

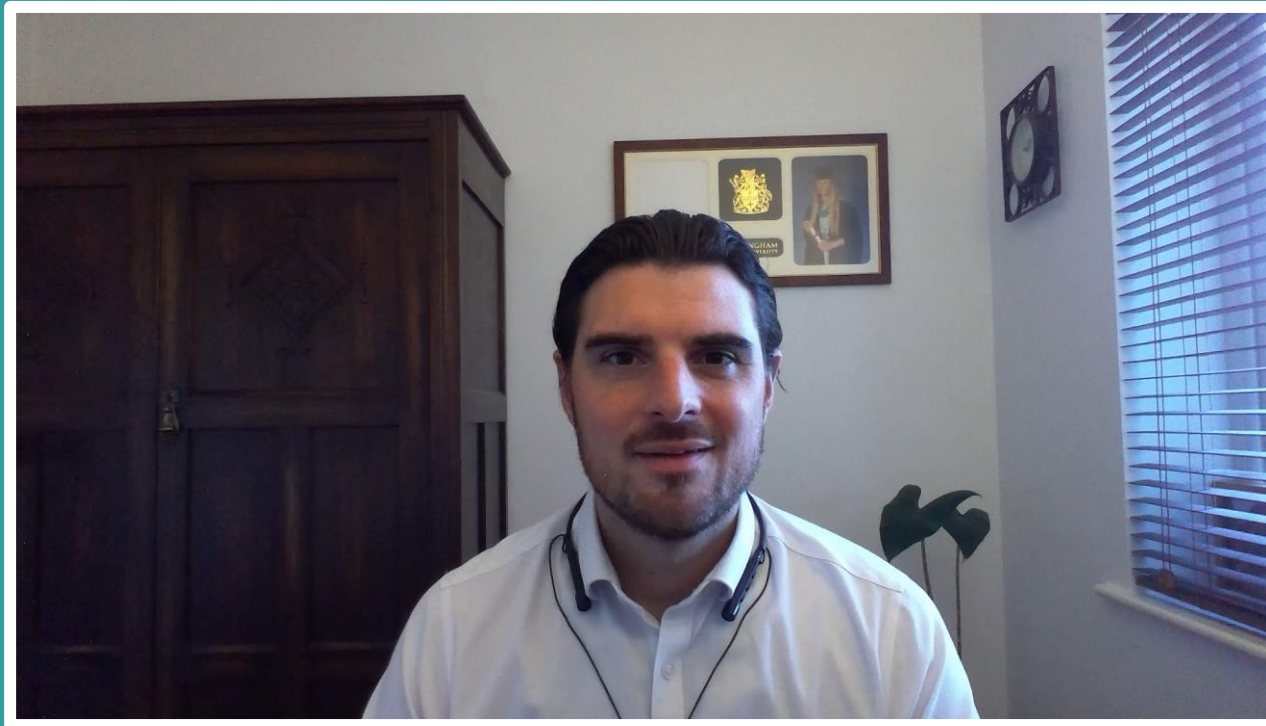
OptiNet

James Whitmore



Optimising the gas network

Intro



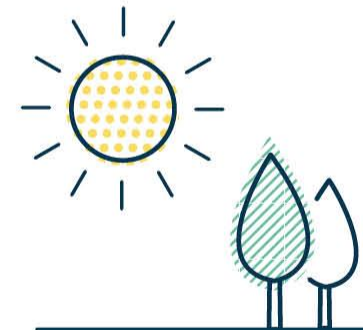
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20/04/2021

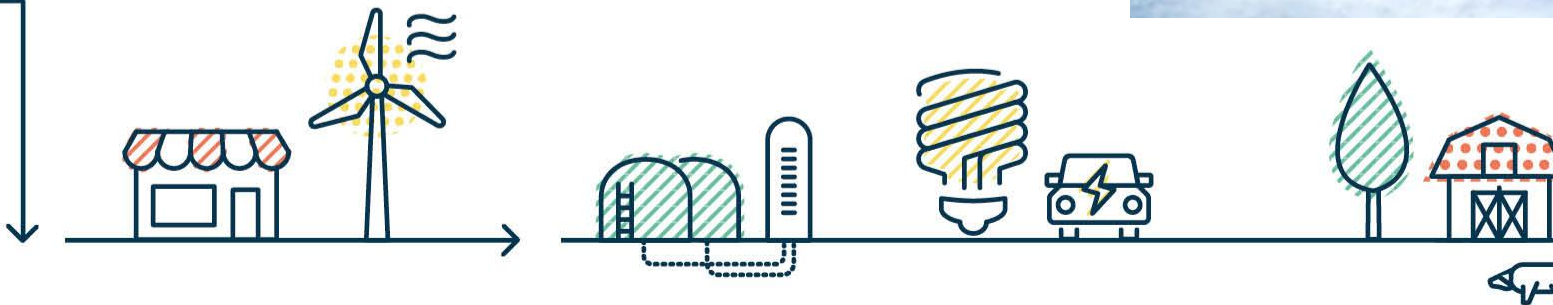
Background

Historic demand on gas networks

- Security of supply
- 1 in 20 winter
- Gas supplied from National Transmission System at offtakes



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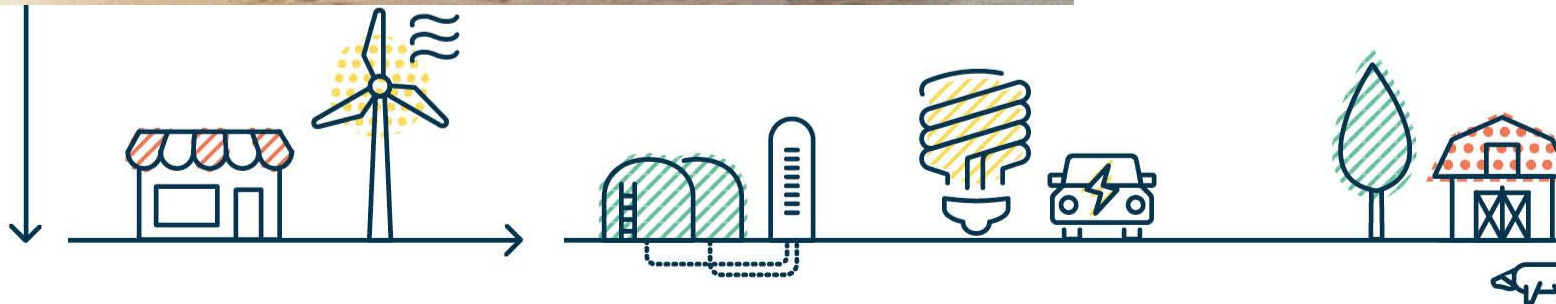


Along came...



- Displaces fossil fuels
- Fuel for transport - HGVs
- Cadent's first plants connected in 2013
- Cadent has over 30 plants connected / 230,000 homes heated
- Important role in the energy transition

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Transmission
National Grid

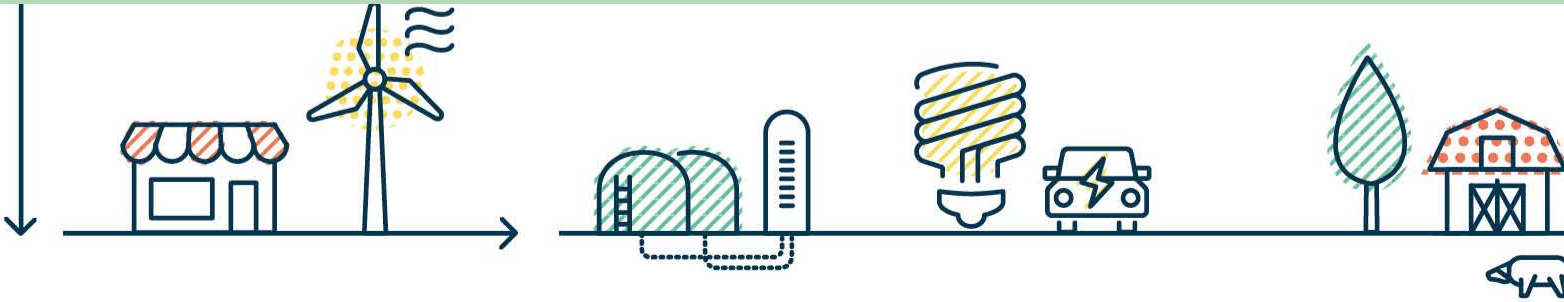
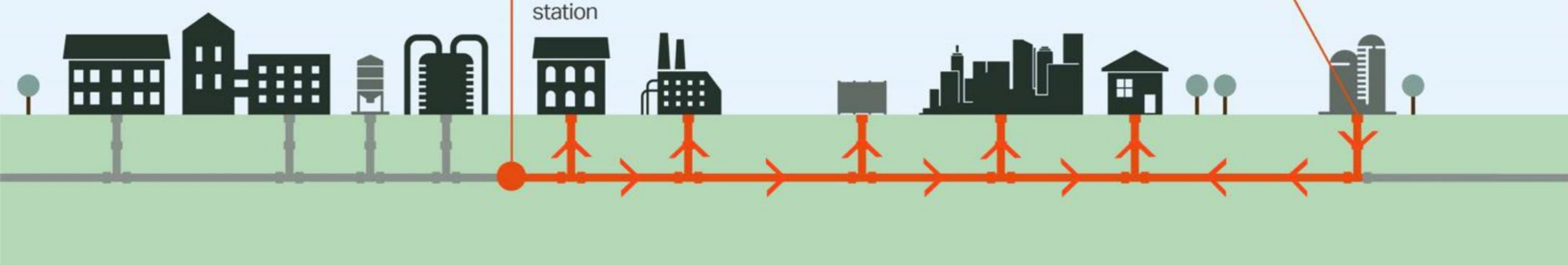
Distribution
Cadent & Others

Supply
Other Companies

Terminal Compressor LNG storage

Local distribution zone offtake

Pressure reduction station Industrial Governor Commercial Domestic Biomethane



What is 'entry capacity'?

Available 'space' within the pipes to be able to receive gas from an entry point, such as biomethane

capacity

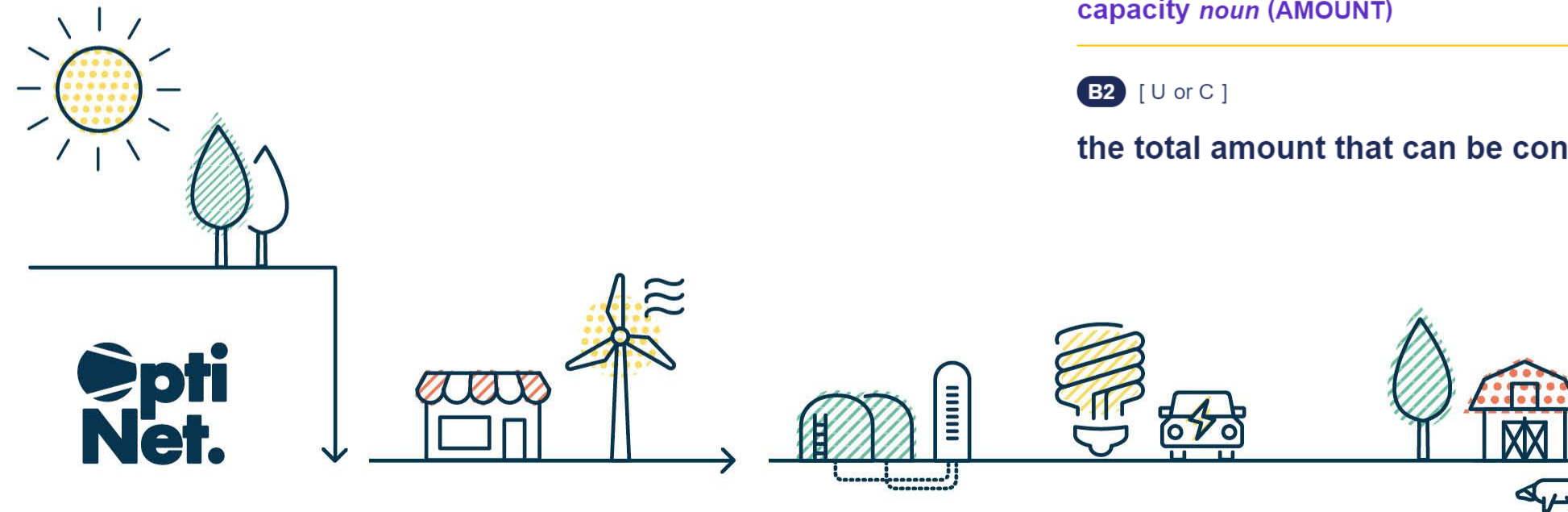
noun

UK  /kə'pæs.ə.ti/ US  /kə'pæs.ə.tj/

capacity *noun* (AMOUNT)

B2 [U or C]

the total amount that can be contained or produced:



What is the challenge?

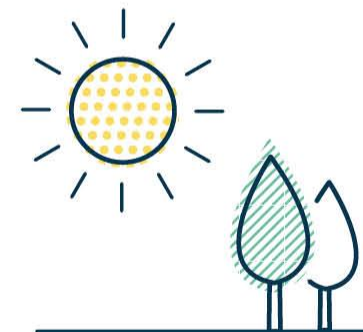
Capacity to accept biomethane onto the gas grid has become more constrained as we connect each site.



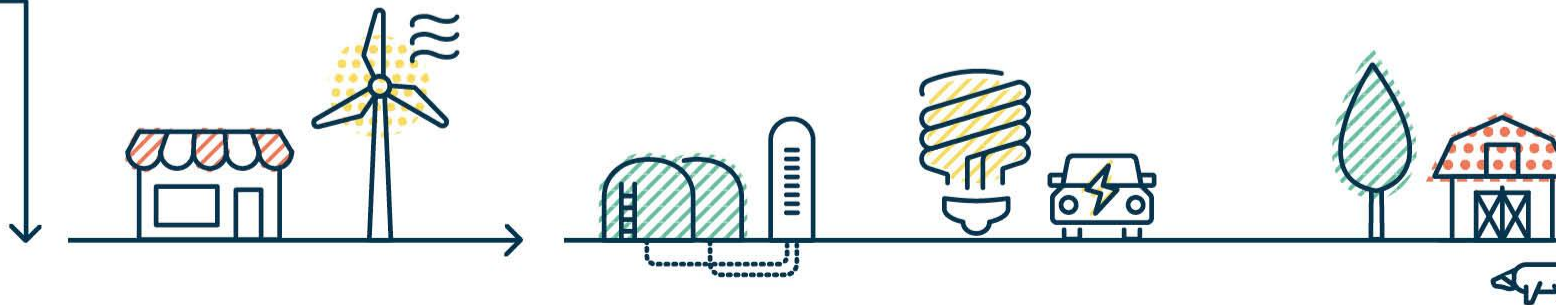
We also have to ensure there is enough gas available for larger loads...

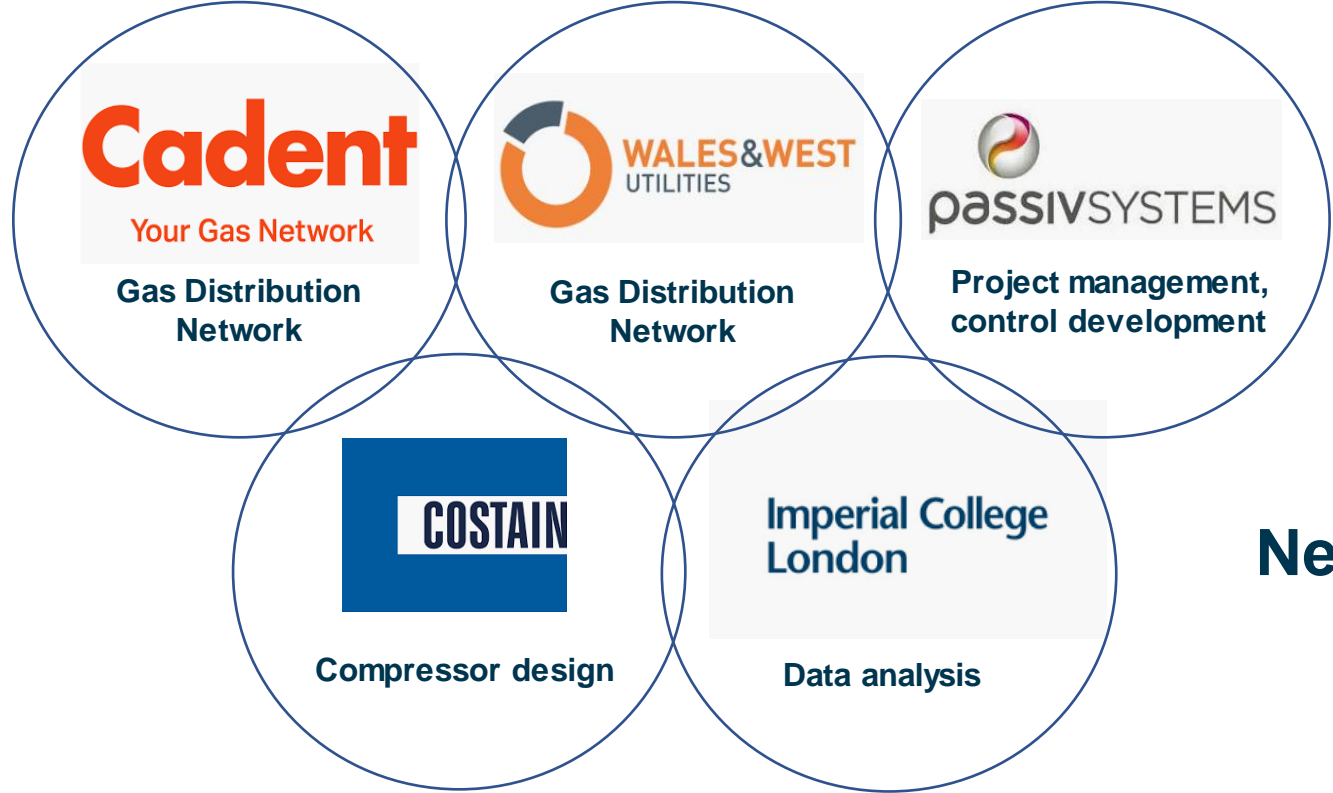


We need an optimised system...

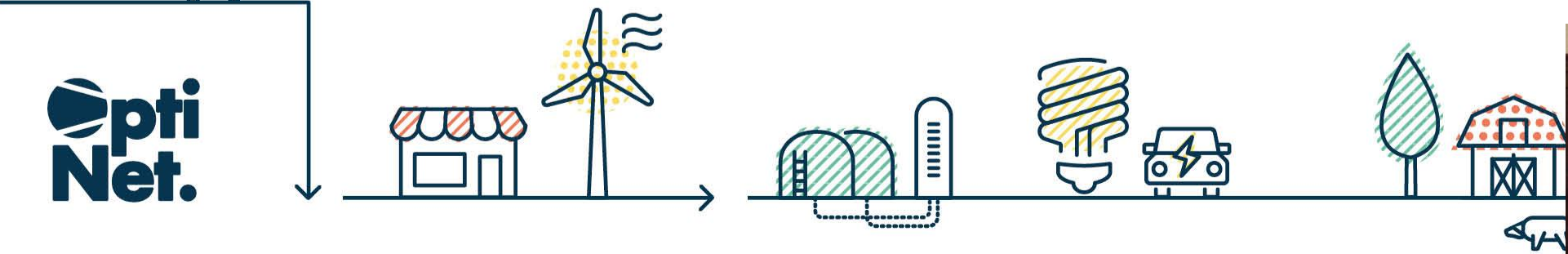
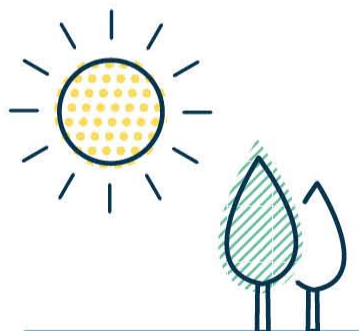


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Network Innovation



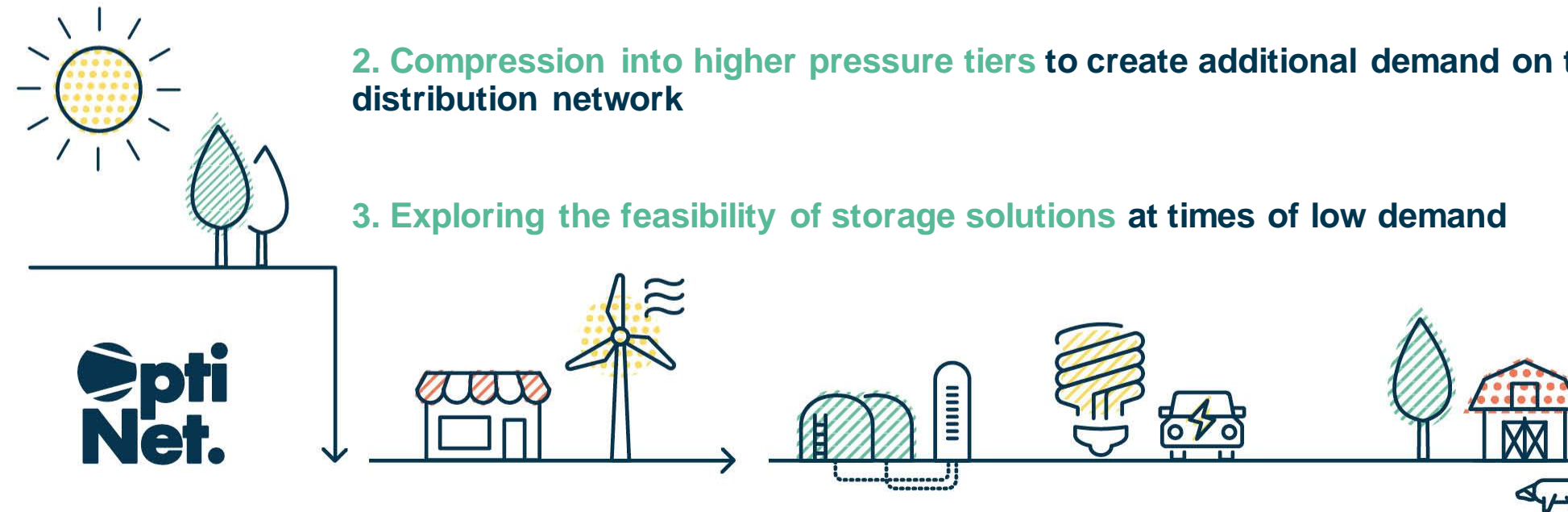
What are we doing?

Exploring ways to optimise the gas network's supply and demand through the following applications:

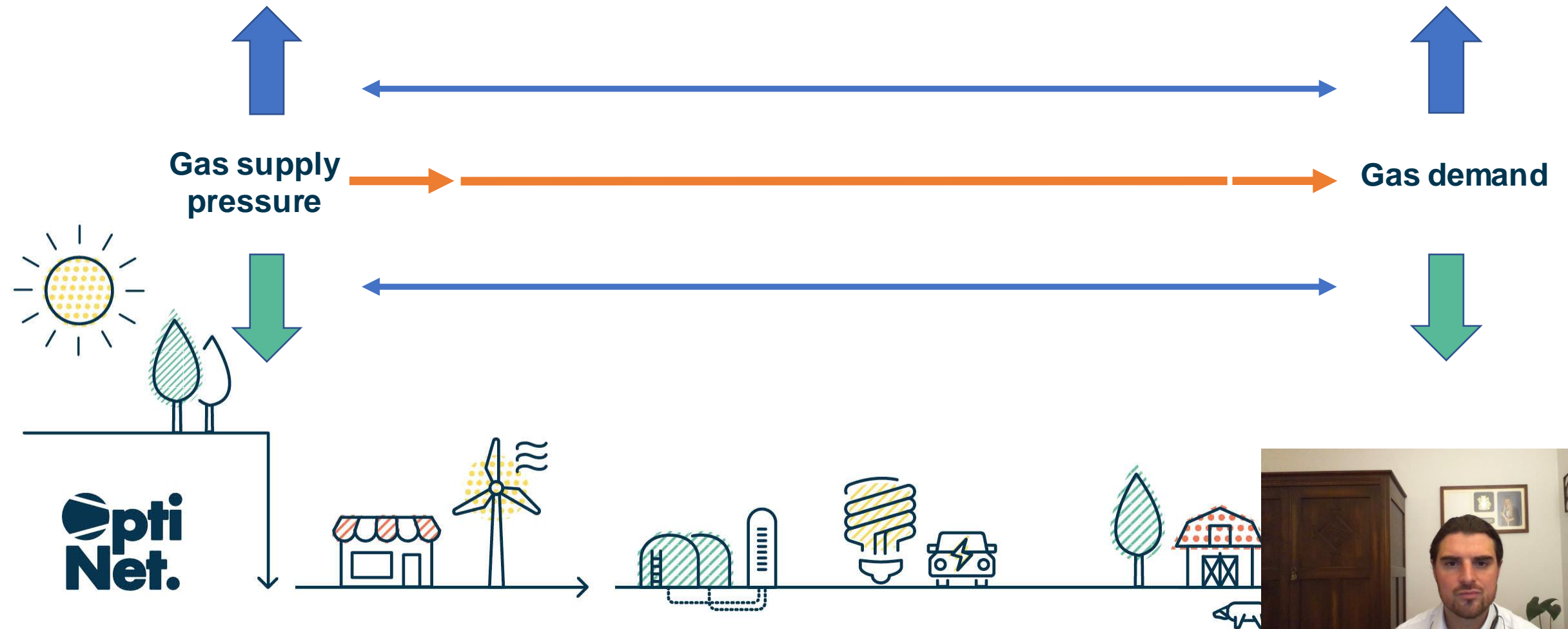
1. **Smarter pressure control** to maximise existing demand in distribution networks whilst maintaining security of supply – in both Cadent and WWU networks

2. **Compression into higher pressure tiers** to create additional demand on the distribution network

3. **Exploring the feasibility of storage solutions** at times of low demand



Smarter pressure control



Smarter pressure control trial

Equipment

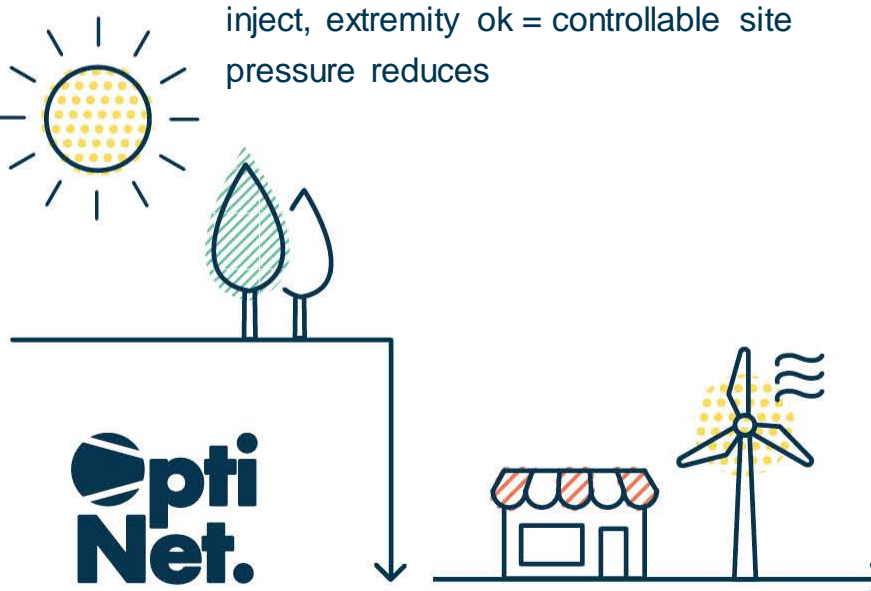
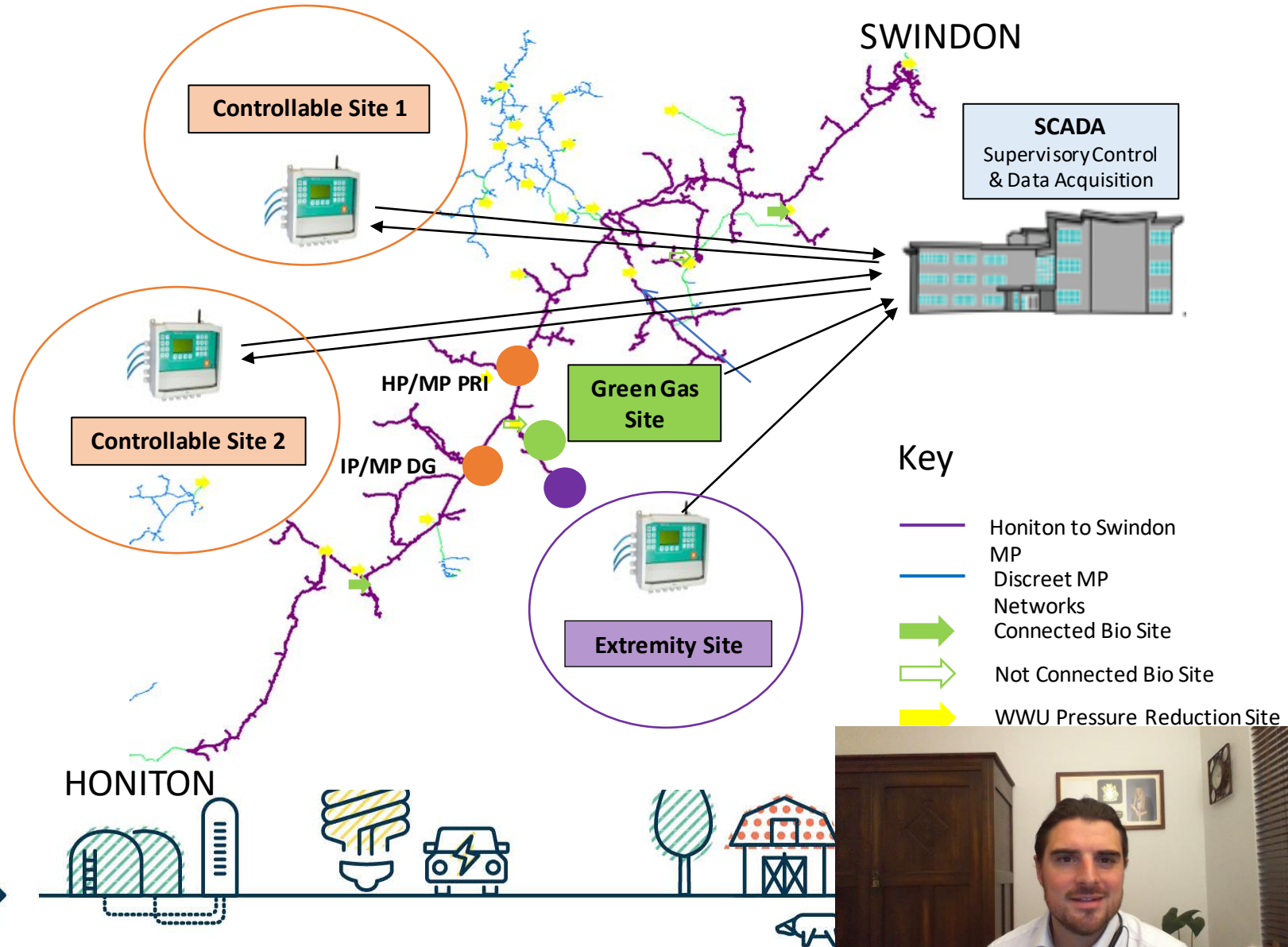
- Loggers & control kit installed at 2 sites
- Logger installed at extremity
- Existing telemetry at green gas site

Monitoring & control

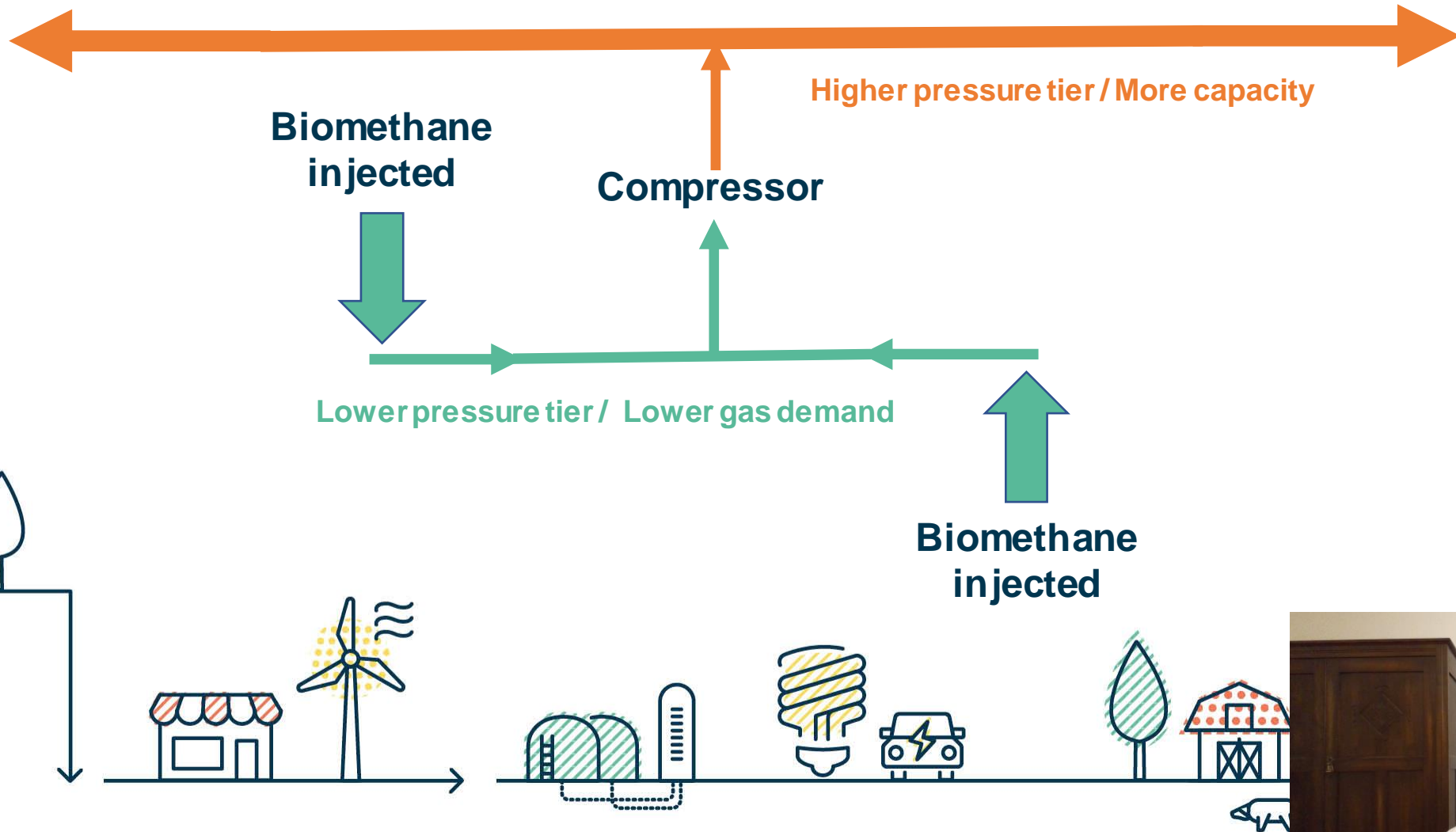
- Automated control via SCADA logic
- Manual overrides

Control example

- High pressure at green gas site, unable to inject, extremity ok = controllable site pressure reduces



Compressor trial



Compressor trial

Equipment

- Compressor
- Smart pressure control

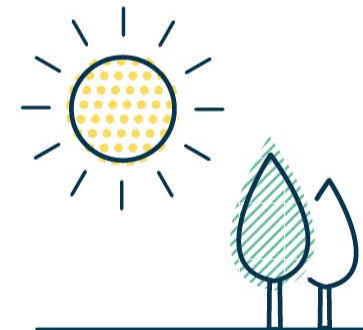
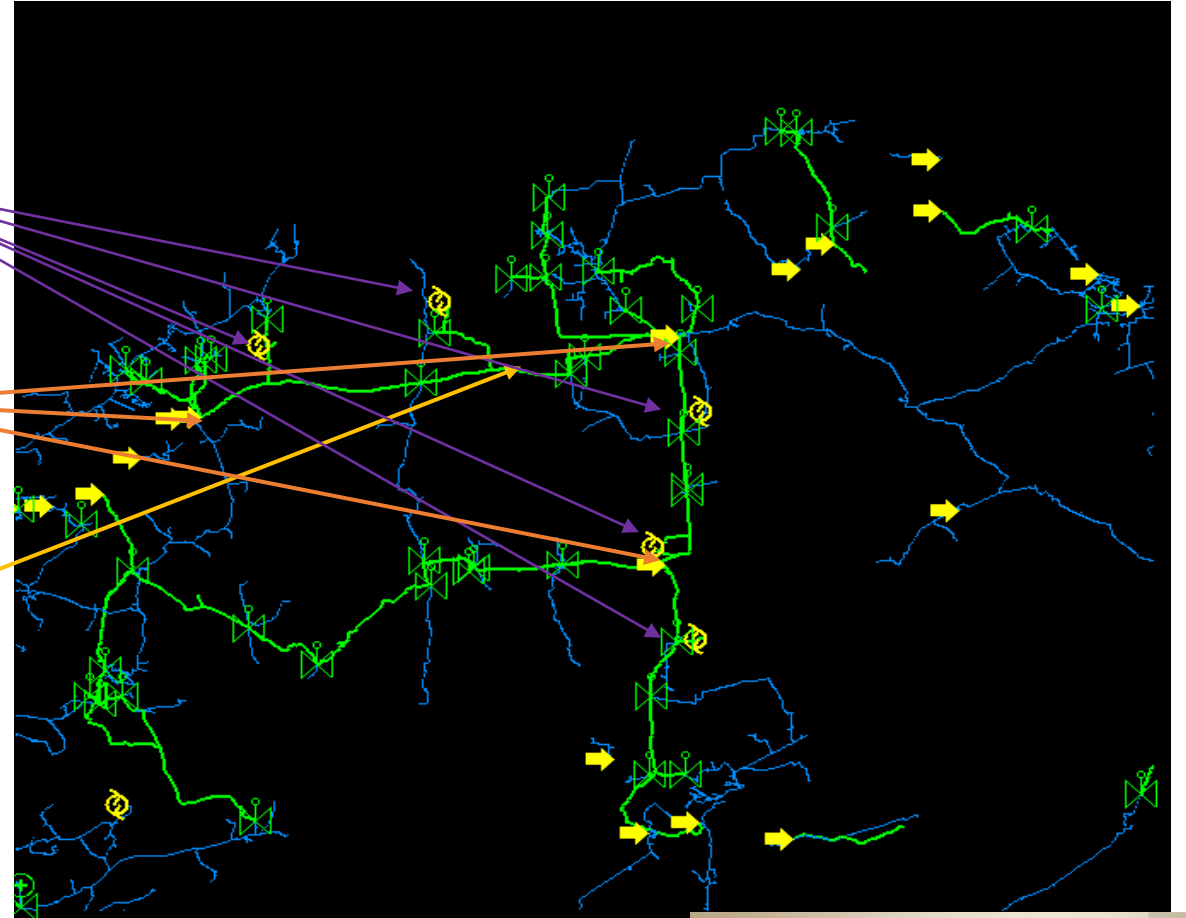
Monitoring & control

- Automated control via SCADA logic
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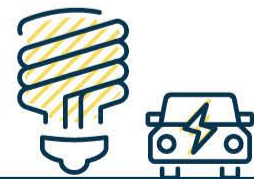
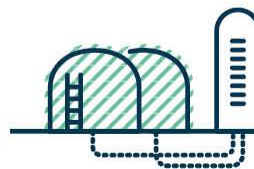
Biomethane sites

Smart control

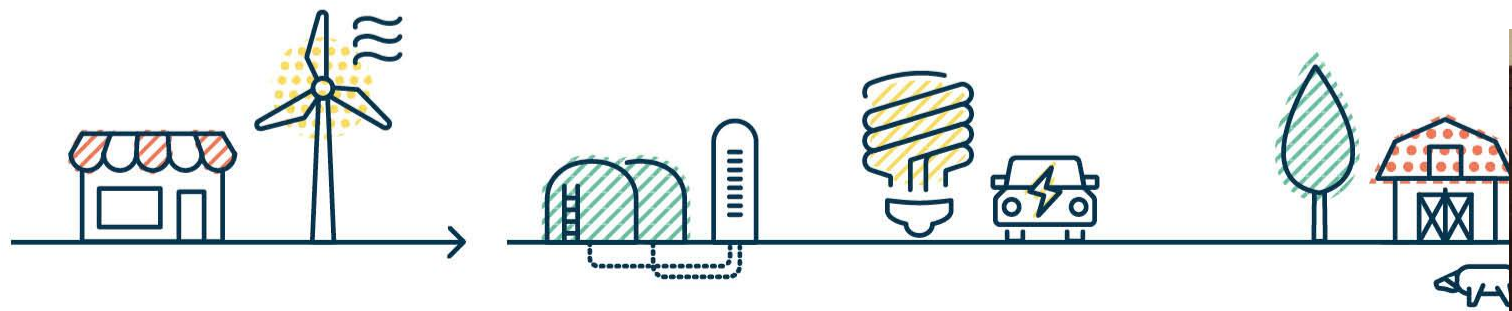
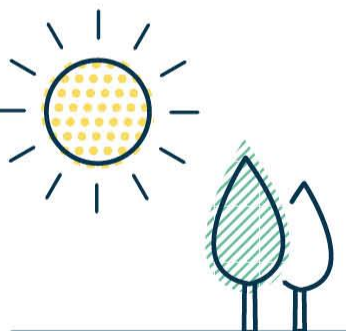
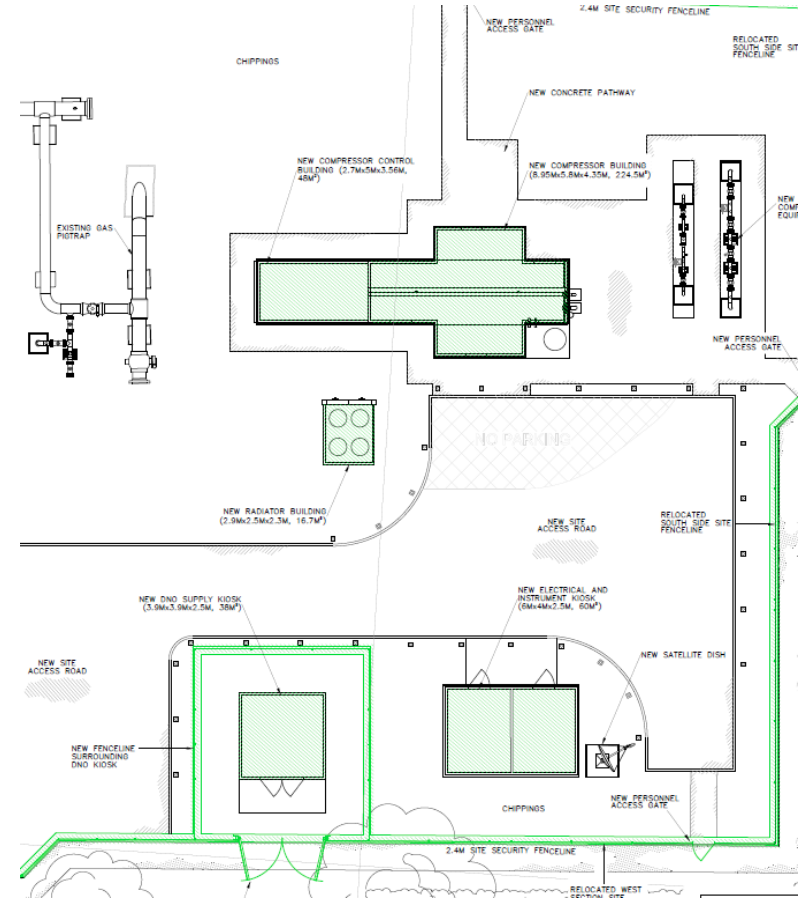
Compressor



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Project updates



Summary

Key learning

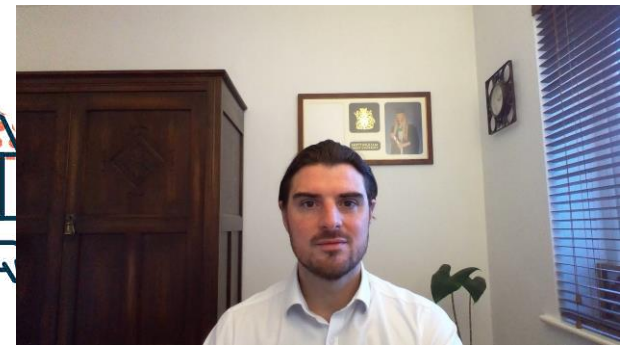
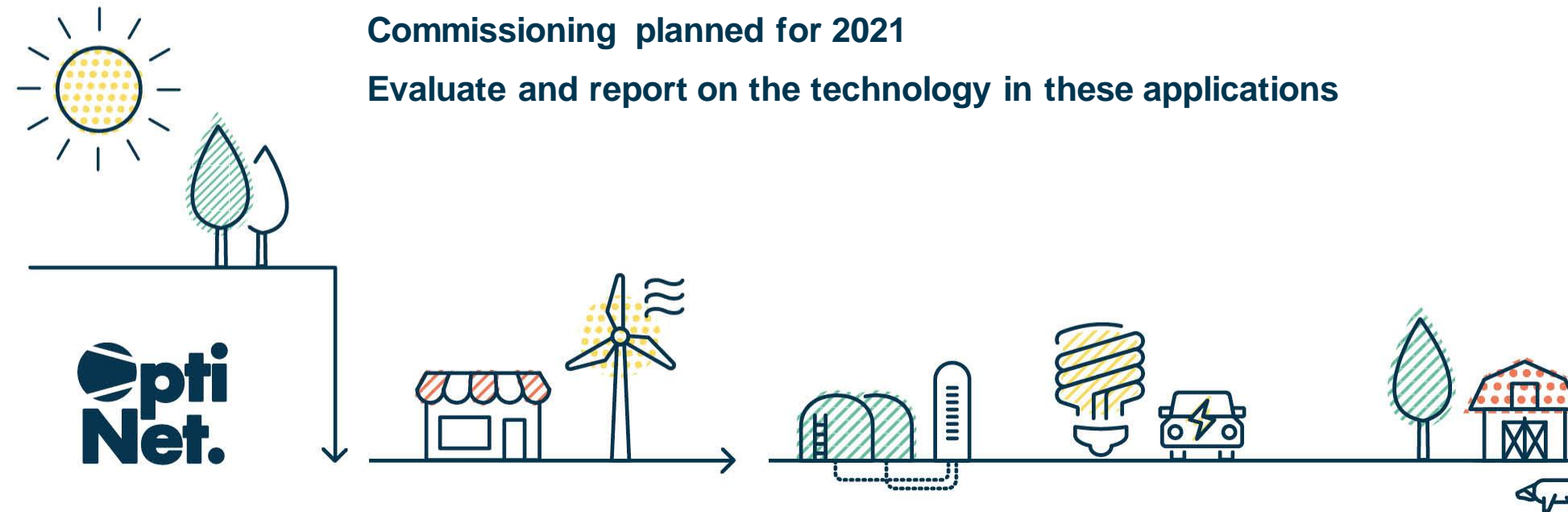
Compressor specification - 1st for a Gas Distribution Network

Smart pressure control logic - into SCADA system in Network Control Centre

Future

Commissioning planned for 2021

Evaluate and report on the technology in these applications



Thank you

James Whitmore, Cadent

