SMART POWER GRIDS
CONSORTIUM – POLAND

Development of Innovative Power Grid Technologies

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Smart Power Grids Consortium - Poland

Polish Science Contact Agency – PolSCA, Smart Energy Network
Brussels, May 5th, 2011

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Wrocław University of Technology

„The necessity of investment in smart grid came up as a result of several factors:

- substantial danger of blackouts,
- expectations associated with the penetration of renewable sources,
- growing customers expectations of the reliability of electricity supply systems.

The public and the authorities began to insist a power sector to ensure regular and reliable supply of energy. Very important is also the climate and energy policy of the EU.”

Bartosz Wojszczyk, GE Energy

Source: www.wnp.pl

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Agenda

- Smart Grids deployment in Poland
- Memorandum about establishing the theme of intelligent electricity networks (Smart Power Grids) as one of the main topics of Polish Presidency of the European Union
- About Smart Power Grids Consortium - Poland

Polish Energy Market – regulations

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Start date	Min. energy consumption to get the right to choose a supplier	# customers with free choice of energy supplier
September 1998	above 500 GWh	12
January , 1999	above 100 GWh	80
January , 2000	above 40 GWh	276
January , 2002.	above 10 GWh	1.200
January , 2004	above 1 GWh	~ 6.000
July , 2004	industrial customers	~ 1.700.000
July , 2007	all customers	~ 15.000.000

Poland has been gradually deregulating its power market since 1998, it is still in transition.

Is there a competition in energy sales in Poland?

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Three years have passed already since the release of energy prices in Poland and the competition is evident. In the case of small and medium-sized businesses the competitive fight began this year. Most of the Polish energy group has already discounted offers to this market segment. What's more, the offer is dedicated not only to customers from their own terrain, but also in the area of competition. And that is certainly only the beginning of the fight to the end customer.

#customers who changed their energy supplier	EOY 2009	EOY 2010
industrial	1.537	8.280
residential	906	1.313

Source: URE, Warsaw January 2011

Smart Metering Projects Overview

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The distribution companies financed all pilot projects from its own resources. Lack of support from the government level is not pushing them for large investments.
As a result, distribution companies may begin to impose costs the end customer, increasing the charges for electricity instead of the projected cost reduction.

Company	# meters installed EOY 2010	# industrial to be served EOY 2014	# residential to be served EOY 2014	Investments [EUR]
Energa (Gdańsk)	18.000	300.000	2.500.000	250 millions
EnergiaPro - Tauron Group (Wroclaw)	8.500	n/a	20.000	2,5 million
PGE Dystrybucja (Łódź, Białystok)	3.300	n/a	50.000	n/a

AMR Deployment in Poland

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The consultation to the position of the Polish National Energy Regulatory Office (URE) on the proposals for AMI was announced (March 2011). URE standpoint includes: postulated system architecture, split of tasks and responsibilities, the mechanism of redistribution of benefits.

www.ure.gov.pl/portal/pl/424/3926/Stanowisko_regulatora_w_sprawie_niezbednych_wymagan_wobec_inteligentnych_systemo.html

Year	# smart meters to be installed in Poland 2011-2020 [pcs]	
	Per year	Accumulated
2012	1 203 419	1 203 419
2013	1 363 873	2 567 292
2014	2 406 839	4 974 131
2015	3 209 117	8 183 248
2016	3 048 661	11 231 909
2017	1 604 558	12 836 467
2018	1 604 559	14 441 026
2019	802 279	15 243 305
2020	802 279	16 045 584

Source: Hewlett Packard: „Building and reconciliation of Polish metering market model and demand management including business models", Warsaw 2010

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Greatest blackouts in the last decade

- 1999 – Brasil – 90 million people
- 2003 – USA – 50 million people
- 2003 – Italy – 56 million people
- 2005 – Russia – 10 million people
- 2005 – Indonesia – 100 million people
- 2006 – Germany – 10 million people
- 2007 – Columbia – 80% of the country

- **April 8th, 2008 – Poland, Szczecin**

The current situation in Poland in relation to the European Strategy 2020

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- 50% increase of electrical energy demand in the next 20 years.
- Network infrastructure is now obsolete in most established from 30 to 50 years ago, and infrastructure growth is half slower than the growth in energy demand.
- Energy losses in transmission and distribution networks reach 6 - 9% of total energy produced.
- Increase of efficiency in energy use should reach 20% over the next 10 years
- An increasing threat of power system failures (blackouts), which is caused by, among others by natural disasters (global warming), terrorism and poor coordination in the field of control and security.

New opportunity – Smart Infrastructure

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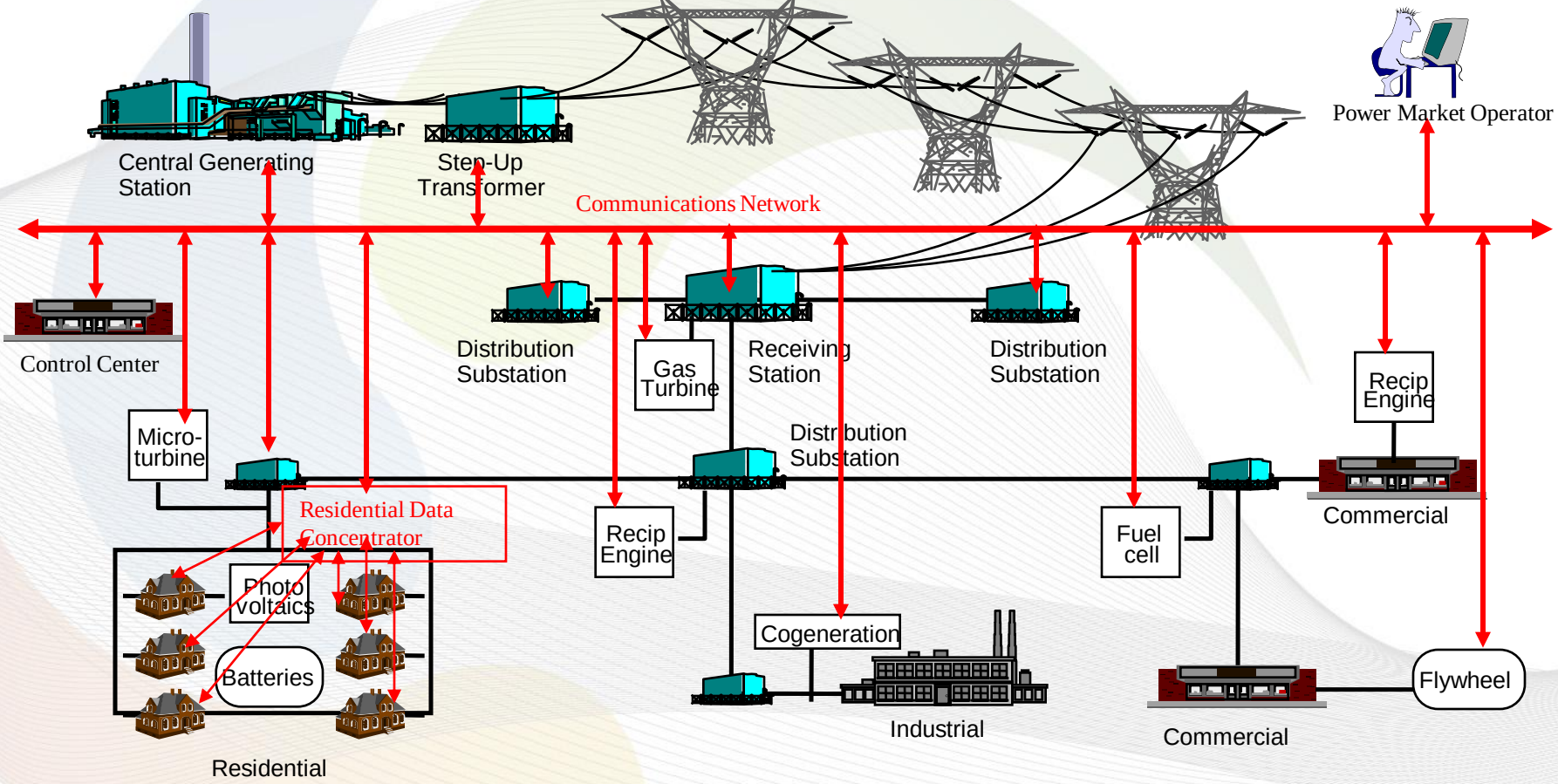
- Smart electricity grid built on requirements of renewables, microgeneration and smart metering
- Sensor networks play a greater role, with business opportunities for Polish firms
- Improved communication infrastructure cannibalize existing networks
- Monitoring (data acquisition and simulation of possible incidents.)
- Business Intelligence supports decision makers (adaptive and intelligent decision making algorithms.)
- Emergency control (intelligent control of generation, intelligent transformer tap changing control, intelligent load shedding and islanding.)

Goal: System Integration and Interaction



Source: WROCLAW UNIVERSITY OF TECHNOLOGY

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Memorandum

about establishing the theme of intelligent electricity networks (Smart Power Grids) as one of the main topics of Polish Presidency of the European Union

„The technology of smart electricity grids as the most effective way to reduce electricity consumption, to ensure the safe delivery of this energy and to integrate renewable energy sources. Poland is particularly threatened in the generation and transmission of electricity. Poland has an excellent both academic and technical staff and could become a European leader in the application of smart power grids technology."

Resolution No. 2 / 2011 of the Programme Council
Smart Power Grids Consortium – Poland, April 1st 2011

Consortium Foundation

The Consortium Smart Grids - Poland was established at the Wroclaw University of Technology, on the 3rd of November 2010. The declaration on establishing new organization, consisting of scientific and economic institutions, was signed by **Honorable Founding Committee** members: **Mariusz Swora**, president of Energy Regulatory Office, **Anna Strezynska**, president of the Office of Electronic Communications and **Jan Raczka**, president of National Fund for Environmental Protection and Water Management and **Mateusz Morawiecki** - President of Bank Zachodni WBK Management Board.
The leader of the Consortium is the Wrocław University of Technology.

Consortium Members

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The Consortium has open character, i.e. it is possible for new entities to join and become Partners, the decision on accepting new entities will be made by the Consortium Leader after seeking the opinion of the members of the Honorary Founding Committee.

Consortium Programme Council

In the Programme Council there are the representatives of all Consortium Partners.

The Programme Council supervises the activity of the Consortium Office and the activities of the Consortium undertaken to achieve its goals.
As at March 28th, 2011 Program Committee consists of 14 Members.

President of the Programme Council
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Present Consortium Activity

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- the development of smart power grids used for power transmission and distribution as well as optimization, security and control tools, the establishment of the basic development directions of the network and its technical parameters
- identifying the sources and establishing the rules of applying for relief funds for R&D projects
- educational, standardization and conference activity
- staring up the Postgraduate Studies Department “Smart Power Grids” in 2011;
- preparing and organizing a conference on the standardization and evaluation of the state of work on SmartGrid in Poland

Consortium Projects Examples

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Project Name: **Monitoring of of power grids with the participation of renewable energy sources in the Lower Silesia**

Submitted by: Institute of Electrical Power Engineering, Wroclaw University of Technology

Project Name: **Communication standards development for passive systems of data acquisition.**

Submitted by: Sygnity

Project Name: **Smart Metering implementation platform.**

Submitted by: IASE

Consortium „power teams”

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SCIENCE **BUSINESS** **TELCO** **AUTOMATION**

A Power Team is a group of companies which work with the same project but do not take business away from each other.

Project Management Office (PMO)

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This unit of Consortium Office wil define and maintain the standards of process, generally related to project management, within the organization. The PMO will be the source of documentation, guidance and metrics on the practice of project management and execution.

The PMO will carry out all the documentation projects, including plans and reports, requests for changes, etc.

collecting and consolidating reports from technical units, preparing reports for the Project Management Team,

financial accounts, with external suppliers and customers (in close co-operation with Project Managers)

Consortium Education activity

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Smart Power Grids Postgraduate Studies will start in the academic year 2012-2013. There will be particular emphasis on engineering education from the perspective of understanding the goals, rules and practical realizations of the smart grid as well as offering a platform for experience exchange and norm coordination. In the diploma work, students, supervised by promoters, will prepare a study of a selected issue – preferably, if it is possible, connected with the enterprise in which they work. The studies will have didactic and practical character and will be meant for medium and top-level managerial staff as well as the engineering staff of professional power industry, power departments in industrial enterprises and IT companies serving the power sector.

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Thank You for your attention!

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