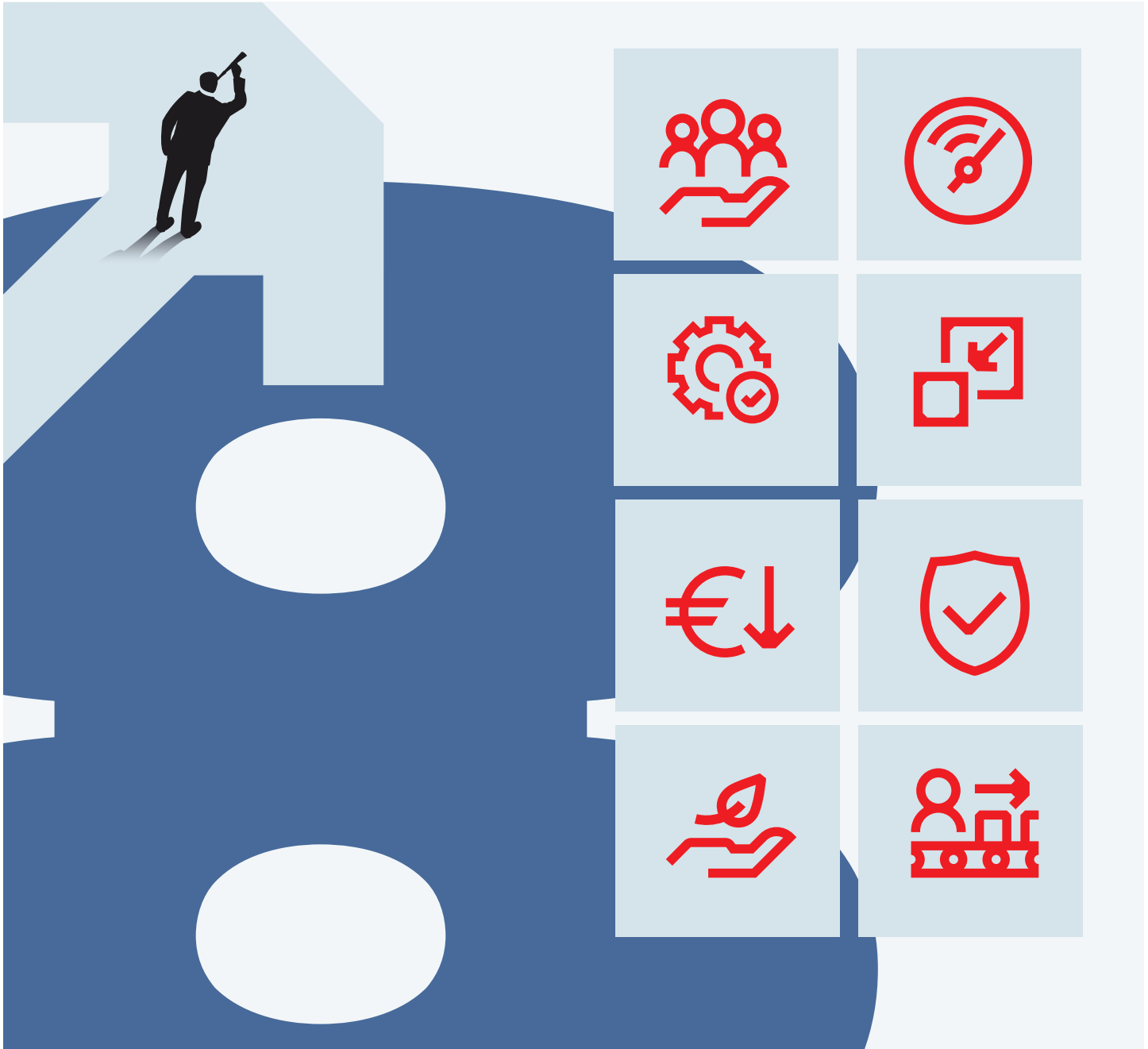
Henkel Adhesive Technologies

THE BIG EIGHT

Major Factors Driving Innovation for Power Conversion and Industrial Automation Applications

Justin Kolbe



THE BIG

“The biggest question, I suppose, is: Is it possible to deliver on each of the eight factors or are some an either-or-proposition? In my view, many objectives overlap and there has been such substantive progress in electronics development in recent years, that I firmly believe the industrial and power sectors are already well on the way ... there is clearly more work to be done, but major milestones are being met and that’s a good thing for industry and humanity.”

Justin Kolbe

Within the power and industrial automation sectors, performance expectations, manufacturing requirements and corporate goals intersect, revealing several primary innovation drivers. These are not new objectives; they are enduring ambitions but have become somewhat more challenging to meet as a growing global population consumes increasing amounts of energy and demands greater function, all while manufacturers aim to deliver on expectations efficiently, cost-effectively and sustainably.

A leading industry voice and expert in electronic materials for industrial systems and power conversion technologies, Henkel’s Justin Kolbe breaks down these top eight factors. What characterizes each in today’s market and how are they being addressed?

Safety

Clearly, THE top priority, safety is critical and non-negotiable. Industrial occupational health and safety agencies and their solutions are ubiquitous, and are integral to the design envelope.

Efficiency

Driven by legislation, corporate citizenship initiatives and the necessity of greater control over energy distribution in power conversion and manufacturing processes, increases in operational efficiency are solving the challenge of energy scarcity.

Lower Total Cost of Ownership

Companies are in the business of returning value; optimizing total cost of ownership – not merely lowering acquisition cost – is a prime target for raising profitability. Operational expenditure, expertise and ease of training/implementation are high value for automation systems.

Reliability

System reliability is a central component of efficient industrial automation and power conversion technologies. Centralized operations, as well as the increase in remote and critical installations, make reliability all the more essential. Downtime due to parametric failures are costly on many levels; ensuring reliability to avoid these situations is essential.

Increased Functionality

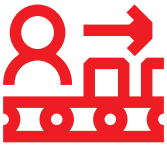
Constant communication and real-time monitoring, exponential increases in data collection and processing and improved security protocols all result in increased overhead. More function is not a 'nice to have', it's a 'must have', so finding ways to maximize performance helps balance the cost/benefit equation.

Size Constraints

Device and system size is important since space is limited for many applications. While there may be slight reductions in footprint, the real challenge is maintaining the current scale while massively expanding function and, consequently, managing the hurdles that come with increasing power density.

Sustainability

Sustainability is more than a buzz word; engaging in sustainable activities delivers real value and shapes responsible business practices. Investors and consumers seek out companies with sustainability goals as part of their corporate fabric, as these organizations tend to be more resilient and deliver positive results over the long term. This value can be brought to the industrial automation space through waste reduction, strategic materials selection and life cycle maximization.



Fast Time-to-Market

Accelerating innovation rates and delivering customized solutions are determining factors as to who wins in the marketplace. The nimbler the supply chain, the broader the global footprint, and the greater differentiation companies can supply – quickly – while meeting all of the aforementioned goals will set apart the leaders in the industrial and power space.

The Big Eight are really a Big Opportunity for a More Automated, Connected and Sustainable Society.

> **"As worldwide population expands, we are manufacturing more product and supplying more energy to satisfy this growth. The demand on systems is stunning. The answer isn't always to just build more – robots, energy plants, alternative energy systems, etc. – but, perhaps of greater importance for the world is how we make and distribute energy and systems more efficiently and sustainably, without sacrificing performance or longevity. That's the ultimate goal."**

Justin Kolbe

Obviously, there are numerous elements to tackling each of these factors and engineering systems and processes that address the application implications. From an electronic materials perspective, many of these perceived 'unmet needs' are, in fact, already being met. Higher capability thermal management materials that can raise performance by more effectively dissipating heat, allowing for greater function in smaller dimensions; automation-friendly solutions that facilitate high UPH to reduce cost; protection materials that safeguard continued reliable performance even in challenging environmental conditions; formulations that offer dual-purpose solutions such as potting stability and EMI protection in a single material; SVHC-free and CMR-free and renewably sourced raw materials, along with low energy products drive sustainability; and multi-application compatible materials – all of these products exist and are enabling the design of better industrial and power solutions. The big eight are really big opportunity for a more automated, connected and sustainable society.

Justin Kolbe

The Author

Justin Kolbe currently serves as Henkel's Director of Market Strategy for Power and Industrial Automation within the company's Adhesive Technology business unit, where he is focused on setting broad strategic guidance and market insights. In 1996, Kolbe joined The Bergquist Company (acquired by Henkel in 2014) as a Process Engineer and has since worked in various capacities including process development, applications engineering, R&D and marketing. A chemical engineer by training, he has extensive experience in thermal management solutions and electronic materials development and processing.

With an impressive professional track record and a long history of providing reliable solutions for customers in multiple markets including power conversion, automotive, industrial automation and power electronics, Kolbe is passionate about ensuring Henkel materials not only deliver on performance, but also on cost and sustainability objectives. Based in Henkel's Chanhassen, MN facility, Kolbe holds a Bachelor's degree in Chemical Engineering from the University of Minnesota.

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