WOC 4 Study Group 3:
Smart Grids in Gas Distribution

10/10/12 outputs (1/3)

Why did you join the WOC 4.3 ?

Here are the questions my company is interested in:

- **What** does a SGG look like? How can we **define** it ?
- How do the **responsibilities** and **traditional value chain** are expected to evolve ?
- What **value** does it bring to the GG ? Can a SGG **CBA** be carried out ?
- What are the **legal framework** and the **B-case** ?
- What are the **functionalities** of the SGG? What are their impact on DNOs **core business** ?
- Is it a **merging** of gas, electricity, heating and cooling networks ?
- We have a **dedicated research project**: EDGAR, innovation initiative DVGW…
- Is it a way to **promote gas modernity** ?
- It is the **enabler** of a “smart city”, of the “smart electricity grid” ?
- Are **Smart Meters** part of the SGG ?

10/10/12 outputs (2/3)

What are the high level objectives of our work ?

1. Defining the functionalities of the Smart Gas Grids

2. Setting up a set of assessment criteria / scoring matrix

3. Identifying the value they bring to the system / each of the clients of the SGG

The expression “smart grids” includes the communicative linking and regulation of power production, storage, consumer and grid operation in energy transport and distribution grids. This enables an optimization and control of the linked components with the objective to guarantee energy supply on the basis of an efficient and reliable system operation.

10/10/12 outputs (3/3)

High level functionalities

- **Remote operation of gas network**
  - Monitoring, enhanced automation and protection
- **Quality control of gas in the network**
  - Different gas qualities
  - Acceptance of NCG
- **Ability to interact with other energy systems**
  - Storage in gas networks, Smart gas utilization
  - Energy measurement
  - Capacities and gas flow real time monitoring.
- **Integrity / security management**
  - Leakage detection, integrity control, failure detection
  - Automatic shut-off / healing
  - Components check

Criteria for analyzing functionalities

- Economy (savings of costs, investments, value of new services, commercial opportunities) – for what stakeholder?
- Technology availability and applicability on the field
- Compatibility with Regulation
- New responsibilities and duties for DNO
- Image and Social acceptance
- New risks of failure
- Safety and security improvement
- Tarrification aspects
- …

Quality control of gas in the network (1/2)

Features	Comment
Acceptance of multiple gas sources / gas qualities / types	
Promotion of accessibility to the distribution network	
kWh measurement instead of m3, energy measurement	
Component monitoring / safety & health on field	
Odorization monitoring - quality control / safety for the end consumer	
Equipments and storage functioning range compliance	
Effect on DNOs infrastructures monitoring (cf. integrity)	Cf. integrity of the network
Pressure monitoring (cf. integrity, flow control)	Cf. integrity of the network, remote operation

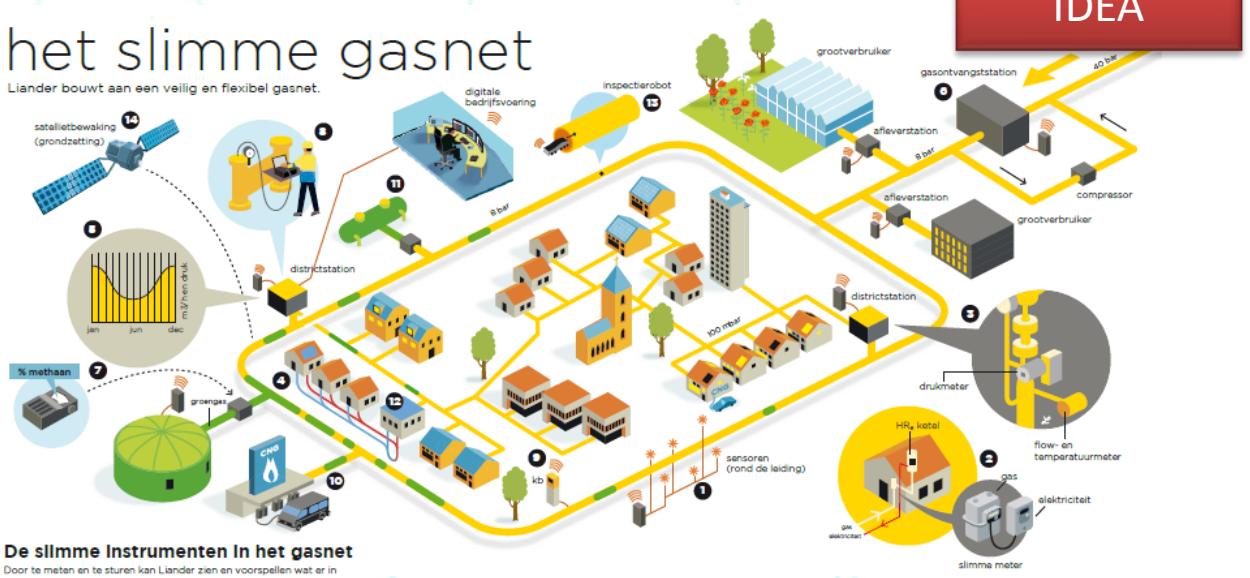
Quality control of gas in the network (2/2)

Criteria	Score	Remarks
Economy (savings of costs, investments, value of new services, commercial opportunities) – for what stakeholder?		(cash out, PNL) Cost / benefit relation for the different stakeholders
DNO	-	
Supplier	+	(gas producer) increased competition intensity
Customer	-	
Society	-	
Shipers	+	Energy vs volume (intermediate)
…		
Technology availability and applicability on the field	-	Expensive solutions on the market.
Compatibility with regulation	neutral	
New responsabilities and duties for DNO	-	increase in responsibility
Image of the gas industry and Social acceptance	+	
New risks of disfunctioning		Dedicated risk assessment to be carried out
Safety and security improvement	+	society expectation to inject NCG
Tarrification aspects	+	Energy vs volume billing, transparent billing of green gas consumers / producers
Commercial opportunity for DNO	+	
Impact on DNO organization	-	new tools, new technologies, new expertise, training, new equipements
Impact on the environment and sustainability	+	

Next steps

- Ask for position papers and examples of smart gas grids projects
  - Other feedback and pilote projects
  - Collecting position papers about Smart Gas Grids & Smart Energy Grids
- Drafting analysis of each functionnality
- Illustration of the features Smart Gas Grids include

IDEA



Thank you for your attention!