



Challenges of a gridoperator in the development of a biomethane market

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Liander - Strategy & Innovation

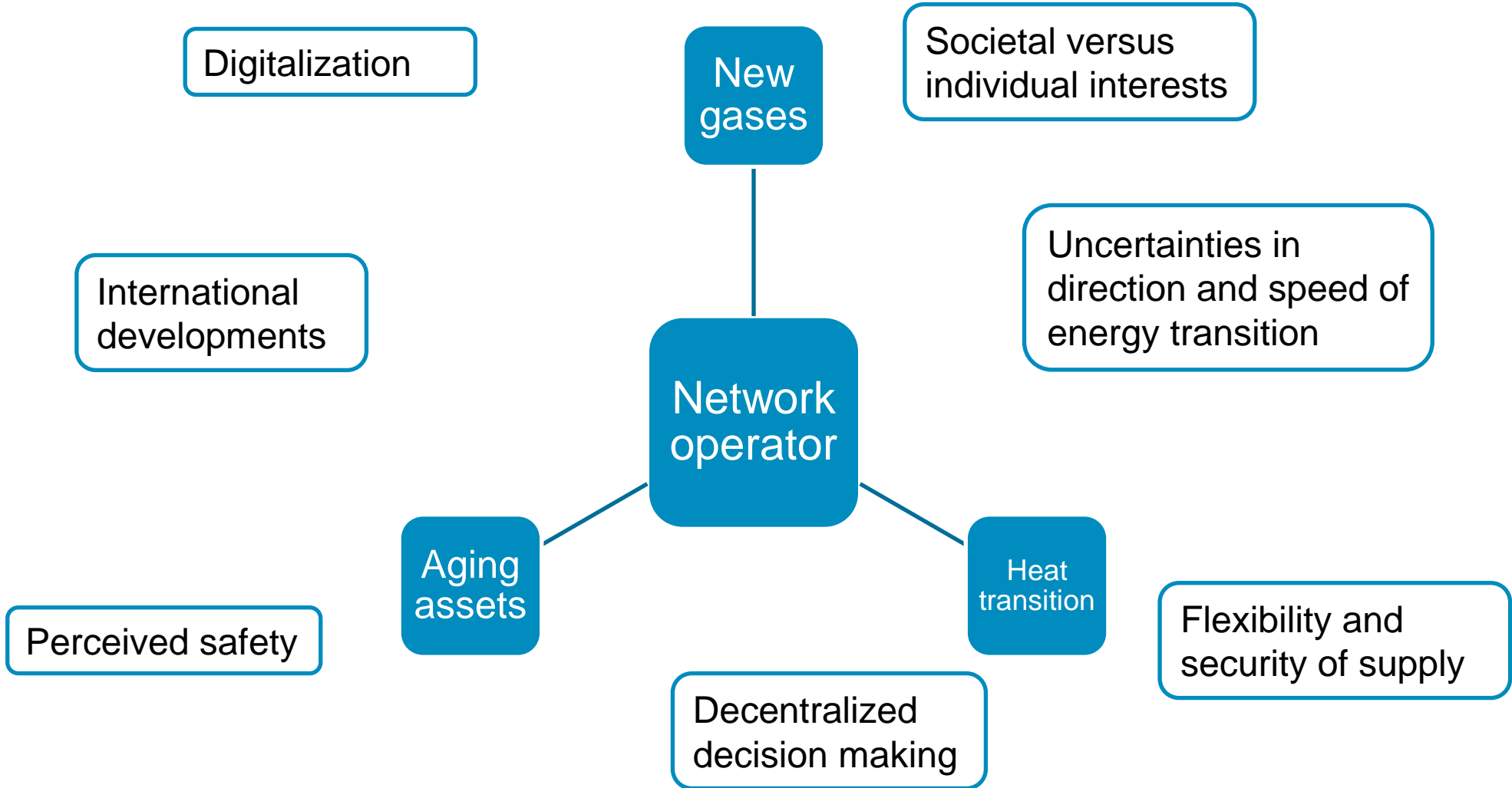
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Workshop Biogas Task37



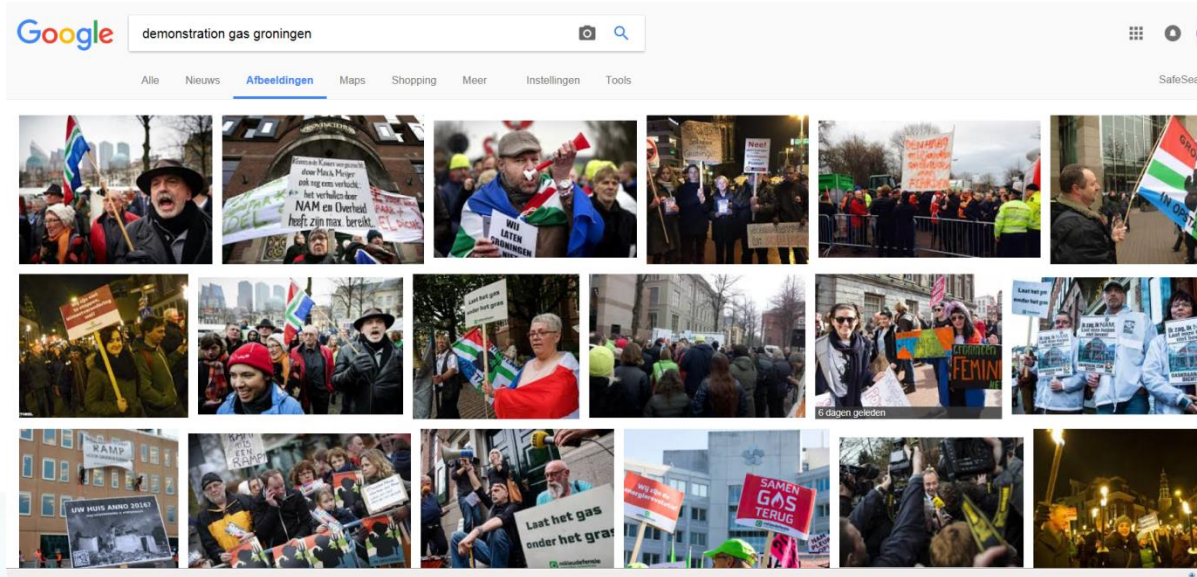
Trends in the Dutch gas sector



Network operator

Heat transition

liander





Network operator

Heat transition



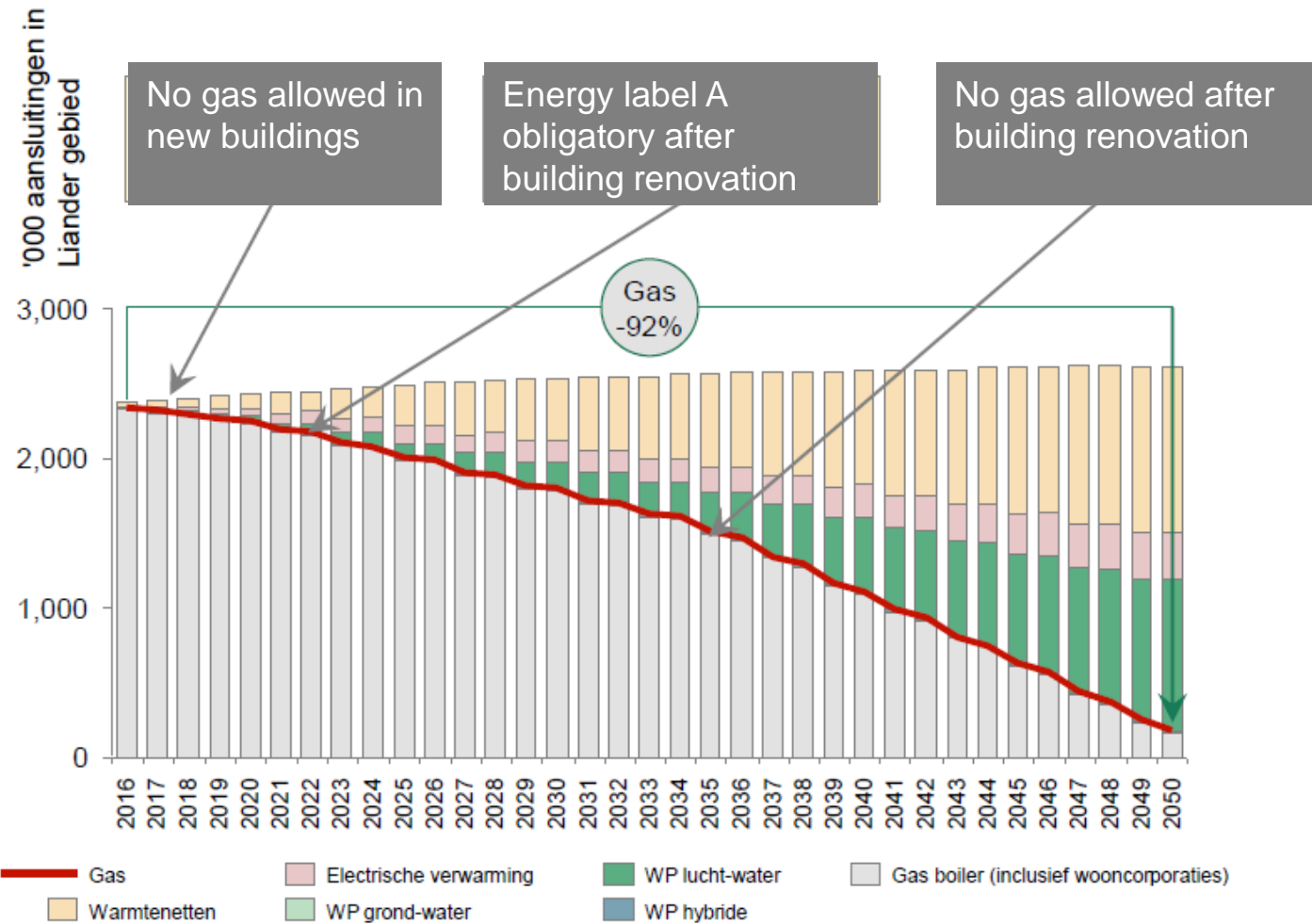


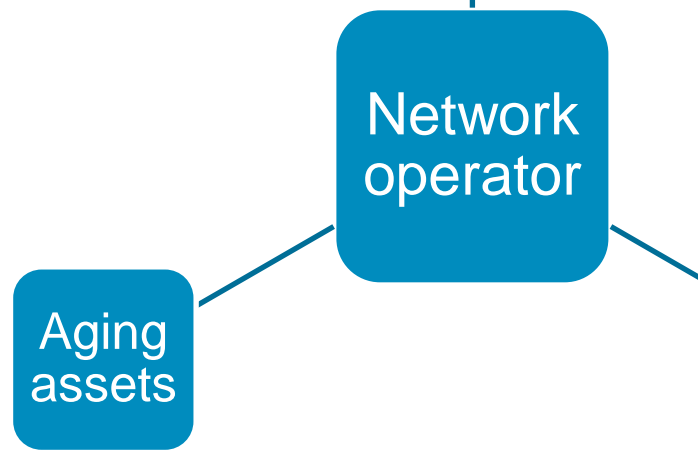
Network operator

Possible scenario reduction of natural gas usage in build environment



Heat transition







Effect of transport sustainable gas on distribution grid?

Network operator

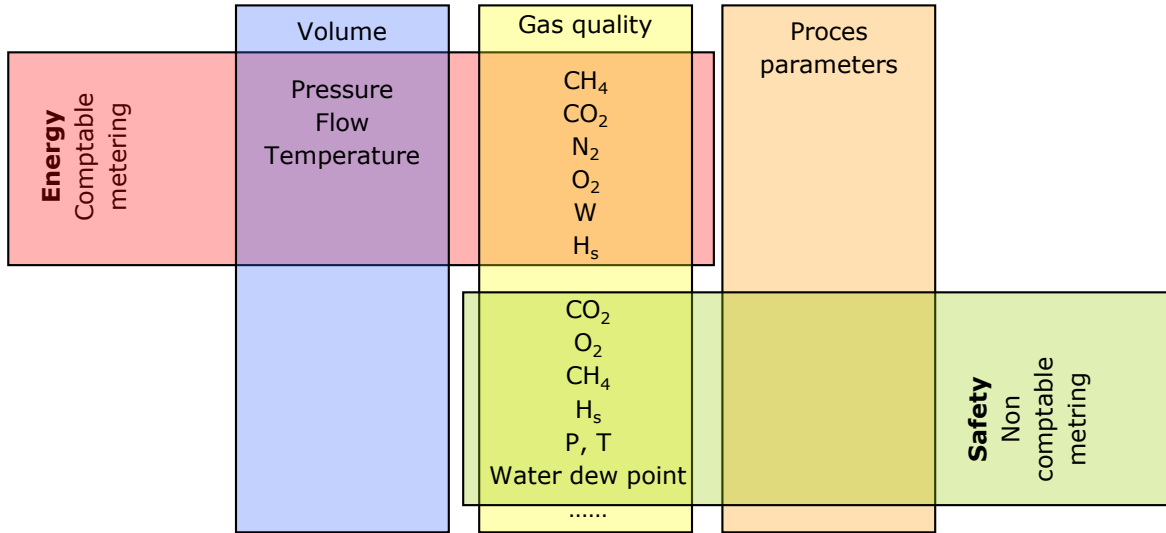
Aging assets



	Sulphur containing components	H ₂ S	Mer-captans	Odorant	Ammo-nia	Chlorine containing components	Fluorine containing components	HCl	HCN	CO	CO ₂	Hydro-carbons	Aromatic hydro-carbons	O ₂	H ₂
PVC	none (up to 160 ppm)		probably none			none		probably none		unknown	none	none, unless liquid		none	none (up to 20 vol %)
PE	none (up to 160 ppm)		probably none			none		probably none		unknown	none	none, unless liquid		none	none (up to 20 vol %)
NBR	none (up to 160 ppm)		probably none			none		probably none		none	none	none, unless liquid		none	none
Steel	water and CO ₂	probably none							with H ₂ S and water possibly	unknown	water and H ₂ S	probably none	water, (H ₂ S) and CO ₂	none	
	water, CO ₂ and O ₂										water, (H ₂ S) and O ₂				
Cu	water and CO ₂		probably none	none (with water up to 50 ppm)	probably none	probably none	probably none	unknown	unknown	water and O ₂	probably none	water and CO ₂	none (up to 20 vol %)		
	water, CO ₂ and O ₂													water, H ₂ S and O ₂	water, H ₂ S and CO ₂
Al	water and CO ₂		probably none	none	probably none	probably none	probably none	unknown	unknown	none	probably none	none	none (up to 20 vol %)		
	water and O ₂													water and H ₂ S	



Gas quality standard and protocol of quality control



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Gaskwaliteit		Waarde	Eenheid
Wobbe-index		43,46 – 44,41 ^{1,2}	MJ/m ³ (n)
Gehalte hogere koolwaterstoffen		≤ 5	mol% propaneequivalent
Gascondensaat		≤ 80	mg/m ³ (n) bij –3 °C bij elke druk
Waterdauwpunt	in RTL en HTL	≤ –8	°C (bij 70 bar(a))
	in RNB-net	≤ –10	°C (bij 8 bar(a))
Temperatuur	in RTL en HTL	5 – 30	°C
	in RNB-net ³	5 – 20	°C
Zuurstofgehalte	in RTL en RNB-net	≤ 0,5	mol%
	in HTL	≤ 0,0005	mol%
Koolstofdioxidegehalte	in RTL en RNB-net	≤ 10,3 ⁴	mol%
	in HTL	≤ 3	mol%
Waterstofgehalte	in RTL en HTL	≤ 0,02	mol%
	in RNB-net	≤ 0,5	mol%
Chloor op basis van organochloorverbindingen		≤ 5	mg Cl/m ³ (n)
Fluor op basis van organofluorverbindingen		≤ 5	mg F /m ³ (n)
Koolstofmonoxide (CO)		≤ 2.900	mg/m ³ (n)
Pathogene microben		≤ 500	aantal /m ³ (n)
Stofdeeltjes met een grootte boven de 5 µm		≤ 100	mg/m ³ (n)
Zwavelgehalte op basis van anorganisch gebonden zwavel		≤ 5	mg S/m ³ (n)
Zwavelgehalte op basis van alkythiolen voor odorisatie			
	Piekwaarde	≤ 20	mg S/m ³ (n)
Totaal zwavelgehalte	Jaargemiddelde	≤ 5,5	mg S/m ³ (n)
	na odorisatie		
	Piekwaarde	≤ 31	mg S/m ³ (n)
	Jaargemiddelde	≤ 16,5	mg S/m ³ (n)
	In HTL Flevoland, bedoeld in Bijlage 10 , ruikbaar ⁶ gas	10 – 40	mg THT/m ³ (n)
THT-gehalte ⁵ (odorant)	in HTL: reukloos ⁶ gas	0	
	in RTL: ruikbaar ⁶ gas	10 – 40	mg THT/m ³ (n)
	in RNB: ruikbaar ⁶ gas	10 – 40	mg THT/m ³ (n)
Siliciumgehalte op basis van siliciumhoudende verbindingen		≤ 0,1	mg Si/m ³ (n)

New
gases

Network

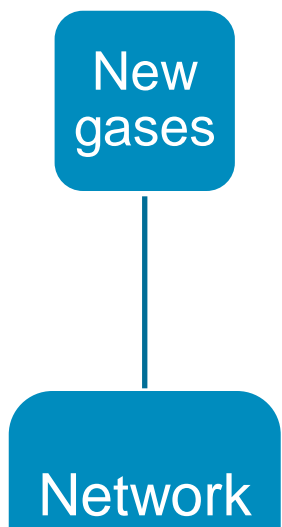
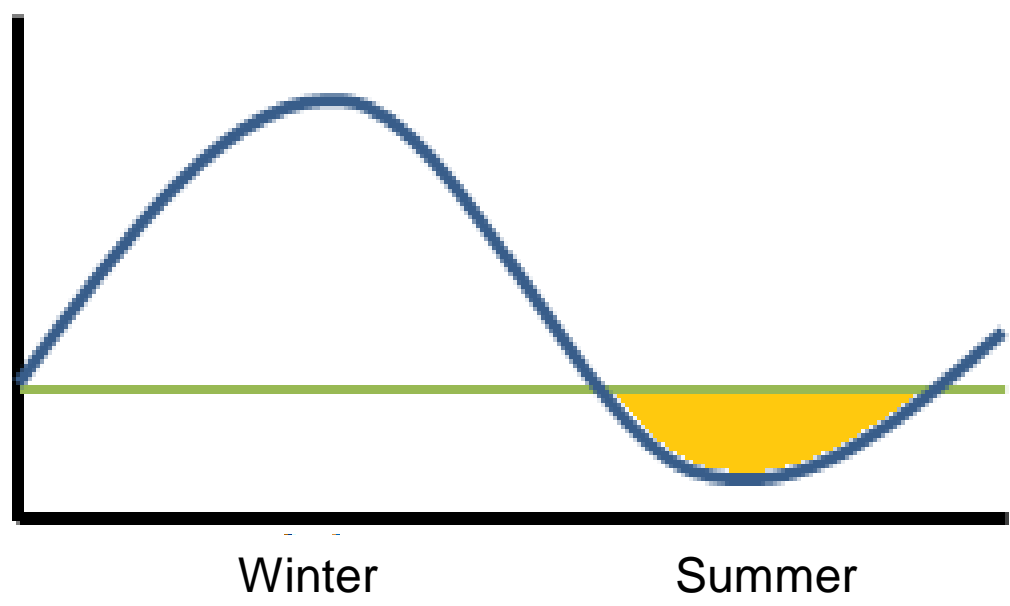
* Richtlijnen beheersprotocol groengas invoedingen , Netbeheer Nederland



How to ensure feed-in capacity in regional gas networks



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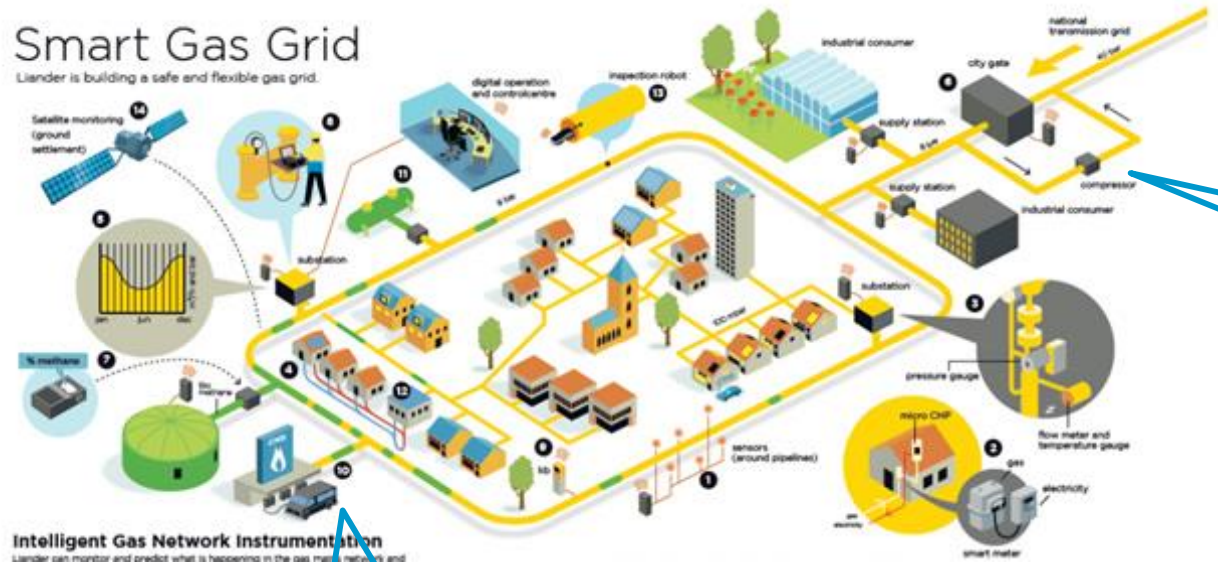
How to ensure feed-in capacity in regional gas networks



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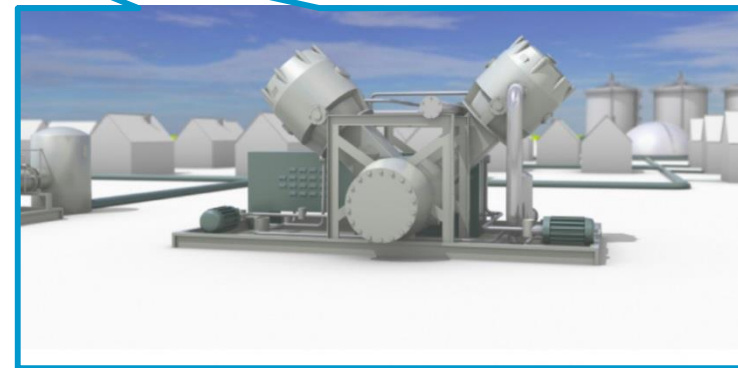
Smart Gas Grid

Liander is building a safe and flexible gas grid.



Intelligent Gas Network Instrumentation

Liander can monitor and predict what is happening in the gas main network and



New gases

Network

operator

Heat transition

Choices

Aging assets

Future gas quality/qualities

Materials that are fit for purpose

Infrastructural design

Affordable access to energy

New gases



Thank you for your attention