

Editorial Board

Peter Terwiesch
Chief Technology Officer
Group R&D and Technology

Clarissa Haller
Head of Corporate Communications

Ron Popper
Manager of Sustainability Affairs

Frank Duggan
Region Manager, Middle East & Africa

Friedrich Pinnekamp
Chief Editor, *ABB Review*
friedrich.pinnekamp@ch.abb.com

Andreas Moglestue
Deputy Chief Editor, *ABB Review*

Publisher

ABB Review is published by ABB Group
R&D and Technology.

ABB Asea Brown Boveri Ltd.
ABB Review/REV
CH-8050 Zürich
Switzerland

ABB Review is published four times a year in English, French, German, Spanish, Chinese and Russian. *ABB Review* is free of charge to those with an interest in ABB's technology and objectives. For a subscription, please contact your nearest ABB representative or subscribe online at www.abb.com/abbreview

Partial reprints or reproductions are permitted subject to full acknowledgement. Complete reprints require the publisher's written consent.

Publisher and copyright ©2008
ABB Asea Brown Boveri Ltd.
Zürich/Switzerland

Printer

Vorarlberger Verlagsanstalt GmbH
AT-6850 Dornbirn/Austria

Layout

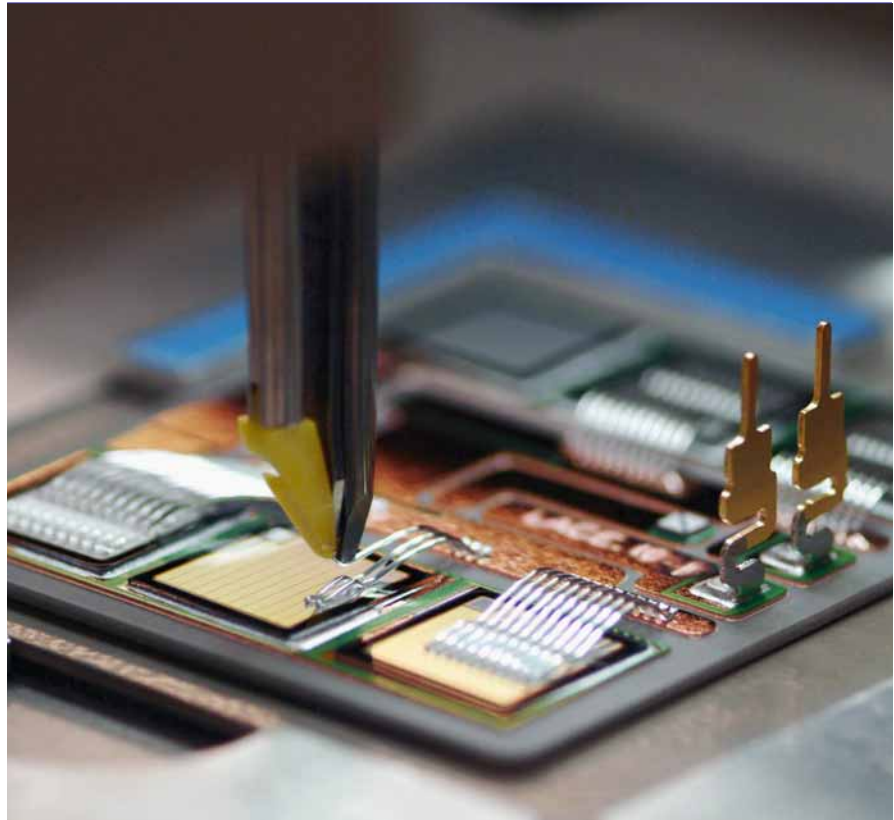
DAVILLA Werbeagentur GmbH
AT-6900 Bregenz/Austria

Disclaimer

The information contained herein reflects the views of the authors and is for informational purposes only. Readers should not act upon the information contained herein without seeking professional advice. We make publications available with the understanding that the authors are not rendering technical or other professional advice or opinions on specific facts or matters and assume no liability whatsoever in connection with their use. The companies of the ABB Group do not make any warranty or guarantee, or promise, expressed or implied, concerning the content or accuracy of the views expressed herein.

ISSN: 1013-3119

www.abb.com/abbreview



Power electronics

From tiny electronic cameras to powerful heaters, most electrical devices in our homes have an inscription somewhere that specifies their desired electrical supply in volts and hertz.

Usually, however, users take the charger or cable that came with the product and trust that this is securing the appropriate supply. It is maybe only when they seek a second charger for a phone or laptop that such details are verified. Just as these everyday devices need the right power supply to function optimally, so do electrical installations in all branches of industry and across the transmission and distribution networks.

Electricity is supplied and used at a broad range of different voltages and frequencies, with different combinations of these parameters being suited to different applications. Many of ABB's technologies are designed to convert or control electricity to permit the optimal operation of these applications. Variable speed drives, for example, must convert an input of fixed

frequency to a broad and continuously variable range of frequencies. HVDC bulk-transmission systems must maintain a fixed DC voltage but vary the current and its direction.

The ability to perform such conversions calls for a technology that is highly flexible and controllable but incurs low losses. In a power-electronic converter, solid-state units switch electricity at very high speeds to modulate the desired waveform. Progress in the voltages and currents that power semiconductors can handle and in the ability to control them is thus continuously opening up new applications for them.

ABB is involved in almost all aspects of power electronics, from the development and manufacture of the semiconductors themselves through converters and drives to grid control and special customer applications. The forthcoming issue of *ABB Review* will look into some of ABB's activities in this area.