



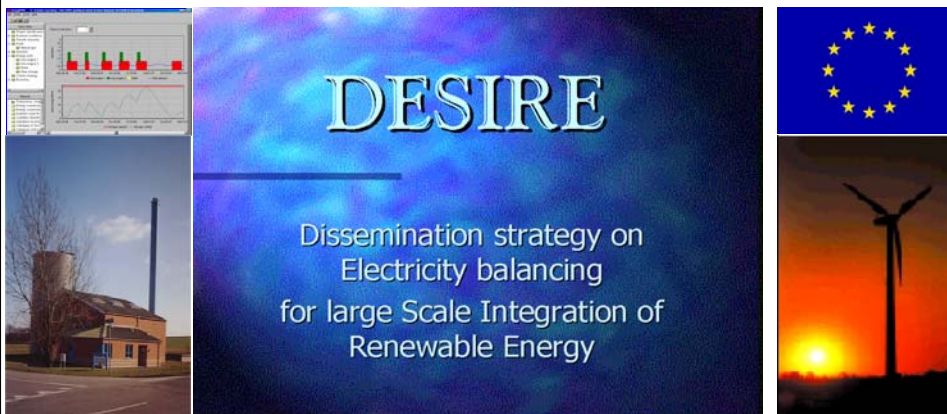
Reporting on dissemination activities carried out within the frame of the DESIRE project (WP8)

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Title of dissemination	Where Will Desire get us
Type of activity	PowerPoint Presentation
Title of forum	DESIRE dissemination conference
Language	English
Date of dissemination	9 th Nov 2005
Place of dissemination	Birmingham, England
Brief abstract / description of dissemination activity	This event spread information about the aims of the DESIRE project and use of thermal stores in integrating renewables into the grid and also improving CHP economics
Audience	Many CHP opinion leaders attended this even and knowledge of thermal stores has been spread widely
impact assessment	
Dissemination	Included after this form

Where will DESIRE get us?

Dr David Toke, Senior Lecturer,
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The central graphic features the word "DESIRE" in a large, blue, serif font against a dark blue, starry background. Below it, the text "Dissemination strategy on Electricity balancing for large Scale Integration of Renewable Energy" is displayed in a smaller, white, sans-serif font. The graphic is flanked by four images: a software interface with a bar chart (top left), a photograph of an industrial building with a tall chimney (bottom left), the European Union flag (top right), and a silhouette of a wind turbine against a sunset (bottom right).

Energi- og Miljødata Institut für Solare Energieversorgungstechnik EMD Deutschland
LABEiN Technological Centre in Bilbao Warzaw Technical University

Having no wind is not a great problem



What can we do when there's too much wind?



Options for balancing

- Turn off some windmills
- Turn off a lot of conventional power stations
- Build bigger electricity inter-connectors
- Use CHP to balance wind power

How balancing works

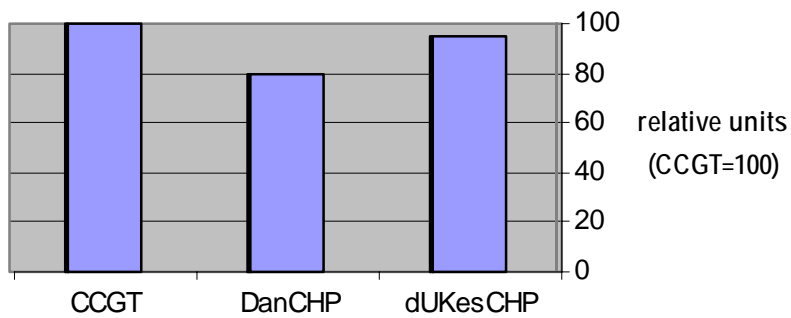
- When there's too much wind.....store heat in accumulators
- When there's not enough wind.....pump heat into accumulators



Picture of CHP unit with two heat accumulators (thermal stores) on left

Danish Gas CHP reduces CO2 emissions a lot better than CCGTs

CO2 emissions: CCGTs compared to Danish and UK statistics on gas engines



How to get a lot more good CHP

- Feed-in tariff for good quality CHP
- Set up good quality CHP obligation
- Make good quality CHP mandatory for next 5 or ten years
- Make good quality CHP mandatory for all new buildings (where gas is available)

How does balancing help in the short term?

- (1) CHP plant can co-operate to bid for the short term operating reserves market, utilising thermal stores

How can balancing help in the short term?

(2) It can reduce BETTA penalties if CHP and windfarms co-produce

Country	Tariff in p/KWh	Average capacity factor (%)	Annual Return per installed MW (£)
Germany	5.5(declining)	18	87,000
United Kingdom	5.0 (15 yr contract)	28	123,000
	6.0 (10 yr contract)		147,000
	8.0(annual contract)		172,000
Spain	4.5	28	110,000



In 2011 the Conservatives might be in office, and they may reduce prices for onshore wind.....

Country	Tariff in p/KWh	Average capacity factor (%)	Annual Return per installed MW (£)
United Kingdom 2005	5.0 (15 yr contract)	28	123,000
	6.0 (10 yr contract)		147,000
	8.0(annual contract)		172,000
United Kingdom 2011	4.0 (15 yr contract)	28	98,000
	4.5 (10 yr contract)		110,000
	5.3(annual contract)		130,000

In 2011 an extra £3-4/MWh might come in quite handy for wind power developers (through reducing BETTA penalties on intermittency)

