

# Productivity



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## Dear Reader,

Production is the transformation of raw materials, capital, labor and energy into products and services. Producers continuously strive to minimize their resource footprint while maximizing output while taking into account safety, environmental, regulatory and other concerns. The quest for higher productivity has shifted from optimizing individual components in isolation and increasingly looks at the broader process. In this it is supported by technological progress in such domains as monitoring, communications, integration and real-time analysis.

Our opening article looks at the exchange of information between a plant and its operating staff. The design of human machine interfaces has great influence on an operator's ability to detect abnormal situations and react to them before they become critical. Apparent details in interface design can favor early detection and hence have a real effect on plant productivity.

Not all abnormal situations can be avoided by operator vigilance alone. It is the task of safety systems to continuously monitor equipment and processes and react when given parameters are exceeded. Safety systems have traditionally been separate from control systems and have required dedicated wiring and hardware. Increasingly however, safety functions can be integrated into control systems. We discuss this with the example of AC drives.

Avoiding abnormal situations through good operating practices and a strong safety culture is the best way to avoid downtime and lost productivity. There are situations, however, where disturbances are caused by exceptional external influences such as earthquakes. Equipment should be sufficiently robust to survive such incidents and to be able to resume normal operations as soon as possible. We dedicate an article to the seismic resilience of large transformers.

Despite all precautions, situations will occur that see the unexpected failure of large components. Due to lead times in their manufacture and transportation, large power transformers cannot easily be replaced at short notice. One solution lies in the use of mobile transformers. They are small and light enough to be able to be shipped at short notice using existing transportation infrastructure, and to be assembled on site quickly providing a temporary solution until the damaged unit can be repaired or replaced. Until now, mobile transformers have been limited to 250kV, but ABB has recently delivered a 400 kV version.

One area that has permitted considerable improvements in productivity in recent decades is power electronics. Advantages include energy savings, improved controllability and simplified maintenance. *ABB Review* dedicates several articles to the company's offerings in the field of power electronics ranging from semiconductors to intelligent motor control.

Further articles look at the latest generation of molded-case circuit breakers, active filters for power systems and reducing the fuel consumption of ships while in port.

On a different matter, I would like to thank all readers who participated in the survey presented in the previous edition of this journal. We will present the results in an upcoming edition of *ABB Review*.

I hope that this edition of *ABB Review* will provide some novel insights into the fascinating world of industrial productivity and raise your awareness of the broad range of solutions that ABB can offer.

Enjoy your reading.

A handwritten signature in blue ink that reads "Peter Terwiesch". The signature is fluid and cursive, with a long horizontal stroke at the end.

Peter Terwiesch  
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ABB Ltd.



