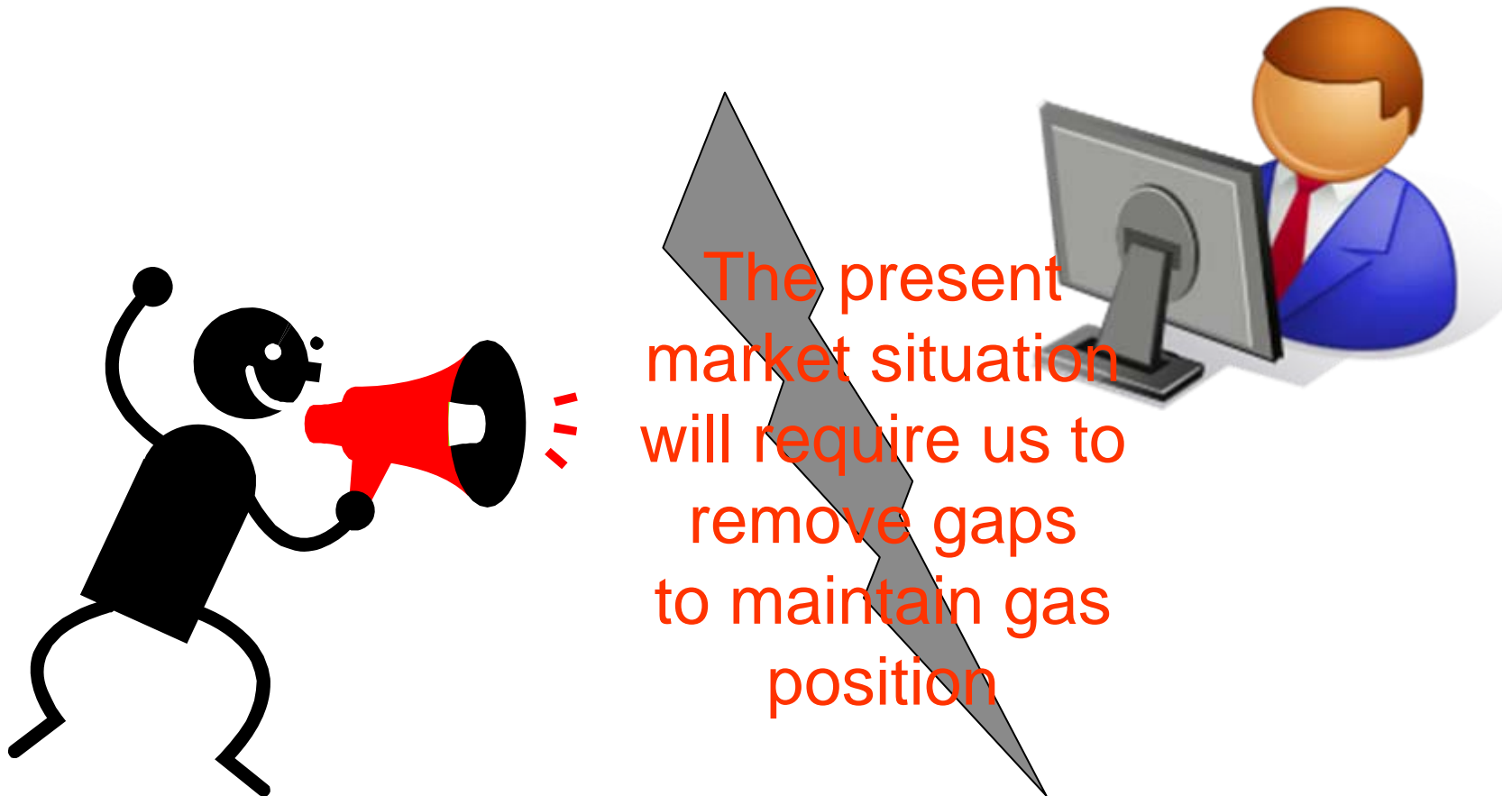


Implementation of new technology into the gas market

Jean Schweitzer
DGC

Next generation of appliances - is there a gap between marketing and technology?: *Case study mCHP*



The present market situation will require us to remove gaps to maintain gas position

Domestic & commercial situation



- Heat demand is decreasing, making traditional technology too expensive (e.g.: Central Heating boiler (CH) in the new building sector) and thus un-adapted to the new situation.
- Our competitors are introducing new products that are better than ever (e.g. el. heat pumps, wood pellet boilers) and are taking over gas market shares.
- Renewable energy is developing strongly (see the 20/20/20 EU plans), which can be both a threat and an advantage for natural gas.
- Gas is now considered just another fossil fuel. The conscience for carbon print and global warming is increasing, the trend for renewables is here.

Present gas market in danger!

ECO design of CH boilers, VHK 2008 (www.ecoboiler.org)

The recommendations...

- minimum requirements 2013 (space heating) -

Class	Limit	Examples
A+++	>120%	Vertical el. GSHP Best Gas Abs. HP
A++	>104%	Gas-fired Abs. HP Hor. El. GSHP
A+	>88%	Best condens+ solar Vent. Air HP
A	>80%	Best condens Outside Air HP
B	>72%	Avg. Condens. Outside Air HP
C	>64%	Best LT Heating Condens.
D	>56%	Avg. LT Best gas + solar
E	>48%	Low end LT Best gas + solar
F	>40%	Avg. atmospheric Electric resistance
G	>40%	Low end atmospheric

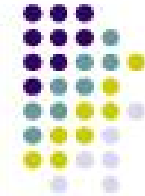
Ca
50 M
CH
GAS
boilers

Heating with CH boilers = 90 % of gas sales in the Residential and commercial sectors!

Present gas market in danger!

The recommendations...

- minimum requirements 2013 (space heating) -



Class	Limit	Examples	
A+++	>120%	Vertical el. GSHP	<i>Avg. lifetime of boiler = 15 years</i> Best Gas Abs. HP
A++	>104%	Gas-fired Abs. HP	Hor. El. GSHP
A+	>88%	Best condens+ solar	Vent. Air HP
A	>80%	Best condens	Outside Air HP

EU: 50 M Gas boilers 2013

EU: 25 M Gas boilers 2020

El Heat pump

Gas Heat pump

Gas + solar

mCHP
ecopower

**We need new technologies:
Are we ready?**

We need new and competitive technologies!

WANT:

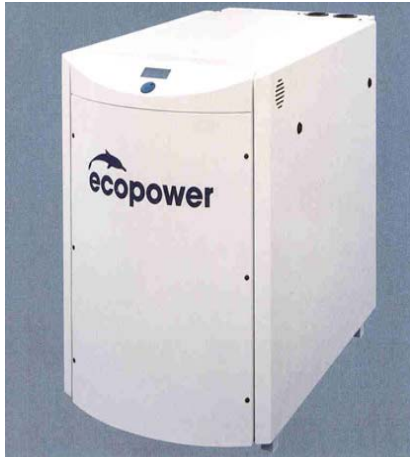
Appliance that can offer new services (electricity generation, cooling etc.)

Appliances that possibly combines gas & RE

Heat pump

mCHP

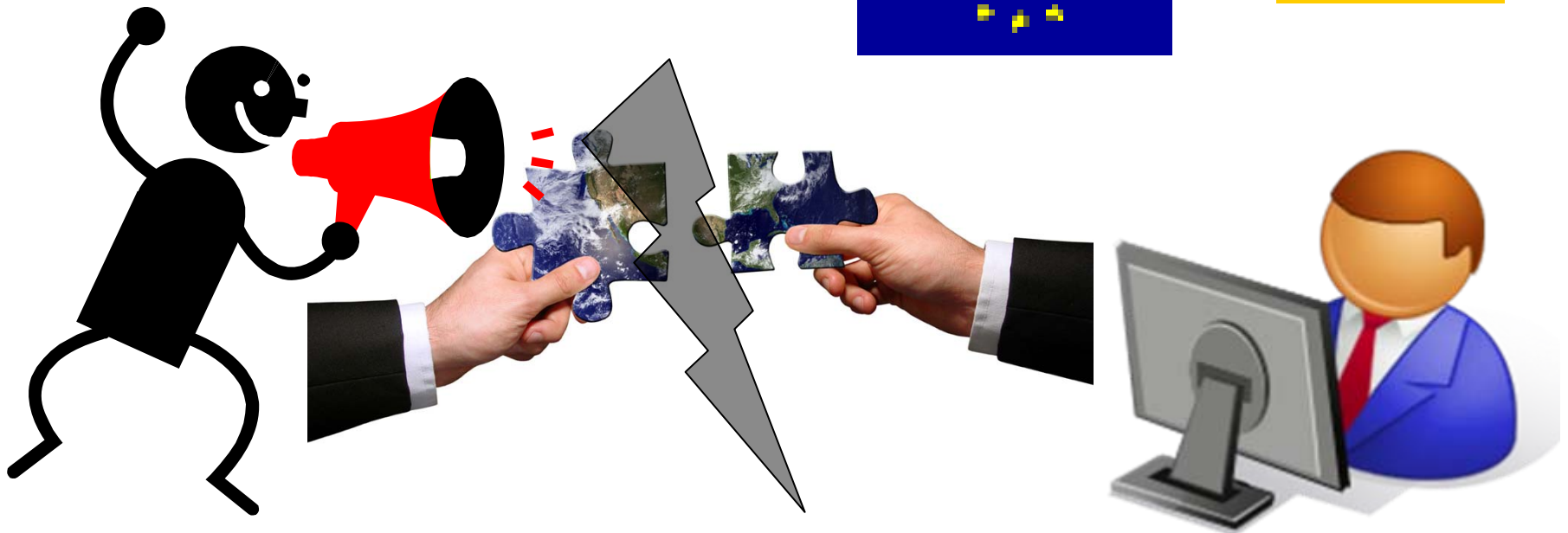
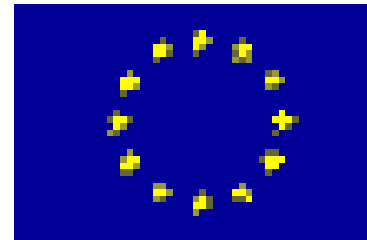
CH boiler + solar



The long way to market integration

	Industry	Gas industry			Authorities	
	Manufacturers	R&D	Lobby	Marketing	CEN	EU/ Gov
Technology Availability						
Research	█	█				█
Standardisation	█	█	█		█	█
Reliability						
Field test	█	█				█
Diversity						
Production of different models	█					
Economy						
Purchase cost	█			█		
Running costs	█			█		
Incentives				█		█
Packages			█	█		
CO2 taxation			█			█
Popularity						
Information	█	█	█	█		
Proofs of performances. Models	█	█	█			
Proofs of performances. Tests	█	█	█			
Labelling	█	█	█	█	█	
Installation						
Education	█	█	█			

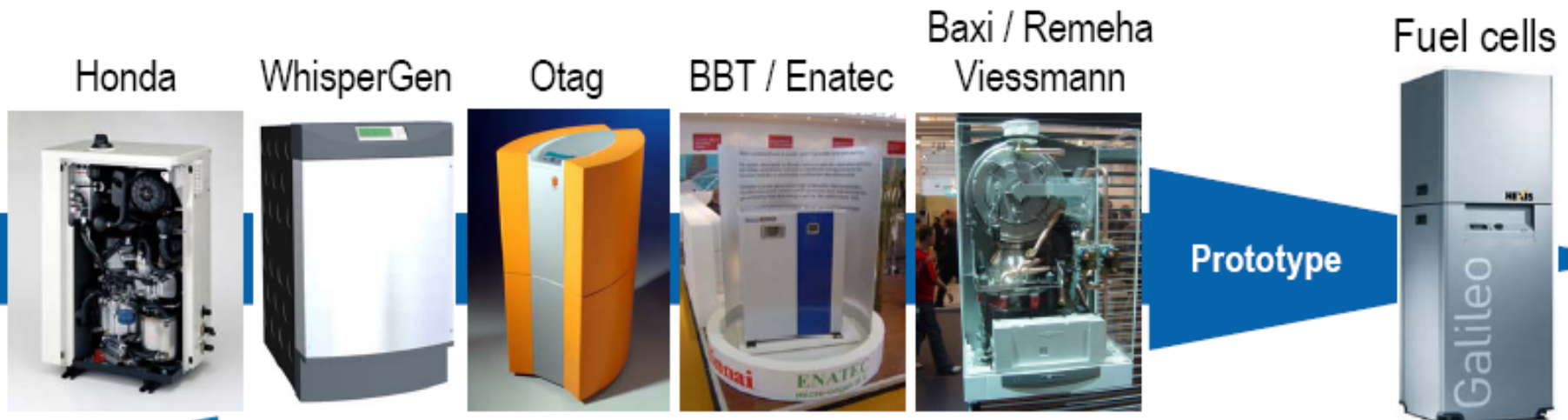
Collaboration needed on several fronts !!!!



IGRC 2008 Jean Schweitzer, Danish Gas
Technology Centre

CASE STUDY: mCHP

- MCHP is seen by many as the technology that will enable gas to stay on the heating market.



mCHP Platform

Goal: accelerate the integration of those technologies into the market.

- 1) Establishing a joint mCHP voice / representation to the EU.
- 2) Co-ordinating and organising various actions (technical, standardisation, marketing, lobby) within and among the members.

For any enquiry please contact:

- Jean Schweitzer (IGU WOC5), jsc@dgc.dk
- Daniel Hec (MARCOGAZ), daniel.hec@marcogaz.org
- Terry Williams (GERG), terry.williams@advantica.biz

Organised by: Marcogaz, IGU, GERG
Supported by: Eurogas, ASUE
Sponsored by: Gaz de France



mCHP technology check list

Performance standard, CEN,
integration in ECO design.
Test methods

The product shall be developed
and found on the market

Field tests

The product shall be safe, efficient
and reliable

More developments!!

Many models sizes and colors!

Too expensive!

Purchase & Running Cost

Is not

Technology is known & recognized

Can they?

Installer can install the appliances

The product shall be developed and found on the market

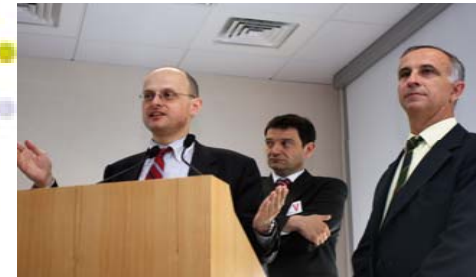
The recommendations...

- minimum requirements 2013 (space heating) -

Class	Limit	Examples
A+++	>120%	Vertical el. GSHP
A++	>104%	Gas-fired Abs. HP
A+	>98%	Best condenser solar
A	>92%	Best condenser solar
B	>84%	Best LT
C	>76%	Avg. LT
D	>56%	Avg. LT
E	>48%	Low end LT
F	>40%	Avg. atmospheric
G	≤40%	Low end atmospheric

We have a gas appliance that may compete with el. heat pump

mCHP



mCHP PF first success:

Inclusion of mCHP in the coming ECO design scheme

PF is already considered as the voice of the industry

Purchase & Running Cost

Finding new ways to bring the technology on the market?

Collaboration with Stakeholders

<With House builders>
Sekisui House Ltd. PanaHome Corporation

<With Local Community>
Onoden Elementary School in Musashino-shi

<Urban Renaissance Agency>
Heart Island Shinden Sambangai
(Residents coming in December 2006)
FC installed in 3-bedrooms with living room and Kitchen type (35 blocks in total)



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New marketing models

- mCHP in Energy services contracts?
- Renting appliances
- Combination with PV in small-scale heat & power plants
- Etc.

Update on CHP Contract with British Gas

June 2008

IGRC 2008 Jean Schweitzer, Danish Gas
Technology Centre

Technology is known & recognized

Marketing examples: CO2 & cost



CO2 & cost, but what about other aspects?



CHP Consumer Benefits

	Compared to a high efficiency condensing boiler	Compared to a low efficiency non condensing boiler
Annual reduction of CO ₂ emissions	1 – 1.5tonnes	2 – 2.5tonnes
Example annual savings of total energy bill	£274	£396

Assumptions:

- Typical British Gas customer with annual electrical demand of 4,080kWh
- Based on typical 2007 UK energy prices

Installed boiler stock in UK homes (2008 est.)

- 5 million – Condensing
- 17 million – Non-condensing

KORT FORTALT

Technology is known & recognized

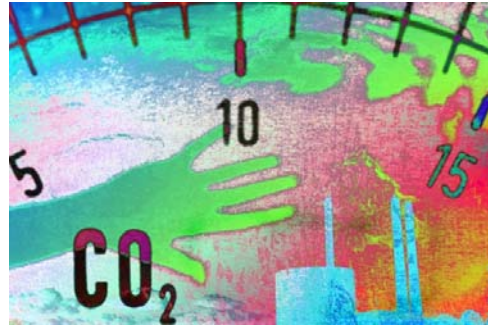


HOW TO COMMUNICATE about mCHP?

STRONG NEED FOR MARKETING

- Appropriate terminology: **mCHP?** In Germany: “Strom erzeugende Heizung” “Power generating heating system“
- Is the argument of having a power station at home a positive one?
- How can the customer show he is contributing to global warming reduction?
- mCHP as bridge to Renewable Energy via future combination of fuel cell & H₂?
- Etc.

CO₂ one of the main argument for mCHP to convince the deciders



IGU Efficiency Indicators

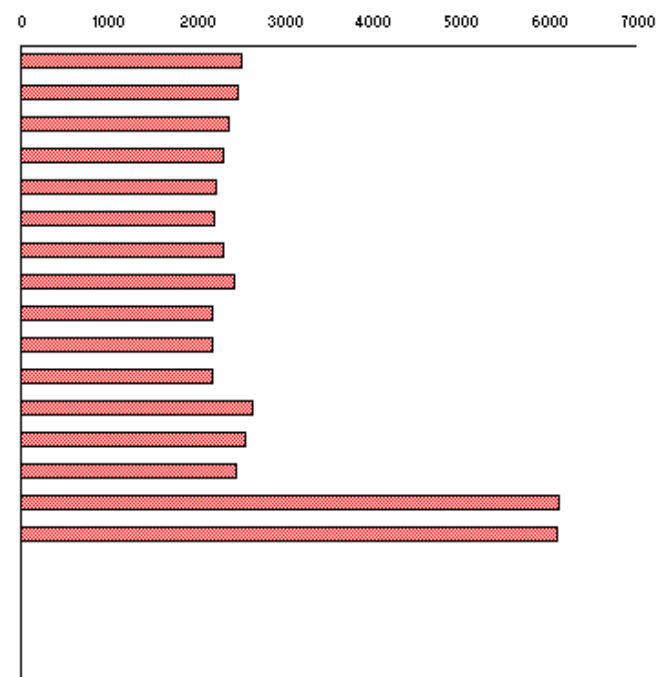
*A collaboration with the
International Energy Agency*

Uncontroversial tool demonstrating the CO₂
advantages of gas technologies

IGRC 2008 Jean Schweitzer, Danish Gas
Technology Centre

Energy costs and CO₂ emissions

Energy costs and CO ₂ emissions		FOR DEMO PURPOSE ONLY	
Input			
Country	Denmark		
Annual heat demand (kWh)	20000		
Boiler size (kW)	20		
Radiator system	Traditional		
User-defined appliance (optional)			
Description			
Type	Natural gas, atmospheric boiler, non modulating		
Full load efficiency (% net)	not operational		
Part load efficiency (% net)	not operational		
Electricity consumption (kWh/year)	not operational		
Results		Energy costs (kr./year)	CO ₂ emissions (kg/year)
15	Natural gas, atmospheric boiler, non modulating	2514	4661
16	Natural gas, atmospheric boiler, modulating	2457	4555
17	Natural gas, traditional flue balanced, non modulating	2359	4375
18	Natural gas, traditional flue balanced modulating	2305	4274
19	Natural gas, condensing flue balanced non modulating	2208	4094
20	Natural gas, condensing flue balanced modulating	2197	4073
21	Natural gas, gas Radiator (flue less)	2293	4252
22	Natural gas, gas Radiator (flued)	2421	4488
23	Natural gas, gas heat pumps	2179	4039
24	Natural gas, micro CHP sterling	2179	4039
25	Natural gas, micro CHP fuel cells	2179	4039
26	Fuel oil, traditional boiler	2639	5770
27	Fuel oil, condensing boiler	2556	5589
28	Fuel oil, radiators	2437	5328
29	Electrical boiler	6115	7863
30	Electrical radiators	6083	7823
31	Wood boiler with ventilator	0	0
32	Wood boiler without ventilator	0	0
33	Wood, other	0	0
34	District heating	0	10672



Conclusion:

**New times: gas customers are looking at el. & renewable
We don't have yet the gas products to fulfil their need**

**Weed to more wide collaboration for market integration of
new technologies and especially technology/marketing**

