



COGEN
España

*Impulsando
la energía del futuro*



-Case Study- 100MW PP-CHP-CCHP Plant for Data Center in Spain

**Gas Engine Tech. based
Pure Power / Cogeneration / Trigeneration Systems**

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09.02.2026 Workshop Cogen Espana



Bridge -

Problem: Time-To-Power



Bridge - 2 - Grid

2G

Solution: Bridge - 2 - Grid



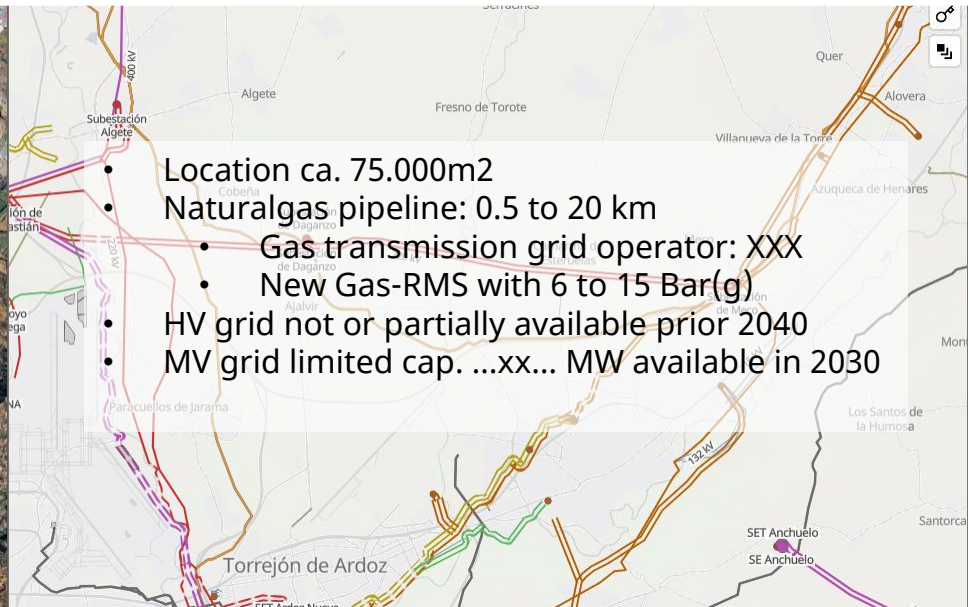
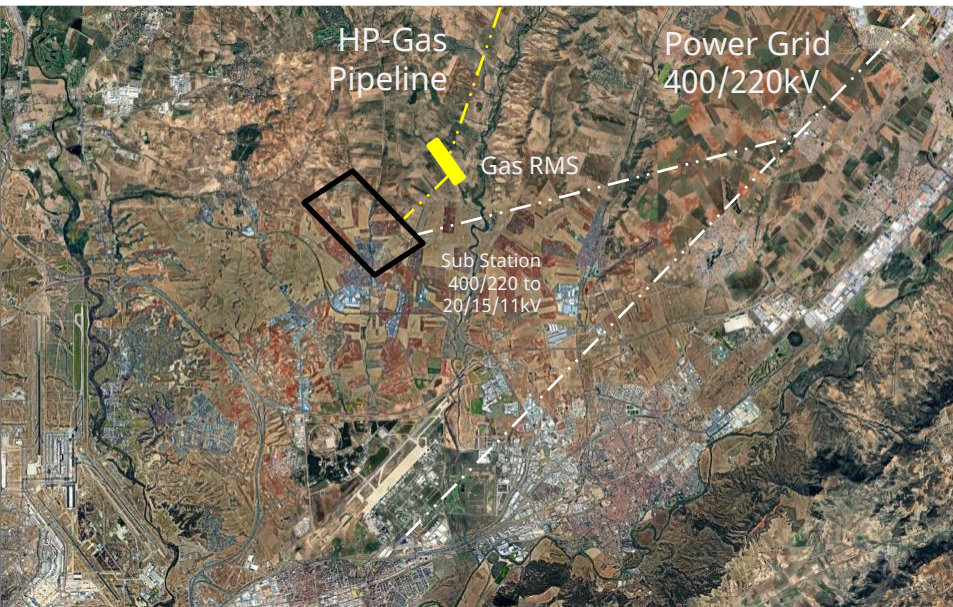
Natural gas today, H₂ tomorrow
Reliable - Affordable - Continuous - Sustainable Electricity

Bridging the gap!



Location- East of Madrid (Example only! Applies for any other location in Spain and Europe.)

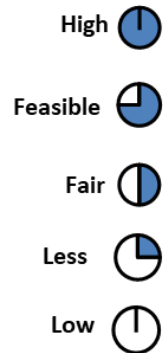
HV – Power grid & HP – Gas grid



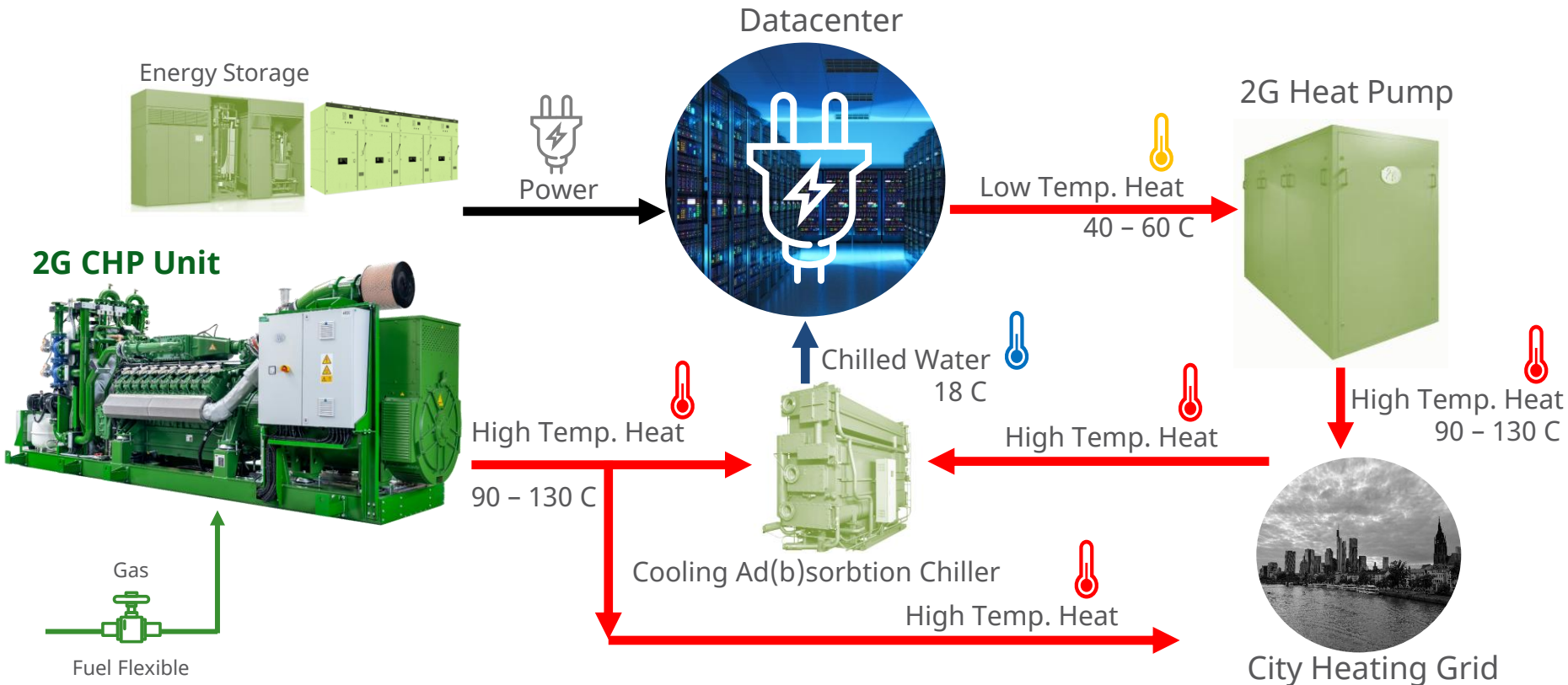
Behind-the-Meter (BTM) Options for Datacentres

Elaborating Technology and Sustainability for Datacenters

Source type	Fit to DC load		Fit to Sustainability objectives	Other considerations	BTM Feasibility	
					< 2030	> 2030
Solar / Wind 		High variability – but needs storage & demand-side response; Low variability low reliability		Requires large land banks & storage capacity (100MW DC (75000 m2) needs, ca. 0.5 to 1.0 GW RES plant, but battery storage 6X → 6 GW Res and 6 GW Storage ≥750 million m2) High LCOE		 If lower storage cost
Hydro 		Seasonal variability (wet vs. dry season)		Few opportunities near dams; high grid connection cost; High LCOE		
Natural Gas 		High variability (dispatchable) high reliability	 Natural gas  Biogas, H ₂  CCS/CCU	Proximity to gas source critical Lowest LCOE		
Nuclear 		Low variability high reliability	 	SMRs possible post-2030 (?); considered CO ₂ -free; extreme high security measures; extreme high recycling and decom-missioning costs; High LCOE		



Consolidated Energy Concept f. Datacenters

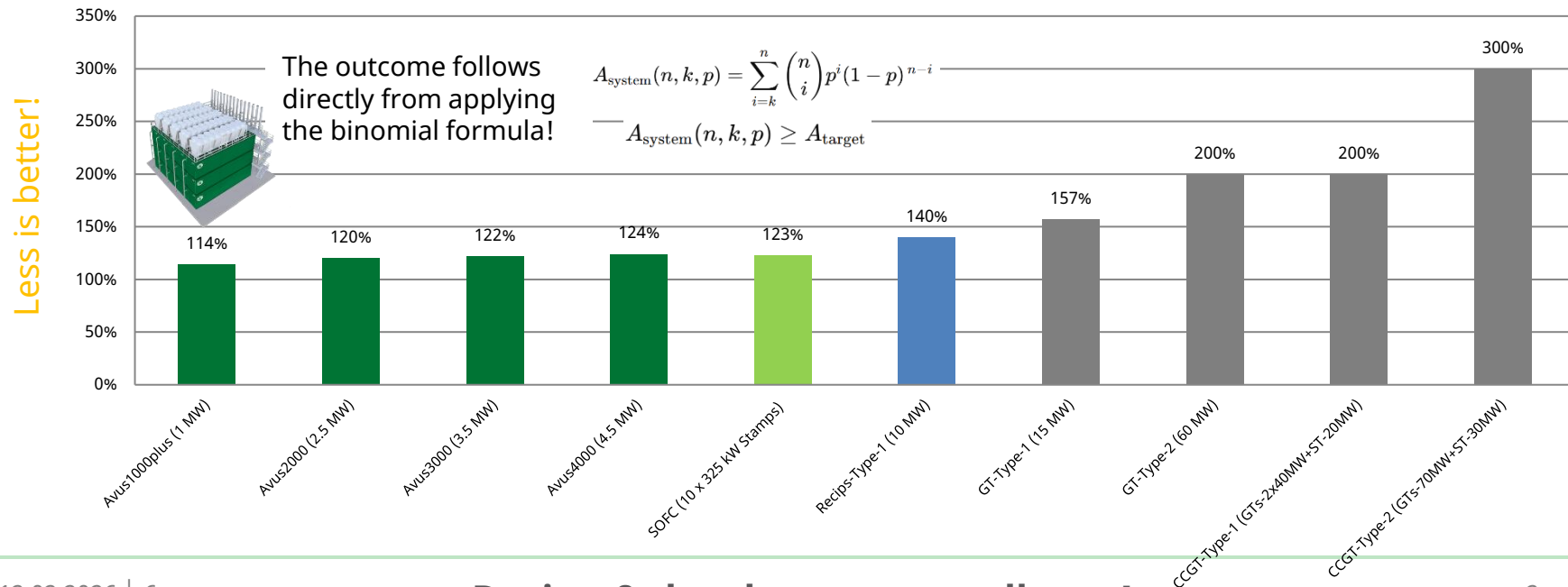


On-Site Power Generation – Alt. Overview? - 100 MW DC-Example

Unit size influence on redundancy ratio (for 99.9% availability)

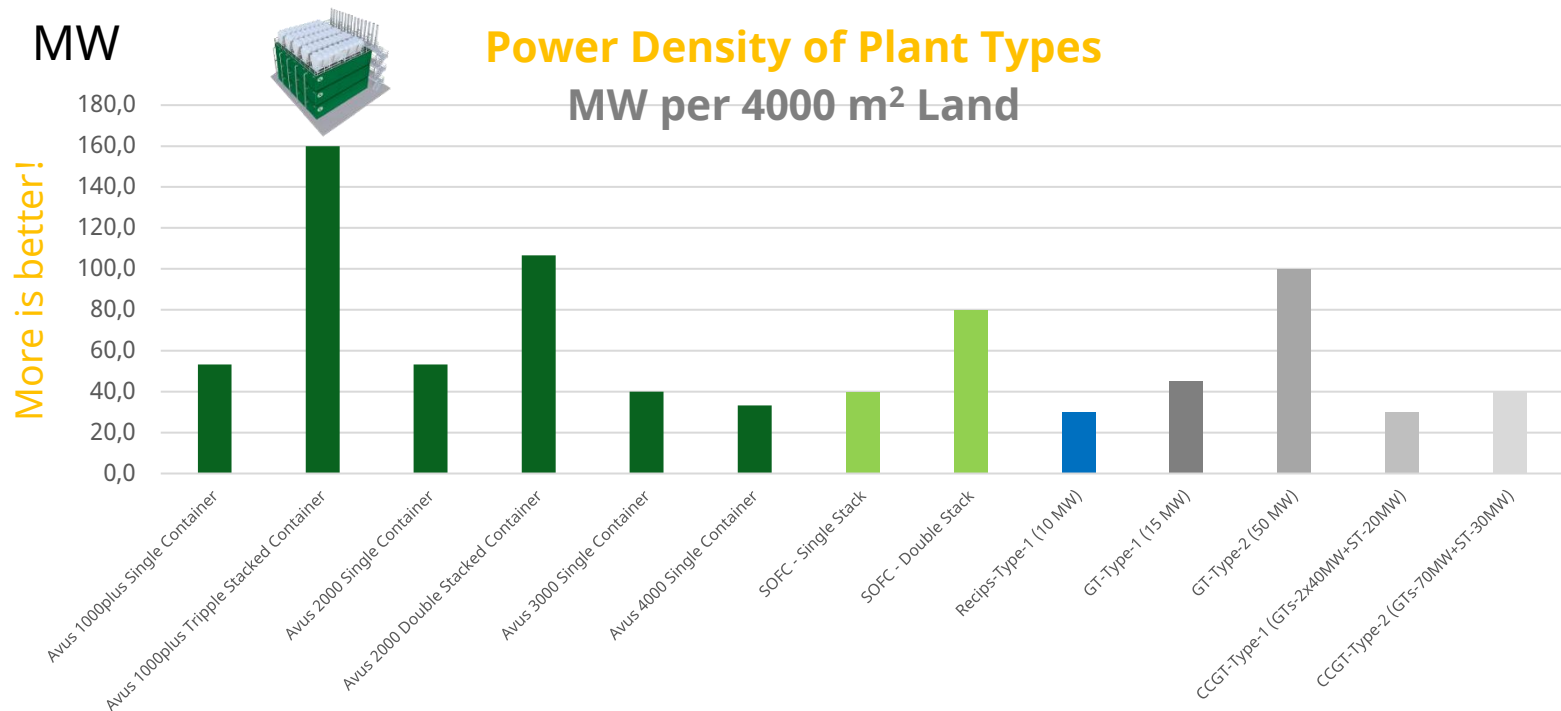
Redundancy Ratio in % for a 100 MW size Power Plant

Formula: Sum Installed Capacity (MW) / Demand Capacity (MW)



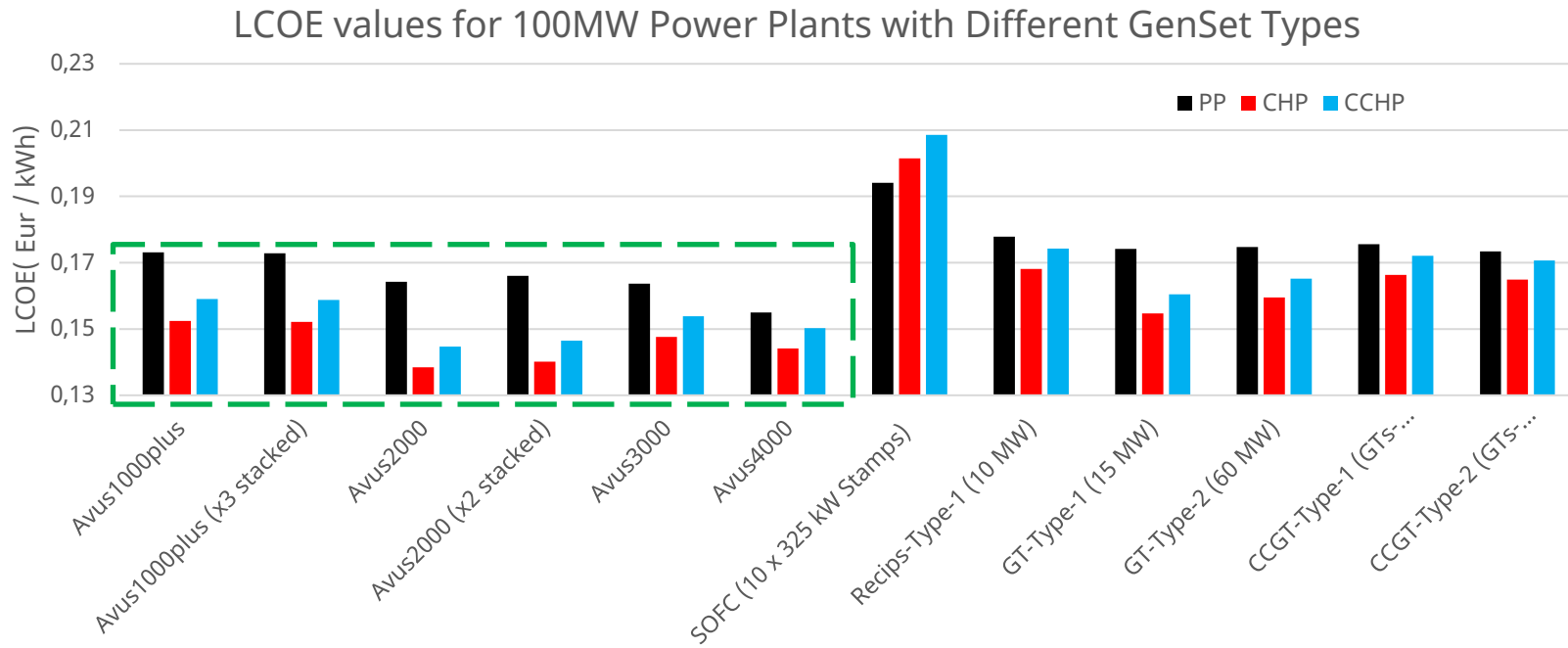
On-Site Power Generation – Alt. Overview? - 4000 m² DC-Example

Power density (land footprint) of various power plant type



On-Site Power Generation – Options Overview?

LCOE (TCO) Analysis – 15 yrs. term



Model for 100MW PP-CHP-CCHP Plant

Plant Features and Energy Balance

Electrical Power Capacity Net $98.4\text{MW}_{\text{el.}}$ @ 10/20/33kV

Installed Cap. $115\text{MW}_{\text{el.}}$

Redundancy matching 99.9% availability guarantee

Cooling Capacity 69.9MW_o @ 18°C

Heating Capacity $87.4\text{MW}_{\text{th.}}$ @ 95°C

Voltage 10/20/33 kV
Electrical architecture Off-Grid (or On-Grid)
Power Grid Connection Not available at site

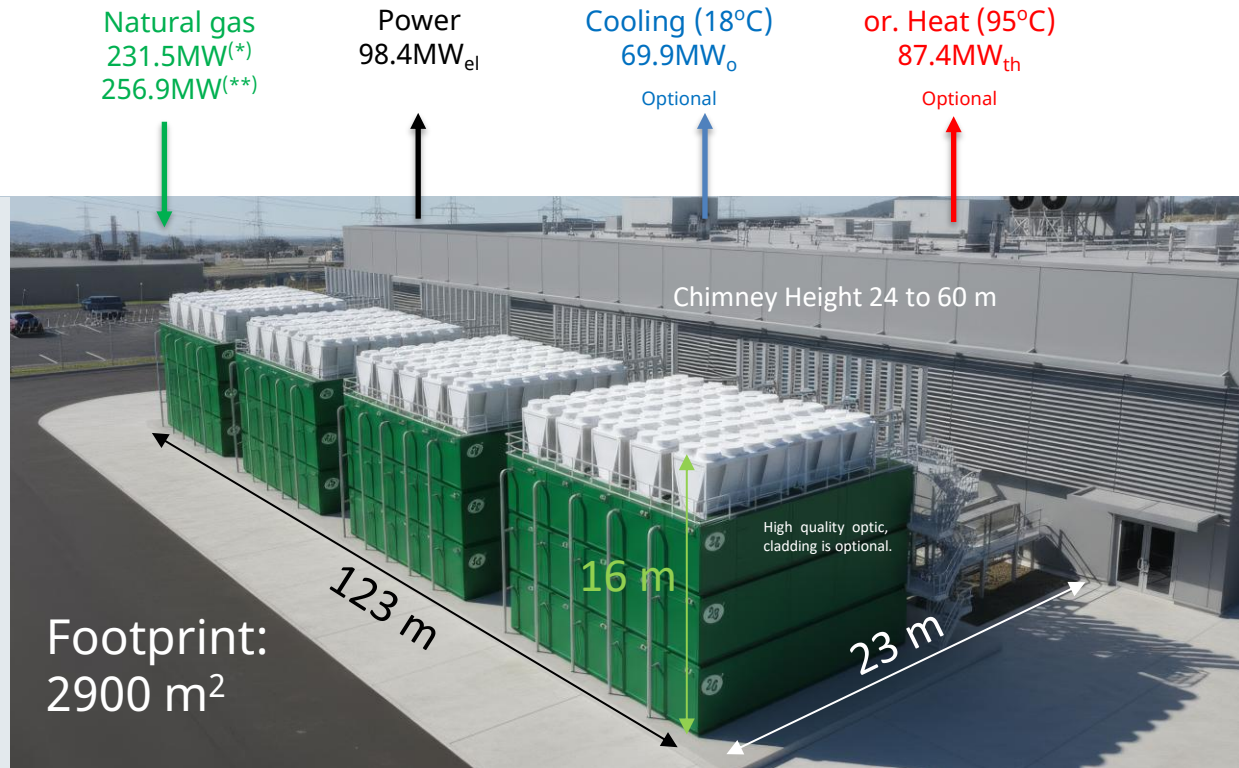
Natural Gas Consumption LHV $231.5\text{ MW}^{(*)}$
HHV $256.9\text{ MW}^{(**)}$

Power plant operational gas pressure 1 Bar(g)
HP – Gas Pipeline Available at Site 6-35Bar(g)

H₂ Switching possible when available

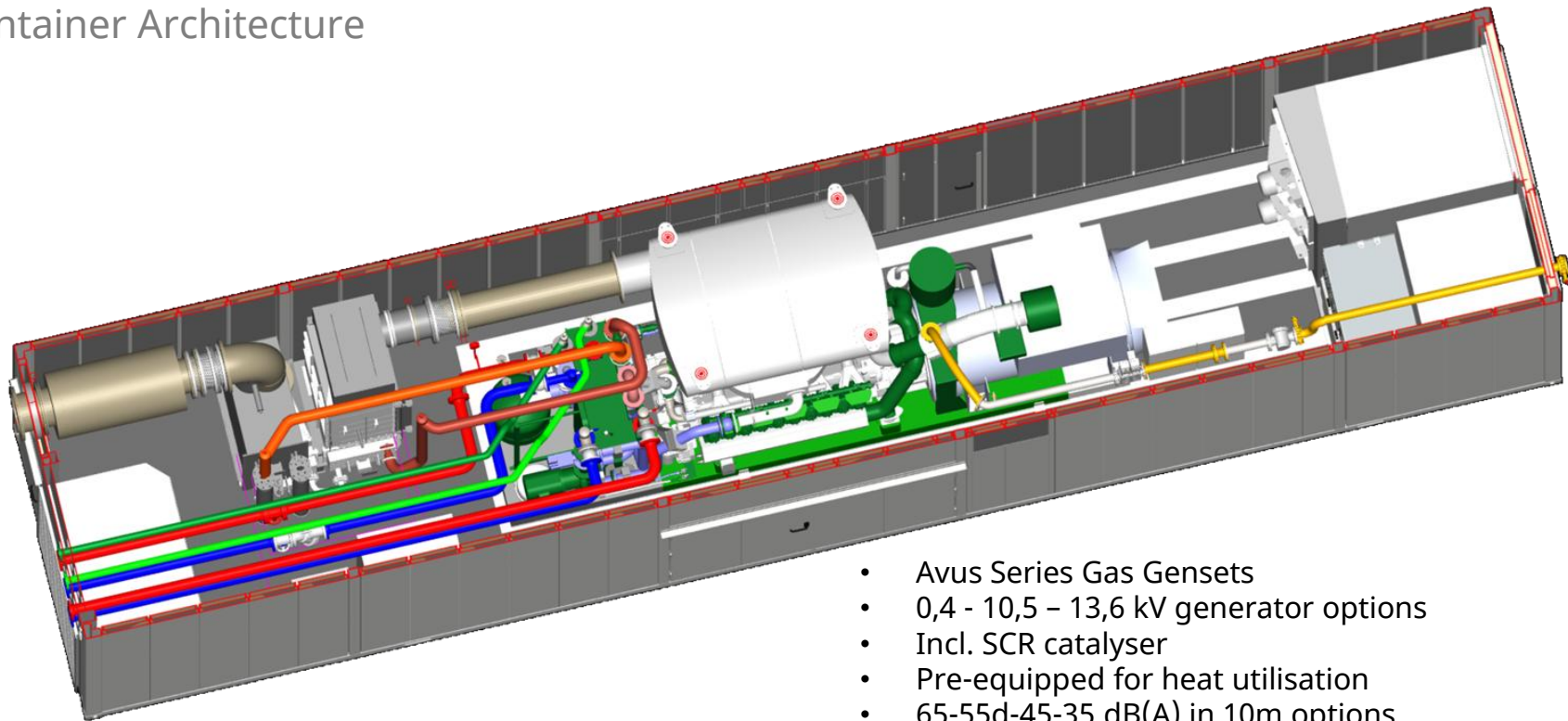
Air emission limits conform, sound emission limits conform

(**) HHV +5% fuel tolerance. 243 MW Fuel Input for pipeline sizing.



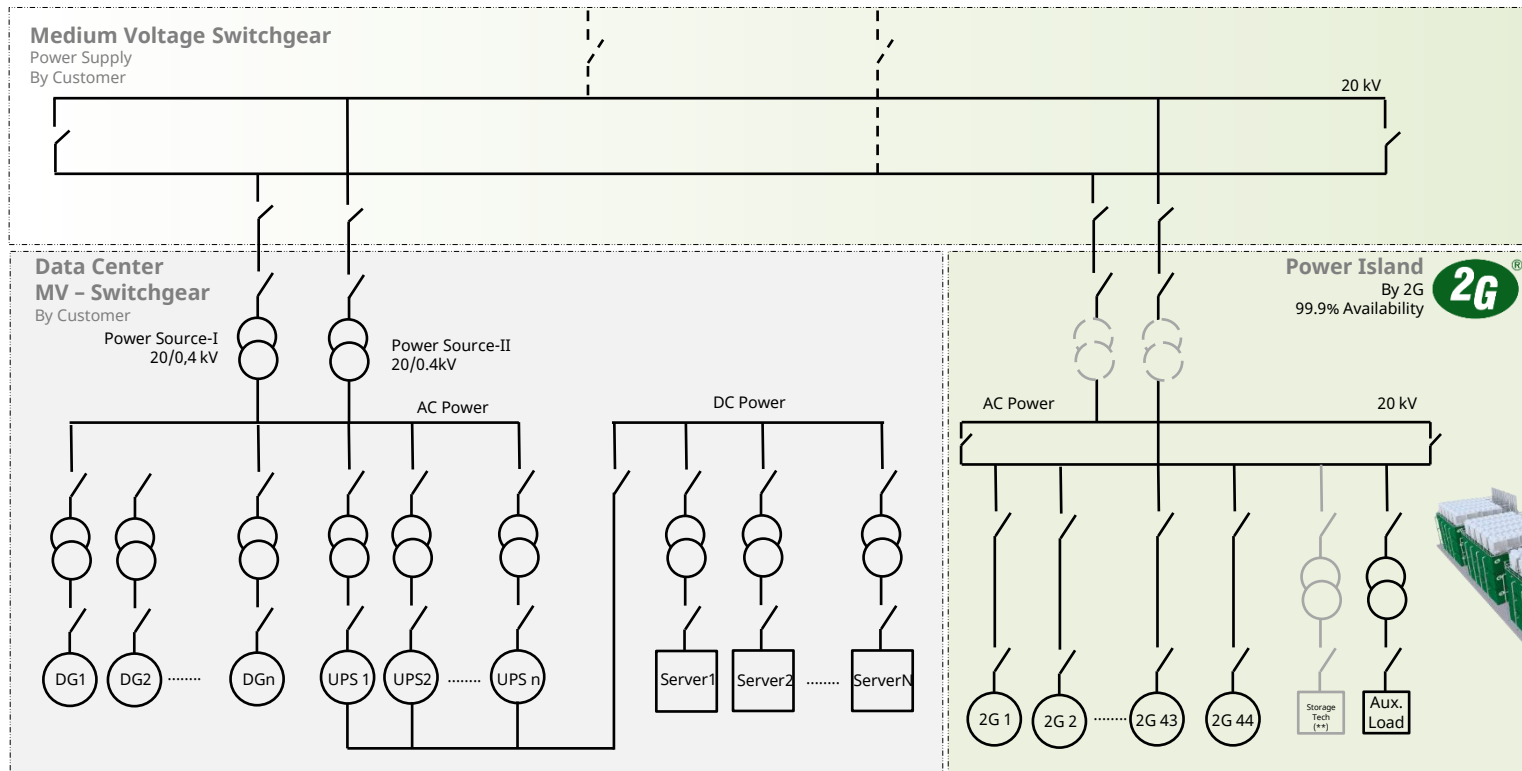
3D - Model for Avus Series Units – Scalling excellence

Container Architecture



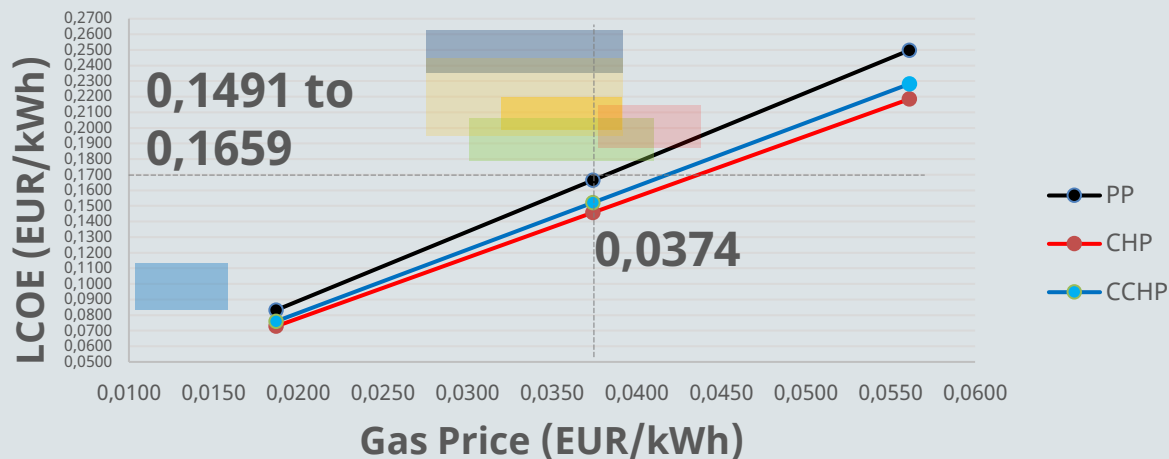
- Avus Series Gas Gensets
- 0,4 - 10,5 – 13,6 kV generator options
- Incl. SCR catalyser
- Pre-equipped for heat utilisation
- 65-55d-45-35 dB(A) in 10m options

2G Containerized Solutions – Electrical Architecture



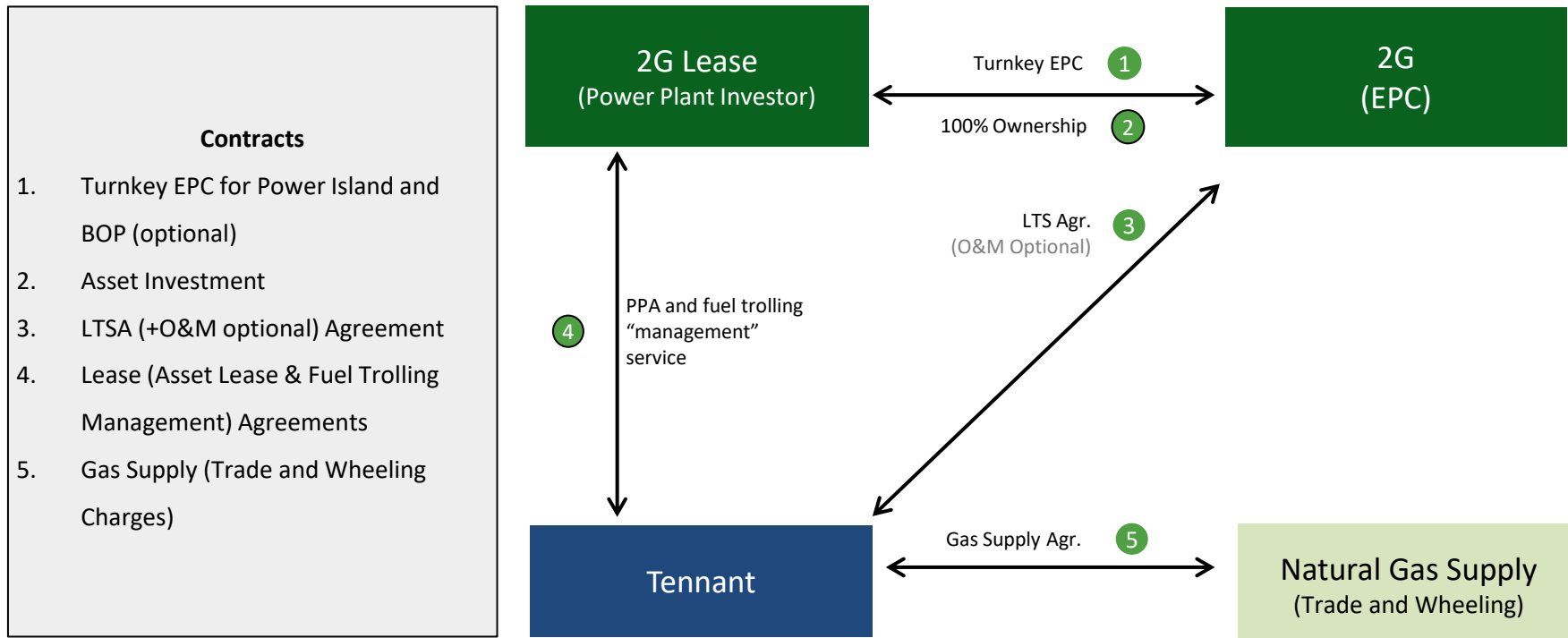
TCO in Variation to Fuel Price

Leverage Cost of Electricity (LCOE) vs. Fuel Price
GenSet Alternative 1



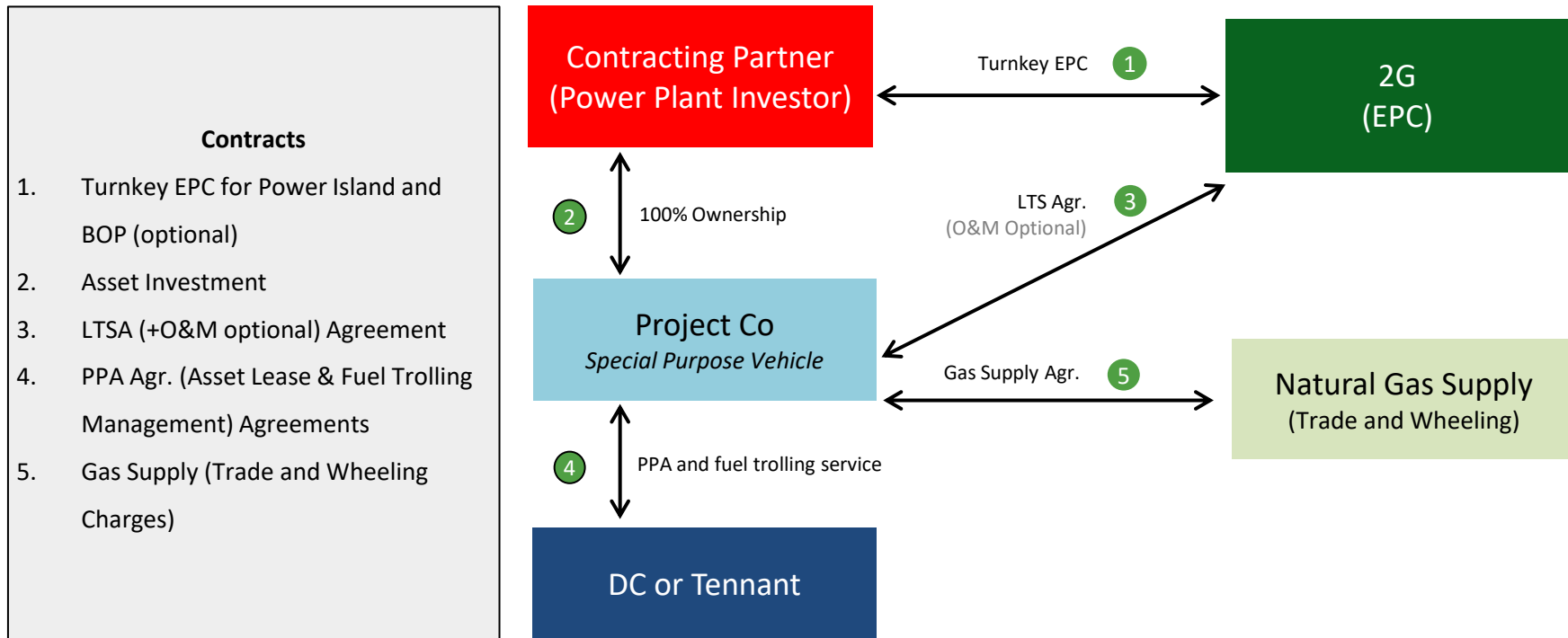
Lease Structure

5-10-15 Yr. Term alternatives



PPA Structure

5-10-15 Yr. Term alternatives



The background of the top-left section is a photograph of the Golden Gate Bridge in San Francisco, viewed from a low angle looking up at the bridge's towers and suspension cables.

Bridge -

Problem: Time-To-Power

The background of the top-right section is a dark green circle with a white, stylized "2G" inside. A registered trademark symbol (®) is located at the top right of the circle.

2G

Solution: Bridge - 2 - Grid

The background of the bottom-left section is a photograph of several high-voltage electrical transmission towers and power lines stretching across a landscape.

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Affordable – Highly Reliable – NetZero

Thank you for your attention!

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