



Realizing the Promise of DC Technology Conference  
"Energizing" Low-Income Communities  
4th–5th October 2013, Prague, Czech Republic

Organized by:



PRESS RELEASE

## **Direct current (DC) will replace alternating current (AC) in the future, participants at an international conference in Prague conclude**

**Prague, 14th October 2013 –The use of direct current (DC) is the future of energy sustainability and has the potential for improving the conditions of disadvantaged communities around the world. The statement which many would have considered impossible only a few years ago was the main idea behind the international conference that took place on September the 4<sup>th</sup> and 5<sup>th</sup> in Prague, organized jointly by the Business of Humanity® project of the University of Pittsburgh and Nupharo, an emerging technological park specializing in DC in the Ústí region of the Czech Republic, which hopes to attract start-ups and innovators around the world to develop further the idea and implementation of DC.**

The international DC conference held on October the 4<sup>th</sup> and 5<sup>th</sup> in the Boscolo Hotel in Prague, the Czech Republic, was the beginning of the series of conferences focused on the future implementation of DC technology and the way it can help energize the low-income communities, and how these new technologies can support and stimulate green local power generation.

The conference, held jointly by Nupharo and the Business of Humanity® project of the University of Pittsburgh, Katz Graduate School of Business, attracted a great number of professionals from three continents and various fields including, business and industry, universities, and government, in pursuit of creating a global community interested in the development of DC technology.

“Our goal has been to create a transnational alliance that can enable and accelerate the use of efficient and green DC technology in communities across the world,” said Jana Ryšlinková, board member of Nupharo. “The task of Nupharo is to facilitate the meeting of innovators, experts from universities and government representatives and implement this technology to the users.”

According to available research, DC can play a pivotal role in helping disadvantaged communities especially in the third world, as it can help cut electricity usage by 30 %. DC can also facilitate bringing locally generated, green electricity to isolated communities which the AC grid does not reach or serve well. In this way, DC power is already in use, for example in rural India, because the national AC power grid does not reach these communities.

New smart DC microgrids can effectively integrate local power generation with the main power grid, buying and selling power to minimize energy costs to the final consumer, making the efficiency and sustainability benefits of DC power also available to communities in developed economies. According to participants at the conference, the potential is enormous. Also, the most significant new consumers of electric power today are at the “apex of the pyramid,” the companies which operate computer data centers and server farms. They need DC power because electronics require DC power. “Growth in the use of DC is inevitable,” said University of Pittsburgh professor John C. Camillus. “All electronic devices – computers, phones, TVs, LED lights – rely on DC and must have converters to turn the AC in wall sockets into DC. A great deal of energy is lost in this conversion. Also DC motors, lighting and appliances are more energy efficient than their AC counterparts. Renewable sources of energy work best with DC. So, implementation of DC will lead to energy savings and environmental benefits for communities, and profits for business and industry that support DC power.”



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The idea of cutting energy waste was also developed by Nupharo's guest Dutch professor Ad van Wijk from Delft University of Technology. "If we generate the electricity in our solar cell system we have to convert it from DC to AC grid. Then when we want to store it in our car battery, we will have to convert it back from AC to DC. If we then want to use some of the electricity in the battery for something else, it will have to be converted again from DC to AC. And then for the LED lighting, it will be converted yet again from AC to DC. This example comprises 4 conversion steps, resulting in an energy loss of around 10-20%. But that's not all; we will also need expensive inverters to realize all these conversions. These are costs that we can avoid."

When speaking about the future of DC, Ad van Wijk went even further in predicting the gradual decline of AC. "It might take decades to happen, but at the end of the day, nothing from the production or consumption side will be AC," said van Wijk.

Some of the speakers also mentioned the importance of proper communication with the wider public. "There is always a combination of technical and social challenges. It is necessary to educate at all levels to accelerate the utilization of DC power," said professor Ravi Madhavan from the University Of Pittsburgh's Katz Graduate School of Business, stressing the necessity of persuading the public of the advantages of DC.

The delegates of the conference formed working groups to further develop the idea of expanding the use of DC. The groups dealt with topics such as the local generation of DC power, designing households powered by DC, strategies for bringing about the shift to DC, and the potential contribution of DC technologies for the economy and employment.

For more than 100 years, the worldwide standard for distribution of energy has been AC. However, a good number of scientists and engineers point to the advantages of DC these days. Most importantly, it is recognized for its higher efficiency and compatibility with local and renewable sources of energy. Users such as computer data centers, which require large amounts of reliable energy, are shifting to locally generated DC power. Regions with low income communities, with limited or virtually non-existing access to national electric power grids might be the first to benefit from the above-mentioned advantages of DC. Their experience will facilitate the implementation of DC power in more developed contexts.

"The Business of Humanity® project's DC initiative is intended to support the objective of building business models and strategies that integrate societal benefit with economic benefit," said University of Pittsburgh's Swanson School of Engineering professor Bopaya Bidanda, one of the project's founders.

Nupharo group, the co-organizer of the conference, is building a technological park and campus with a specialization in DC in the Ústí region in Northern Bohemia. The facilities of Nupharo Park, which is due to be completed in 2014, will be offered to both established companies and start-ups. Interested companies and investors are eligible for the EU grants (Operational Programme 'Enterprises and Innovations') to finance their business. The total amount of money available is 800 million euro (approximately 20 billion Czech crowns). Thanks to its unique concept, Nupharo Park has already attracted a good number of strategic partners, including companies like ABB, CISCO, E.ON, GE and PHILIPS.



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### **Nupharo Park**

Nupharo Park, a technological park and a campus currently under construction, will not only serve as a business incubator and an innovation centre, but also as a platform to create a community of the most competent experts from all over the world. The main goal of the project is to commercialize new ideas and innovation in smart energy technologies, focusing on DC. Nupharo provides not only rental space for companies, but its main service consists in supporting the new ideas with finance and consulting about the commercialization of technological achievements. The technological park, planned to be completed in 2015, will be located in the Ústí region on the D8 highway, thus having a perfect position between Prague and Berlin and consequently many other European cities. Among the most important partners of the project are ABB, CISCO, Phillips, E.ON, Dimension Data, DNV GL and others. The project is co-financed by the European Union through the European Regional Development Fund, Operational Programme 'Enterprises and Innovations'. Besides partnerships with technological companies, Nupharo collaborates with various universities both from the Czech Republic and abroad, including the University of Pittsburgh, the Delft University of Technology, the Czech Technical University and others.

### **Business of Humanity®**

The Business of Humanity® Project ([www.katz.pitt.edu/boh](http://www.katz.pitt.edu/boh)) was founded by John Camillus and Bopaya Bidanda. Camillus is the Donald R. Beall Professor of Strategic Management in the Katz Graduate School of Business, University of Pittsburgh, and Bidanda is the Ernest E. Roth Professor and Chair of Industrial Engineering in the University of Pittsburgh's Swanson School of Engineering. They lead a multidisciplinary team of researchers in exploring a new frontier in capitalism. Pitt's Business of Humanity® Project has drawn upon actual case studies and business examples from Brazil, the Czech Republic, India, Russia, and the United States to create a model for optimal business and economic performance that includes benefits for workers, the community, the environment, and other stakeholders. The project probes what happens when firms incorporate concepts such as humaneness and humankind into their strategies for success. The Business of Humanity® Project offers a theoretical academic framework and a practical global business focus that build social responsibility into business models as a way of making greater and more sustainable profits.

### **University of Pittsburgh / Katz Graduate School of Business / Swanson School of Engineering**

The University of Pittsburgh is one of the oldest and most prestigious universities in the United States. 35 thousand students enroll every year and the university is a key center of scientific research, encompassing more than 400 different study programs on 16 faculties. The graduates and professors of the University of Pittsburgh include not only the Pulitzer Prize and Nobel Prize laureates, but also the first scientists to synthesize insulin and develop a vaccine for polio.

Joseph M. Katz Graduate School of Business is one of the most important schools of the University of Pittsburgh. It is led by world-renowned, broadly-cited professors. Its representation in Prague provides programs of management education for the whole CEE region. Its Executive MBA Worldwide program, the highest rated program in the Czech Republic, aims at preparing experienced managers for the role of global leaders. It has been continually recognized as one of the top 100 programs of its kind globally. It



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also has the accreditation provided by the AACSB International, which is internationally recognized as the gold standard in the certification of business schools.

The Swanson School of Engineering at the University of Pittsburgh in Pittsburgh, Pennsylvania has a strong engineering legacy built on the traditions of Pittsburgh's industrial past and is recognized for its world-renowned faculty, outstanding students, and cutting-edge research. The University of Pittsburgh Center for Energy is one of the 4 research centers housed in the Swanson School of Engineering that is dedicated to improving energy technology development and energy sustainability. The center was created in 2008 to bring together energy innovators across a range of engineering and academic disciplines and to develop stronger collaborations with energy industry partners in Western Pennsylvania

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