Leadership Q&A

Strengthening the Engineering Profession of the Future

This Leadership Q&A column recognizes the honorees of the 2017 AIChE Gala, which was held in New York City in December. The Gala celebrated Bhavesh V. (Bob) Patel, Chief Executive Officer, and Chairman of the Management Board of LyondellBasell, for "leadership in advancing possibilities for the next generation of engineers," and Jack Futcher, President and Chief Operating Officer of Bechtel Group, for "inspiring the next generation of engineers to dream big."

LyondellBasell is one of the world's largest plastics, chemicals, and refining companies. Boasting 55 manufacturing sites in 17 countries, it is the world's largest licensor of polyolefin technologies. Patel joined LyondellBasell in 2010 and became CEO in January 2015. In his years at the company, he has led the restructuring of its U.S. business, developed plans to capitalize on the shale gas boom in the U.S., and established a record of strong performance for the company's operations in Europe and Asia.

Futcher has had a career that spans more than three decades with Bechtel, a global engineering and construction company. He is responsible for the management and oversight of Bechtel's global operations, and is also a member of the company's board of directors. Throughout Futcher's career with Bechtel, he has taken on several operational, management, and leadership roles; most recently he served as president of the company's oil, gas, and chemicals business.

The gala raised nearly $450,000 to support the initiatives of the AIChE Foundation and its Doing a World of Good campaign. These funds will help expand AIChE's high school and middle school science, technology, engineering, and mathematics (STEM) education programs, travel grants to promote increased participation by women engineers and international students at AIChE conferences, and AIChE's Undergraduate Process Safety Learning Initiative, among other projects.

Patel and Futcher recently discussed how they are investing in our future workforce by driving STEM education initiatives. And, they explained how their respective organizations are working to make our industry more diverse and inclusive.

What challenges does the chemical industry face in inspiring the next generation of engineers?

Bob Patel: I think there are two issues. First, I think we need to do a better job telling our story and shaping the way we're viewed by the next generation. When we're competing with companies like Google or Tesla, we need to make a compelling case for why our industry is doing important, exciting, innovative work. We have a lot to be proud of. For example, we're rebuilding a key manufacturing base in the U.S., we're an industry that is increasingly digital and technology-focused, and we are making a very tangible difference in the world. Chemicals are building blocks that end up in a lot of everyday-use applications that enable our daily life. Our challenge is to provide these products in an increasingly efficient way with an eye towards preserving the environment.

Bob Patel, CEO of LyondellBasell

A second challenge has been that historically we haven't been a very diverse industry, while the world around us has become increasingly diverse and connected. We're making good progress in this area, but we need to keep reinforcing that we are looking for the best and the brightest who want to do great work — regardless of their race, creed, or economic background. We're looking for — and welcome — all sorts of diversity, including diversity of thought, experience, and opinion.

Jack Futcher, President and COO of Bechtel

Jack Futcher: Diversity is critical for success in all STEM industries, as it drives the quality of decision-making and supports innovation. There are many children who, due to economic, societal, and cultural issues, don't think STEM careers are a viable option. STEM-related industries have to continue diligent work on breaking those barriers, working with children at an early age, and providing mentorship for students. At Bechtel, we are working with our customers and organizations like Catalyst, National Action Council for Minorities in Engineering (NACME), Society of Women Engineers (SWE), National Society of Black Engineers (NSBE), and Society of Hispanic Professional Engineers (SHPE) to support diversity in STEM.

What is your organization doing to promote the importance of STEM education and strengthen the engineering profession of the future?

Futcher: Bechtel people and our customers around the globe are very passionate about working with our communities to make the future better for the generations to come. Knowing that the next generation of STEM professionals is vital to the world's continued progress — both as the backbone of our business and as the generation to deliver the next 100 years of engineering, technological innovation, and

invention — our teams are working to equip students with the tools, education, and mentorship to succeed in STEM.

We partner with DiscoverE, Engineers Without Borders, FIRST Robotics, and Junior Achievement to support and participate in programs that inspire children and youth to become engineers, scientists, inventors, and innovators.

Seeing our teams in action and talking to the students involved in our programs, I see a bright future for STEM professions and our industry.

Patel: At LyondellBasell, education is one of the core focus areas for our philanthropic activities and giving. We provide financial and volunteer support to STEM education efforts in many of the communities where we operate around the world, and we also have a scholarship program for STEM undergraduates.

For instance, at our plant in Morris, IL, our team members go to the local elementary school each year to perform some fun science experiments with the students. At our plant in Wesseling, Germany, we hosted over 60 female students at our training center that we normally reserve for industry apprentices to give them some hands-on training and help them envision a career in chemical engineering.

We're proud to invest in the next generation of scientists, chemists, and engineers because they will find solutions to tomorrow's world challenges.

Why do you think it's important for industry leaders to be strong proponents of undergraduate process safety education?

Patel: Safety must remain the number one priority of every person in every position in our industry. It is, in a way, our license to operate in the chemical business. We must continue to invest in training and education programs to increase awareness of best practices and reduce the likelihood of safety incidents.

Process safety is an opportunity for our industry to show leadership. Across the country, process safety instruction is largely undeveloped in undergraduate chemical engineering programs. It's up to us as an industry to share our lessons learned with professors, who will then pass that knowledge on to the next generation of chemical engineers. LyondellBasell was proud to host one of AIChE's CCPS Faculty Safety Training Workshops at our Houston-area facilities in January 2018. We want students to enter the workforce knowing the importance of safety.

Futcher: Safety is fundamental to everything we do, during both construction and operation of the facilities we engineer and build. Leadership support for safety sets the tone for the organization and is critical in developing a culture that embraces and lives safety as a value.

What role should industry leaders and executives take on to encourage and inspire women, minorities, and LGBTQ students to pursue engineering?

Futcher: Diverse organizations are more resilient and innovative in their approach to business. They are also more inclusive of differing opinions and viewpoints, enabling teams to arrive at better solutions. As with all values, it is critical for leaders to embrace them and live them every day to set the tone for their organizations and actively build a diverse, inclusive, and collaborative culture.

STEM industries realized that to increase diversity of our teams, we have to diversify the student base, and make STEM careers attractive and viable for students from all walks of life. Solutions include establishing scholarship and mentorship opportunities for underrepresented groups to provide opportunities; promoting hands-on engagement with students in schools and universities to inspire them to choose STEM careers; and supporting non-governmental organizations and professional associations like AIChE.

Our partnership with MacGillivray Freeman and the American Society of Civil Engineers (ASCE) to present the IMAX film DREAM BIG: Engineering our World (www.bechtel.com/dream-big) was driven by the need to inspire the next generation of engineers. The film celebrates the human ingenuity behind engineering marvels big and small, and reveals the heart that drives engineers to create better lives for people around the world. So far, more than one million students have seen the film. This year, we are launching the next phase of the program, DREAM BIG In the Classroom, which will provide tools for teachers to incorporate STEM topics into their curricula. I am convinced that one day in the not-so-distant future we will have engineers inspired by DREAM BIG working at Bechtel across the globe.

Patel: Identifying and developing high-performing, diverse talent is one of the most important responsibilities of any leader. Not only does it contribute to business results, it also ensures that we have a pool of great employees with diverse perspectives who are ready for larger roles in the future.

We have a robust university recruiting program at LyondellBasell, and we recruit at career fairs such as those conducted by SWE and NSBE. A diverse talent pipeline at the entry level helps to ensure more diversity throughout the organization as these students mature and take on larger roles.

As industry leaders, we don't need to just say that we value diversity, but through our words and actions, we need to consistently reinforce that we welcome fresh thinking. I think the second thing we need to make sure we are doing is clearly laying out the value proposition of working in this industry — that is to say, explain that this is great work that makes a difference and there is a real opportunity to have a long and meaningful career, not just a job. CEP