

WEC Montréal 2010

ABB presenters and technical papers

ABB experts from all four corners of the world will be presenting technical papers and sharing their experience and expertise with the WEC conference community.

HVDC: A key solution in future transmission systems

Presenter: Olof Heyman, ABB in Sweden

Session: 1.5

Session name: Secure, efficient and clean energy systems across borders

Date/Time: September 13, 2010: 3:00 – 4:15 p.m.

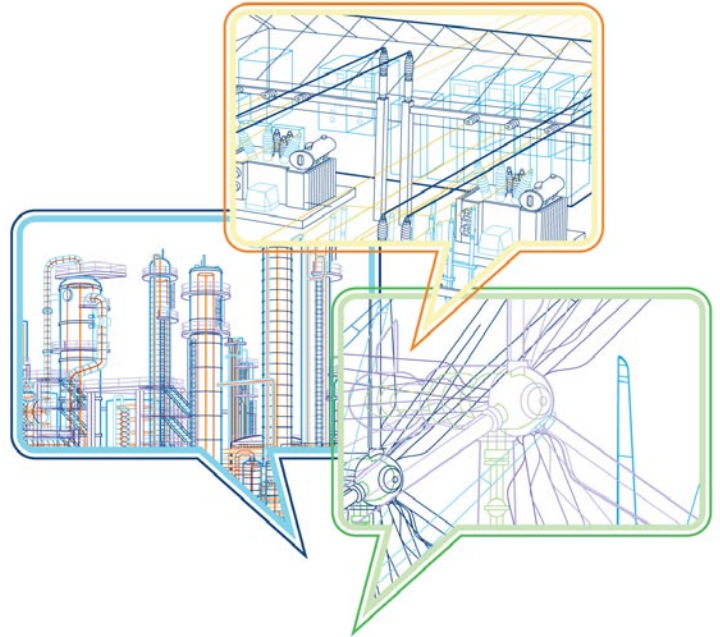
Paper: 237

Abstract: Utilizing HVDC links for long-distance transmission and for interconnecting HVAC grids is proven technology that has been in use for many years.

With the transition of power grids, based on sustainable generation, HVDC has become a key technology with several new applications. This includes connection of remote wind parks and strengthening of existing AC grids to cope with the introduction of renewable energy sources. In addition, traditional applications, such as bulk hydropower transfer and interconnections between regions, play a major role in our transition to sustainable generation and the associated grids.

With the increased number of applications, discussions are also underway to create DC grids for increased flexibility and reliability.

The technology for regional grids with a limited number of nodes is already in place and commercial projects have been commissioned (the Québec-New England project completed in the 1990s). For more extensive grids, development and verification are ongoing in parallel to industry standards being discussed in various groups, such as ENTSO-E and CIGRE.



Energy optimization and reduction of carbon footprint in cement manufacturing

Presenter: Andrew Wilson, ABB in Switzerland

Session: 1.5

Session name: Secure, efficient and clean energy systems across borders

Date/Time: September 13, 2010: 3:00 – 4:15 p.m.

Paper: 340

Abstract: Cement manufacturing is one of the most energy intensive industries worldwide. Furthermore, with the ratification of the Kyoto protocol and the drive to reduce CO₂ emissions the fact that the cement industry alone is responsible for 5% of all manmade CO₂ emissions has led to further focus on energy efficient production techniques. In this paper we examine some of the technologies that have been developed by ABB to assist cement manufacturers in meeting these dual goals of energy optimization and reduction of carbon footprint.

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Use of FACTS for enhanced flexibility and efficiency in power transmission and distribution grids

Presenter: Rolf Grünbaum, ABB in Sweden

Session: 1.6

Session name: Closer integration for infrastructure, adequacy and efficiency

Date/Time: September 13, 2010: 3:00 – 4:15 p.m.

Paper: 44

Abstract: This paper shows how the use of FACTS increases flexibility in power transmission and distribution, improving capacity of transmission corridors to integrate renewable power production. Examples include 69 kV directly connected SVCs for grid stabilization in conjunction with a high degree of wind power penetration; series compensation to evacuate power from the largest wind power installation in the USA; SVC to increase the reliability and reduce congestion over a heavily loaded power corridor; thyristor controlled series compensation to increase the dynamic stability and power transmission capability of a power inter-connector. Finally, some applications of dynamic energy storage are highlighted.

Challenges on wind power development in China

Presenter: Qianjin Liu, ABB in China

Session: 2.5a

Session name: Renewable and alternative energies in the global energy mix

Date/time: September 14, 2010: 3:00 – 4:15 p.m.

Paper: 185

Abstract: Wind power has experienced exponential growth in China in the past five years, exceeding the most optimistic expectations. The increasing penetration and aggressive future plan are arousing big concerns about its impact on operation and security of existing power networks. The wind resources are concentrated in the northern part of China where the AC grid is relatively weak and most of the generated electricity has to be sent to remote load centers through high voltage transmission lines. More regulations and technology developments are needed to guarantee a sustainable development of wind power. This paper introduces the present condition of wind power development in China and the challenges on both grid integration and regulations. Most of these challenges are economical in nature rather than technical. Feed-in tariff policies and grid code are the key countermeasures to harmonize the benefits of all stakeholders. Accurate wind forecast and economical mass energy storage are needed to guarantee compliance of wind power to the grid.

The energy efficient enterprise

Presenter: Bashir Ahmad, ABB in Canada

Session: 2.6

Session name: Energy efficiency: A new energy source and its metrics

Date/Time: September 14, 2010: 3:00 – 4:15 p.m.

Paper: 240

Abstract: Since rising energy costs have become a crucial factor for the economy of production processes, the optimization of energy efficiency is of essential importance for industrial enterprises.

Enterprises establish energy saving programs, specific to their needs, in order to strengthen their competitive ability. The most important elements of these energy efficiency programs are energy savings, energy controlling, energy optimization and energy management

This paper highlights the industrial enterprise approach to establish sustainable energy management programs based on the above elements. Globally, if organizations follow this approach, which was developed over several years working with clients on sites with a range of energy consumption processes, they can significantly reduce overall energy consumption and costs.

Energy efficiency: The Italian situation and opportunities

Presenter: Alessandro Clerici, ABB in Italy

Session: 2.6

Session name: Energy efficiency: A new energy source and its metrics

Date/time: September 14, 2010: 3:00 – 4:15 p.m.

Paper: 200

Abstract: This paper reports on the results of a study led by Confindustria (Italian Federation of Industrial Associations) on the Italian situation with respect to energy efficiency policies and their effective implementations. The study is being continuously updated with the contributions of ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) and ERSE (previously CESI Ricerca) and highlights the obtainable savings through efficient technologies now already available for applications in the final uses of energy for both the industrial, commercial and domestic sectors.

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ABB presenters and technical papers

Powering oil and gas offshore operations

Presenter: Asmund Maeland, ABB in Norway

Session: 3.1

Session name: Full life cycle – the only reliable framework for impact assessment

Date/Time: September 15, 2010: 3:00 – 4:15 p.m.

Paper: 53

Abstract: This paper describes principal power from shore (PFS) technologies available today, highlights their key attributes, and discusses cost-benefit aspects of these emerging solutions in comparison to decades of gas turbines generation offshore.

Effectively reducing emissions from ports

Presenter: Marquart Knut, ABB in Switzerland

Session: 3.3

Session name: Road map to efficient energy policies

Date/time: September 15, 2010: 3:00 – 4:15 p.m.

Paper: 233

Abstract: Commercial ships calling at more and more ports worldwide can now turn off their diesel engines and tap into cleaner energy sources provided by electrical connections from shore. The technology to make this possible has been in place for over a decade. With a global technology standard due to be ratified by three technical bodies in 2010, high-voltage shore connections will soon get much more attention. Environmentally-minded ports, governments and shipowners are all tuning in to the benefits of supplying electricity to ships at berth. ABB presents the challenge, the technical solution and the business case for all parties involved.

Additional technical papers written by ABB experts that will be available during the WEC.

Improving energy efficiencies in today's manufacturing environment

Author: Marc Leroux, ABB in the U.S.

Paper: 404

Abstract: In today's manufacturing environment, there is a strong recognition of energy management as a significant source of both social responsibility and cost savings. Energy typically represents the single largest controllable cost in manufacturing, and is under constant scrutiny by all levels of management.

The challenge with any discussion of energy management is that it means many things, and dialogue on the topic is based on the role and expectations of the parties involved. Without having a clear understanding of the topic area, and the expectation of the audience, a discussion may evolve into

different directions than expected. For example, improvements in energy management to an engineering manager could easily be understood as the replacement of an oversized motor with an energy efficient variable speed drive, while a plant manager would expect to hear about savings in the overall amount of energy consumed by his facility. In this paper we will examine the overall role and components of an energy management strategy, focus on the benefits of looking at energy management from a business perspective, and then examine the role that an effective program, either existing or new, can play in a collaborative manufacturing environment, and how these improvements can reduce energy requirements while maintaining, or improving productivity.

Power quality results in energy efficient aluminium smelter operation

Author: Max Wiestner, ABB in Switzerland

Abstract: New aluminium smelters consume up to 2400MW of electrical energy making the energy efficiency aspect most important. Power quality, optimised power conversion systems and well engineered power plant interfaces are essential for highest energy efficiency. An early optimisation of the power system design will reduce the capital investment cost for the power plant and smelter substation as well as increase energy efficient aluminium production. Electrical energy accounts for 30 to 40 per cent of the aluminium production costs. This paper describes the possible power quality improvement concepts and designs as well as energy cost reduction opportunities that a high power quality system can achieve.