to be recognized. In 2022, Cummins' engineers and scientists were awarded a record 623 global patents. Annually, we recognize innovations that have seen fruition to real world application with the Julius Perr Award, named for a former prolific innovator and technology leader at Cummins.

It's important to recognize, too, that innovation comes in different sizes, forms and even unlikely places. Being open and receptive is key—we need to not have biases in our minds around where innovation will come from.

**Kristina Lund:** Innovation is valued highly at AES, so much so that we created the AES Energy Innovation Challenge, bringing together teams of graduate students from across the United States with diverse backgrounds to present solutions to key challenges in the energy industry. Not only are we looking to engage aspiring energy professionals, but we are also interested in exploring undiscovered solutions.

Innovation has been front and center throughout the history of our company. AES encourages its people to think about innovative and novel solutions for its customers. Our people have the expertise and experience that drives innovation—and every person is encouraged to contribute to innovation in a meaningful way.



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### Q: How can diversity and company culture drive innovation?

**Kristina Lund:** Diversity is essential for innovation. At AES, we believe that bringing together extremely talented people and diverse capabilities behind an innovative strategy can lead to greater results. Diversity—and diverse teams—are better positioned to unlock innovation. Diversity also allows us to reflect our customer base in various dimensions, which ultimately allows us to seek and draw inspiration and ideas from them.

At AES, we have two important values that speak to our company culture. Our Highest Standards value speaks to being a leader in new technologies and within our industry. We have been recognized by the Edison Electric Institute with more innovation awards than any other company in our sector. Additionally, our "All Together" value helps drive innovation. At AES, we partner with industries of every kind, across all markets and at every stage of development, and we've been doing it for decades. Our external stakeholders and partners challenge us to come up with new and meaningful solutions for our customers.

**Srikanth Padmanabhan:** I grew up in Chennai, India, as the sixth of seven children. I joined Cummins to help build a factory of the future. My background is different from most in our leadership team—and that's a good thing.

Having a diverse set of experiences in a team brings a range of perspectives that are often different than the mainstream. While this leads to more creative and innovative solutions, it often takes more time and energy due to cultural differences, accents, language barriers, interpretations, ways of working and more—but the end outcome is always better. It can be difficult work, but it's always worth the effort.

We've been this way long before DEI was a trend. I've worked all over the world, sometimes in locations where I didn't speak the primary language. Cummins' culture allowed me to take risks and make mistakes because when I failed, they would pick me up, dust me off and refocus me onto the next challenge.

## Global scale, local impact



AES Indiana is part of The AES Corporation, a Fortune 500 global energy company accelerating the future of energy. Together with our many stakeholders, AES is improving lives by delivering the greener, smarter energy solutions the world needs. Our diverse workforce is committed to continuous innovation and operational excellence, while partnering with our customers on their strategic energy transitions and continuing to meet their energy needs today.





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**Q: How does innovation play a role in your company meeting environmental goals?**

**Srikanth Padmanabhan:** Climate change is the defining crisis of our time. Decarbonization is essential for leaving this place better for our grandchildren's generation. Decarbonization is also a secular growth opportunity for Cummins, and Destination Zero is our strategy to get there.

John Wall, our former Chief Technical Officer, would say that the innovation process is like an accordion: you start with many solutions, narrow them down, then widen the field, then narrow it down again. Eventually, the right solution for the industry will distinguish itself. We've seen this previously with emissions in the last 25 years—we've been at this for many years.

This kind of innovation is hard for many reasons; while we can all see the end goal, the path there is not necessarily clear. That's why we have many solutions we are working on along the way, to then narrow down. But we have ultimate confidence we will get there.

**Kristina Lund:** AES is a leader in sustainability. We have had a commitment to sustainability since our founding. We were the first US headquartered power company to issue a Climate Scenario Report and we have used innovation in many markets to reduce both carbon emissions and costs for our customers. By combining many technologies, we can achieve AES' vision for a net-zero future. I'm excited about how we're getting there. Solar is currently the fastest growing renewable energy technology in the world, as the costs of solar declined and manufacturing became more efficient. Similarly, battery energy storage, which AES pioneered right here in Indianapolis, is now being used around the world as technology costs have declined over the last 10 years. Green hydrogen, small modular reactors and many other new technologies will go

through a similar process to become widely deployed in the future.

**Q: How do you define disruptive innovation, and do you consider your company a disrupter?**

**Kristina Lund:** AES has a long history as an innovator in the electric sector. By applying market insights and new technologies, we have shown we can meet multiple objectives at once—reducing carbon emissions, saving our customers money, and improving reliability. In our utilities in Indiana and Ohio, we are constantly incorporating new technologies and the changing needs of our customers into our operations. We see tremendous potential from breakthrough technologies to improve our business, such as our efforts with X, an affiliate of Google, to simulate and model the electric grid. Our role is to orchestrate new and old technologies, changing customer needs and modern network assets to optimize system performance and customer value.

**Srikanth Padmanabhan:** Innovation happens in unlikely places, and we are ever-watchful. We never want to become complacent, because when you are complacent, you become someone else's lunch. It is critical to always be watchful and aware of what's happening in the market. All small companies want to be big; all big companies want to be agile.

For example, there are a lot of startups trying to tap into the battery electric market. But not everyone can be Tesla; promises are not kept and financial heft is often missing. Where Cummins can win is with our century-long reputation for quality, we have a built-in network to service new innovations as they hit the roads across the globe, and we have the financial heft to invest in innovation as the industry and infrastructure adapts to a changing world. We're advancing our core business' technology while

accelerating our zero-emission technology. We believe we can be the success story.

**Q: Name an industry, for example, in which you think innovation makes your company a leader.**

**Srikanth Padmanabhan:** There are over 8 billion people in the world, and for many of those, food security is an important aspect of their lives. We know that agriculture will be one of the last sectors to decarbonize. Around the world, a lot of food goes to waste because of the lack of and ability to transport it quickly and store it safely. As a global company with operations in the locations where food scarcity is most felt, we can make an impact. Our products help not only with agricultural machines—the planting and harvesting—but also in the transportation of the products that comes out of farms around the world.

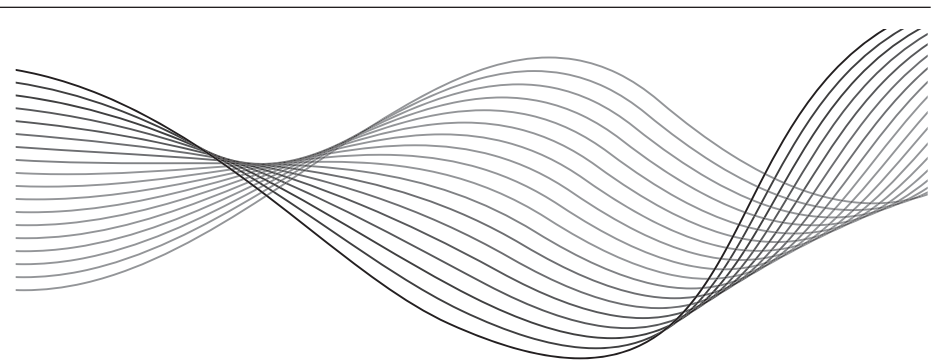
**Q: What smart technologies do you see coming down the pike that will aid future innovation?**

**Kristina Lund:** We see the emergence of a smart home that will operate very differently than what we have right now. It's exciting to think about the comprehensive approach to a smart home, incorporating the ability to orchestrate the usage of

electricity in your home, plus the integration and support of rooftop solar and electric vehicles that can serve as a source for or user of electricity depending on needs at any particular moment. Buildings and homes are becoming more efficient and more customized to what each household wants to achieve for themselves and their families in terms of convenience and energy efficiency. This technology will ultimately aid the customer and the utility. Customers will have greater control over their energy consumption, while their utility partner can optimize system benefits for all customers on the network.

**Srikanth Padmanabhan:** Digital technology is a disruptor. It makes the customer experience better—and we can build on that. We've never had the kind of computer power that we now have in today's trucks.

The other area is automation. Attrition is happening, and people are not coming into the manufacturing workforce like they used to. Collaborative automation like cobots can aid manufacturing shop floors and help with workforce development. Not only will cobots make jobs easier, working with them will require learning skills like programming, which can be a building block to a meaningful career.●



## Powering a zero emissions future

### OUR MISSION: A HEALTHIER PLANET

At Cummins, our Destination Zero strategy enables us to go further and faster on our path to zero emissions by 2050. We have innovated for over 100 years and we won't stop now. Addressing climate change requires collaboration and leadership from all of us.

Learn more at [cummins.com](https://cummins.com) > Company > ESG > Environment > Destination Zero.



**aes** Indiana

**Kristina Lund** is the President of AES Utilities Strategic Business Unit, providing safe, reliable and affordable electric service to more than one million customers. Under Kristina's leadership, AES' US Utilities are leading the inclusive clean energy transition with new technologies to meet our customers' most critical objectives in a sustainable way.



As president of Cummins \$11 billion Engine Business, **Srikanth Padmanabhan** has positioned Cummins as the leading powertrain supplier, with its portfolio ranging from diesel, natural gas, and hydrogen, to hybrid and electric powertrains. Padmanabhan and his team achieved profitable revenue growth in 2022, with 1.2 million engines manufactured globally.

