Guest Editorial
Special Section on Industrial and Commercial Demand Response

NONRESIDENTIAL (industrial and commercial) customers have great potentials in providing flexibility for power systems through diverse demand response (DR) programs. Intelligent energy management can be carried out with DR in industrial and commercial facilities, especially if on-site control, information, and communication technologies are available, enabling also the inherent automation capabilities of heating, ventilation, and air conditioning systems. In the dawn of the Smart Grid era, with increasing distributed generation and the conversion of traditionally passive consumers to newly active energy players in the market, DR is being effectively considered for outage management and network reinforcement deferral.

The industrial and commercial potential of DR is not yet completely understood, especially regarding the emerging advanced technologies associated with the Smart Grid. Advances in smart meter technology that allow monitoring and controlling responsive loads in near real time will also be critical enablers of DR potentials. It can be more complex to implement DR for industrial loads if compared to residential loads mainly due to the reliability management that is more vital for industrial plants. An interruption of service may lead to stopping production or violating operational constraints of the plant. Industrial processes can be interdependent and correlated, which makes it difficult to divide and conquer separately. The reason is that several manufacturing processes are critically dependent on time and must be scheduled with high precision.

Despite these technical challenges, DR solutions, if properly implemented, can reduce costs related to energy consumption and increase renewable sources exploitation. This Special Section aims at providing a forum to discuss the most recent advances on industrial and commercial DR.

In response to the call for papers for this Special Section, 54 full papers were received and thoroughly reviewed, out of which 11 high-quality manuscripts were accepted (from USA, Italy, Australia, China, South Korea, India, Brazil, Germany, Iran, and UK) and included in this Special Section.

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We hope that you find this Special Section interesting and useful, serving also as a reference for future work in the field. Thank you.

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