



G L O B A L F O R U M

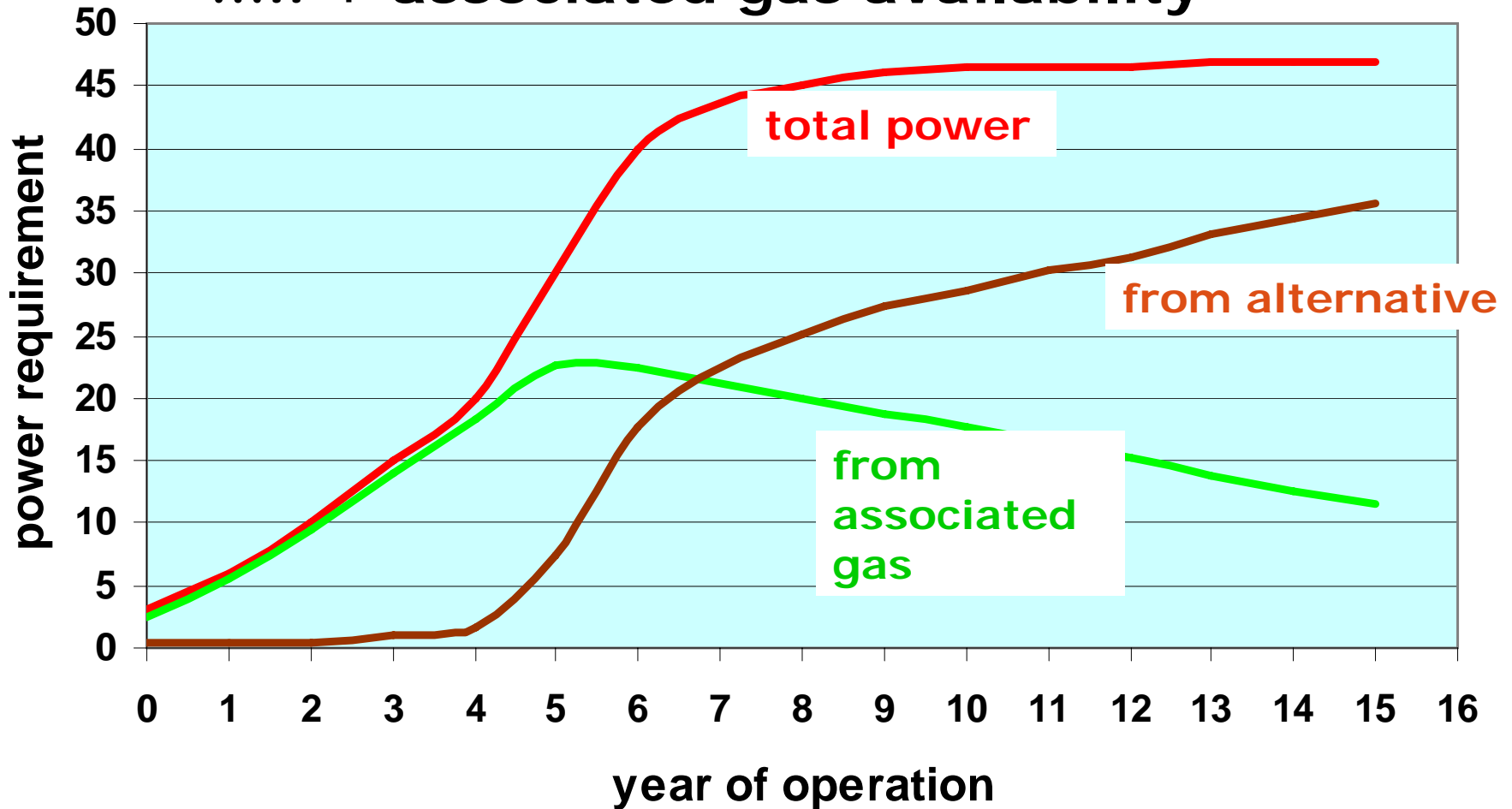
**On Flaring and Venting Reduction  
and Natural Gas Utilisation**

# Gas to Power

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Wärtsilä Power Plants  
[www.wartsila.com](http://www.wartsila.com)

# An example of power demand

..... + associated gas availability



# And even more varies .....

- The gas heating value: 42 MJ/m<sup>3</sup> - 25 MJ/m<sup>3</sup>
- The gas Wobbe index: 45 MJ/m<sup>3</sup> – 30 MJ/m<sup>3</sup>
- The knock resistance (Methane number) 70 – 40
- The daily gas flow

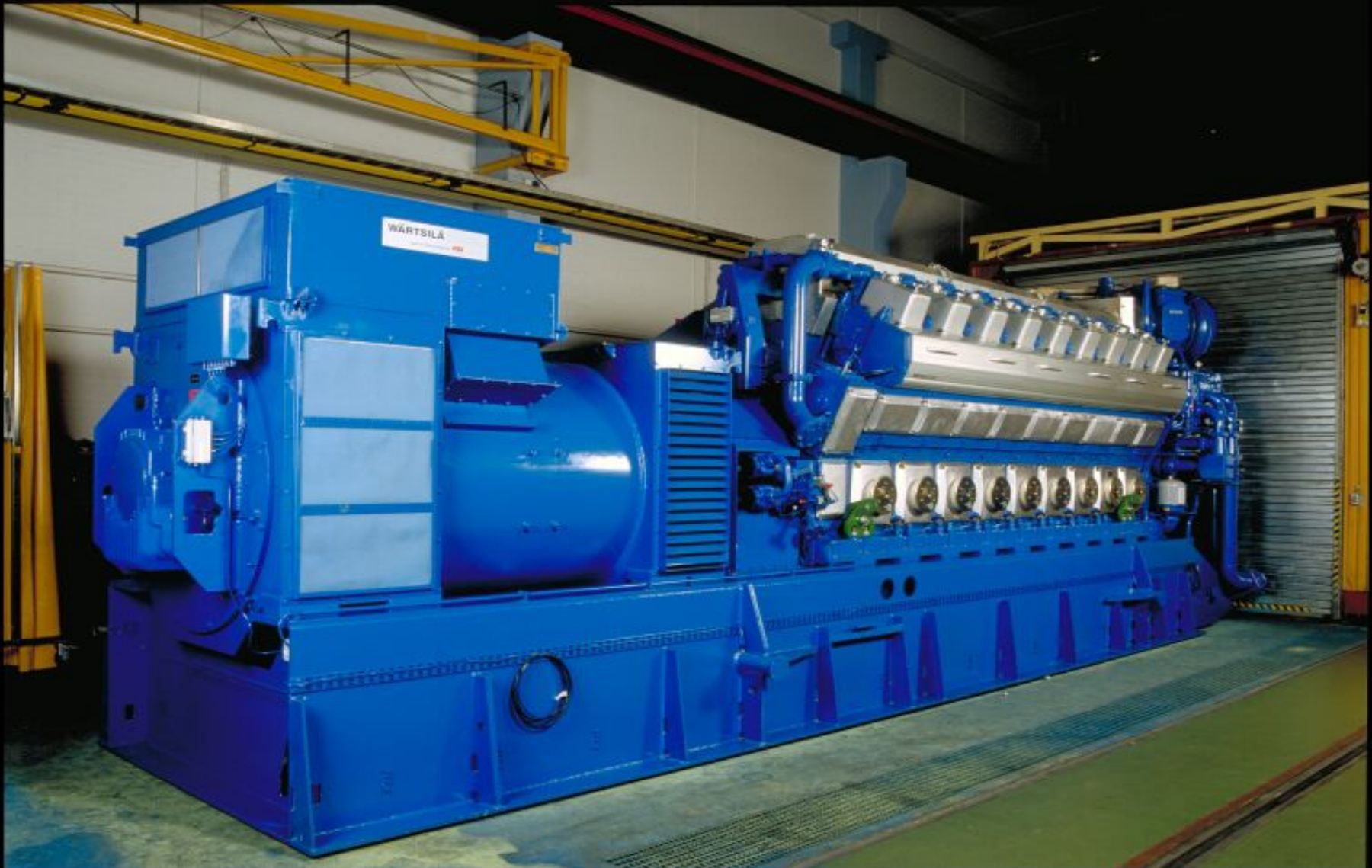
Required, a technology that:

Is insensitive to gas quantity and quality

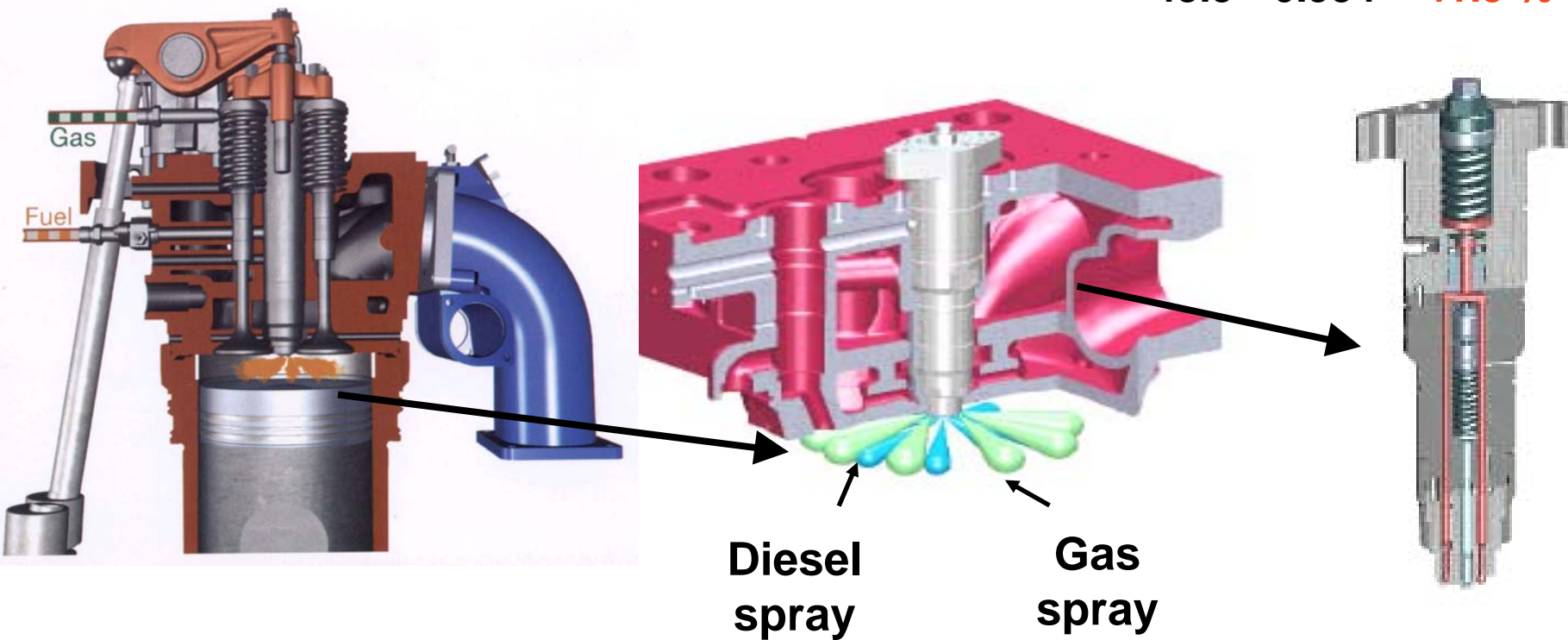
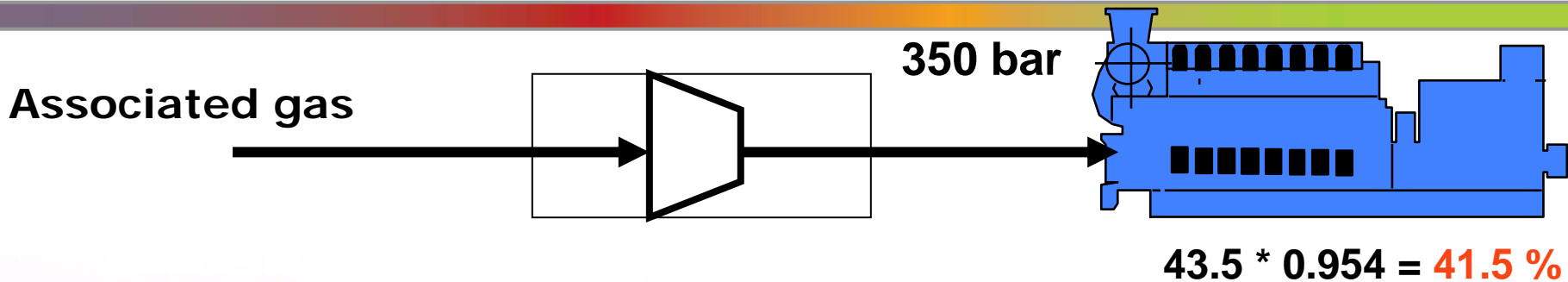
Can use a back up fuel

Has a high utilisation efficiency

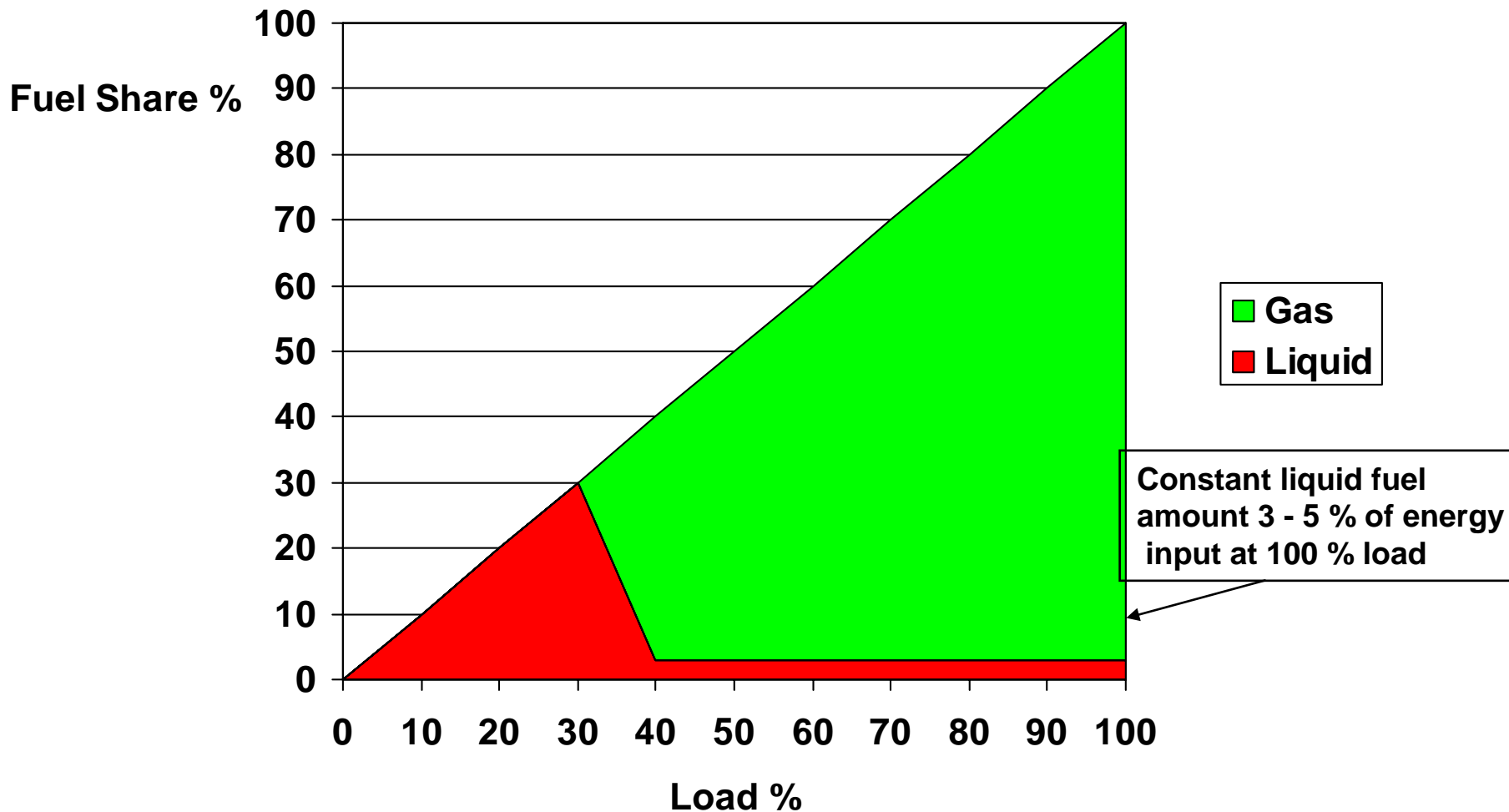
# A reciprocating engine + generator : the solution



# The technology: a gas-diesel engine

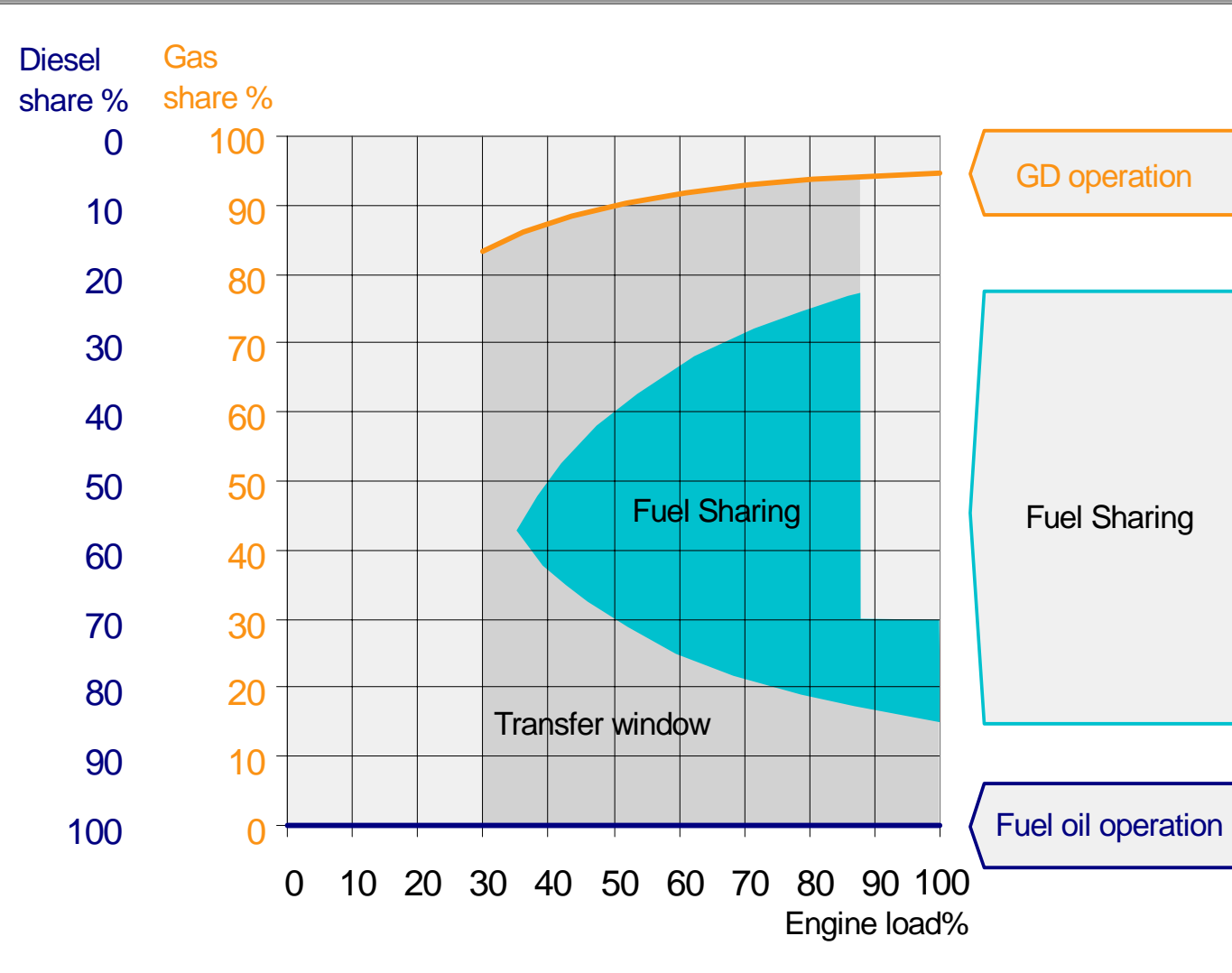


# Operation in 'full' gas mode





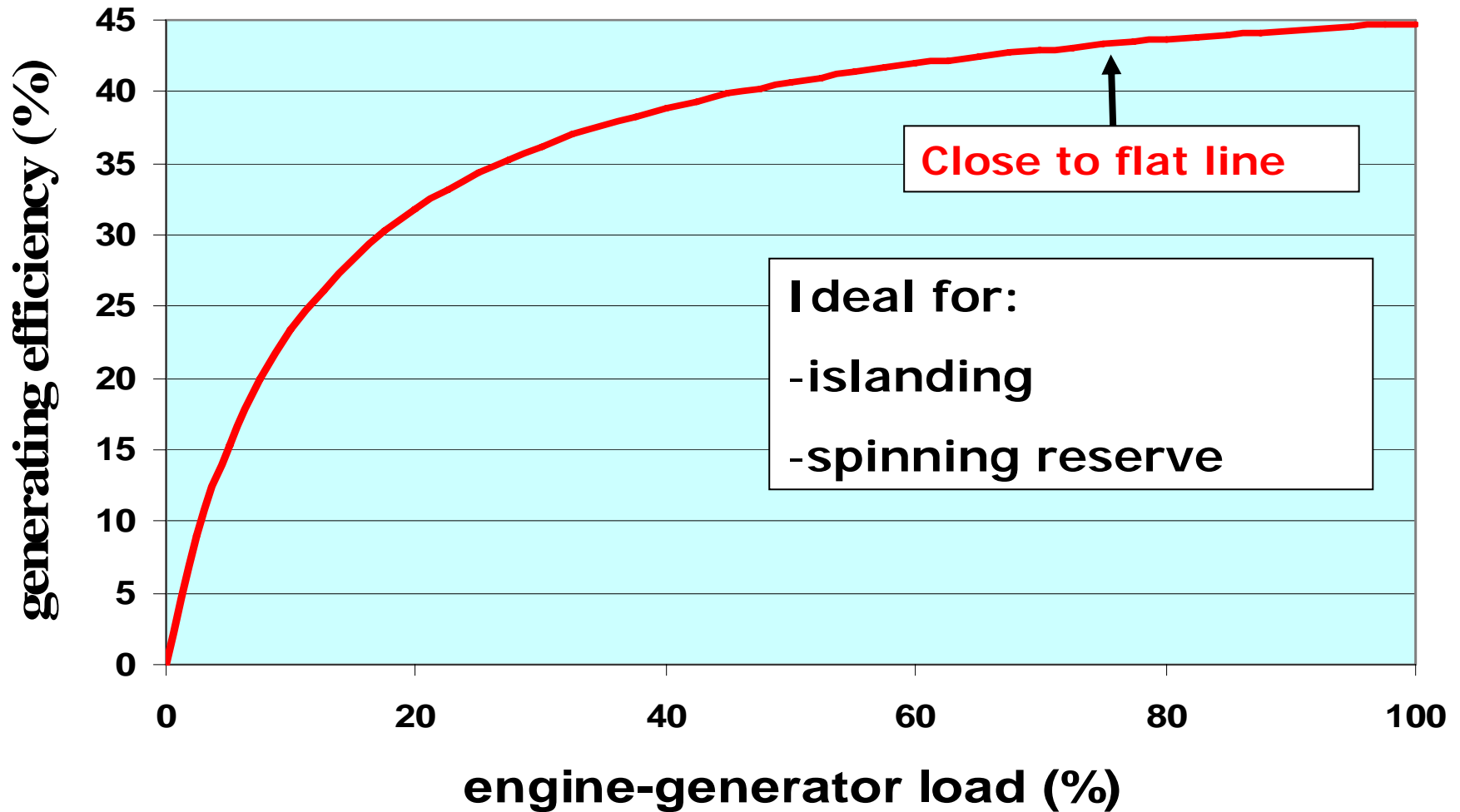
# No power problem if the gas flow varies complement with crude, HFO, MDO, LFO



**diesel  
pilot**

**gas and oil  
share  
adjustable**

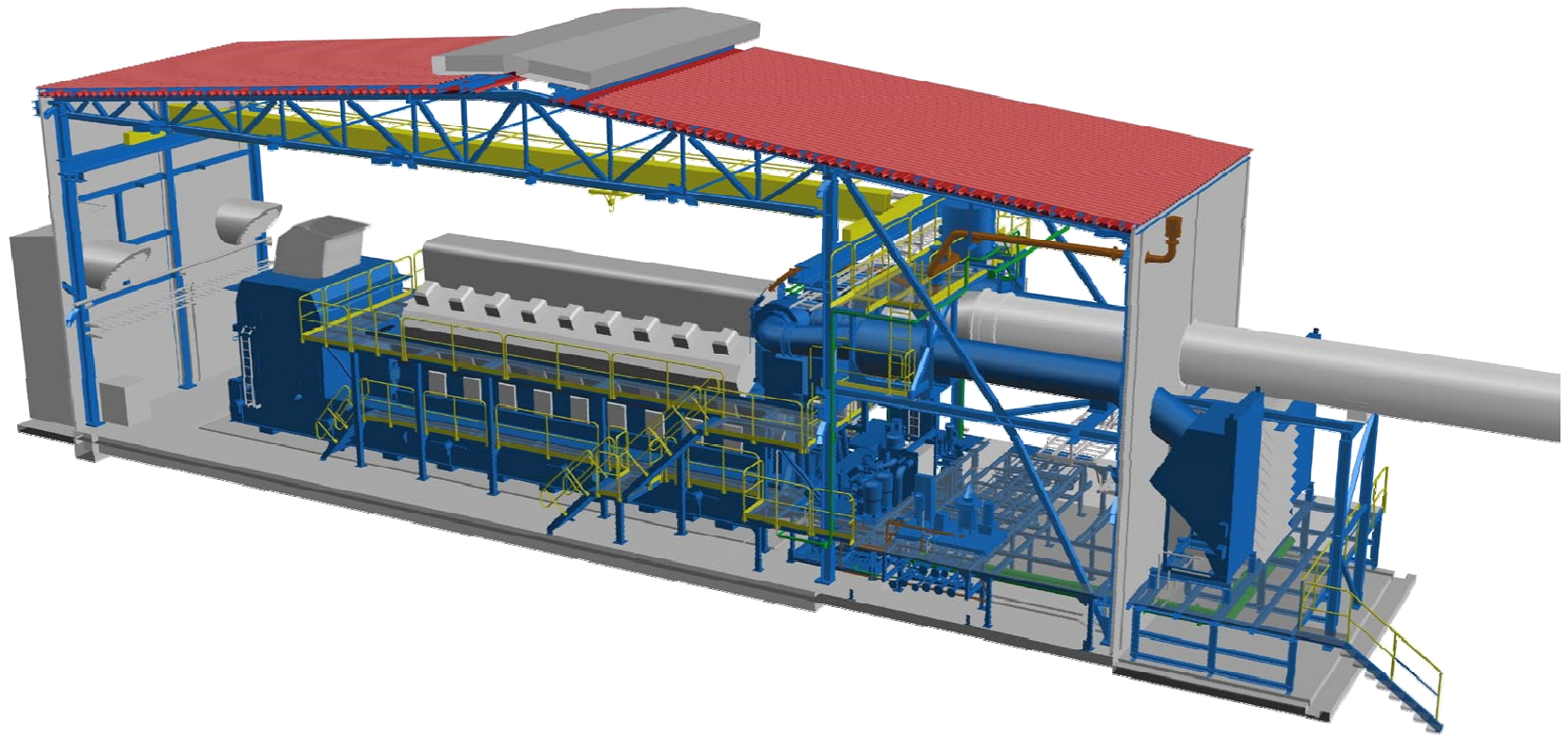
# The efficiency





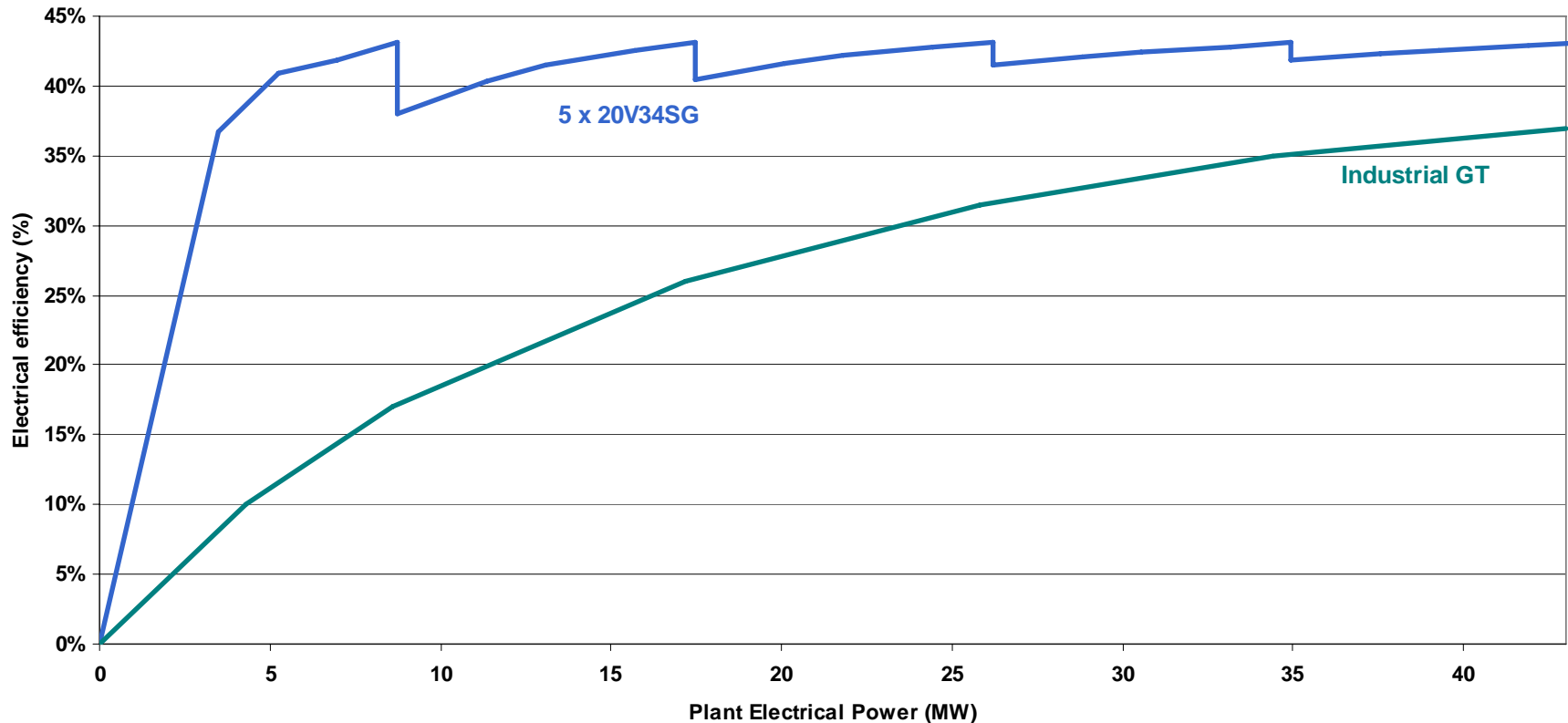
# A modular approach

**Repeatability, flexibility, adaptability, reliability**



# Multi unit gas engine power plant

The multi unit gas engine power plant has very high part load efficiency.  
Example with 5X20V34SG ~45 MW plant

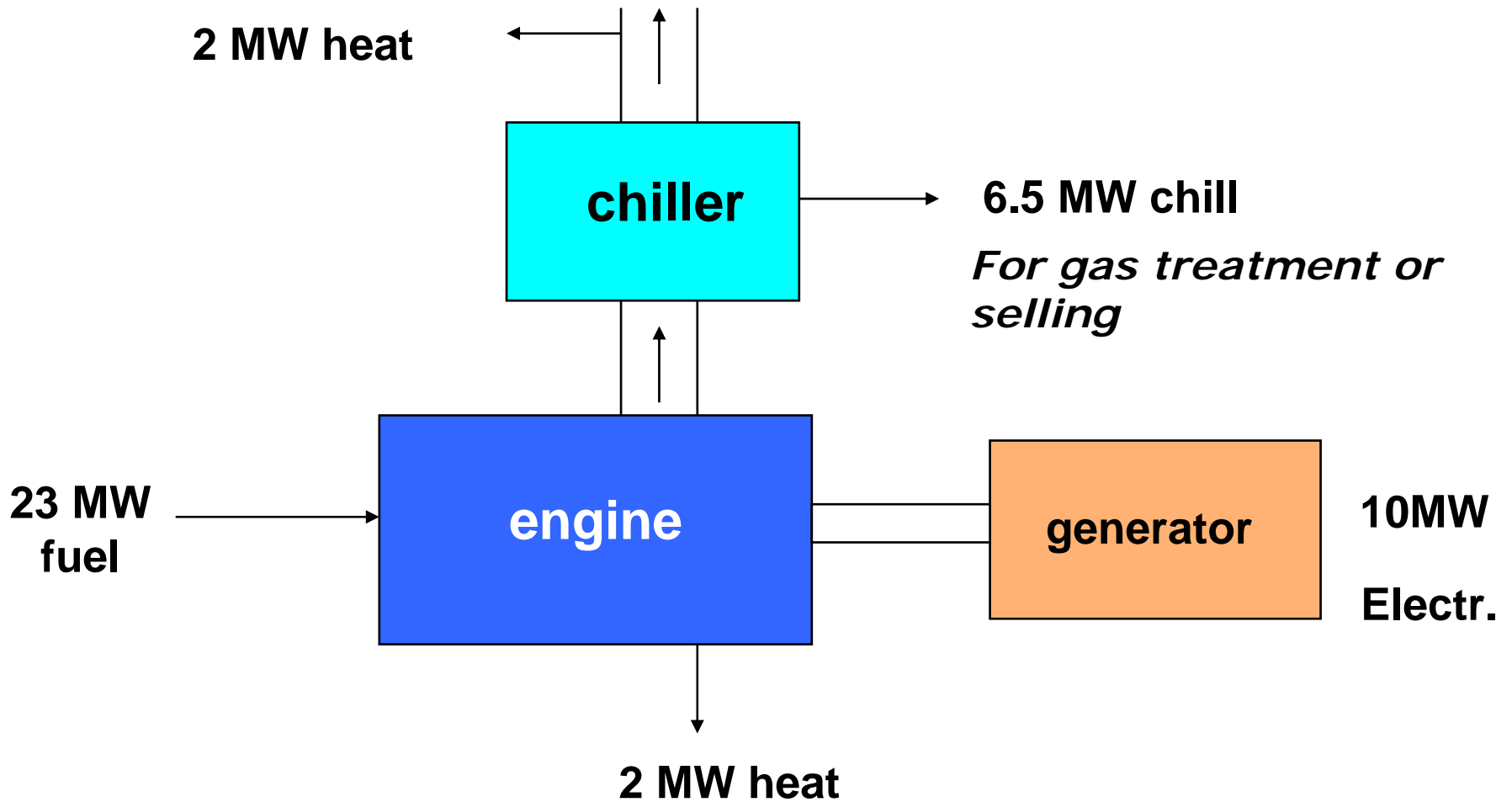


Source: Alstom product brochure 01; Wärtsilä perf

# Fuel-sharing reference in Ecuador

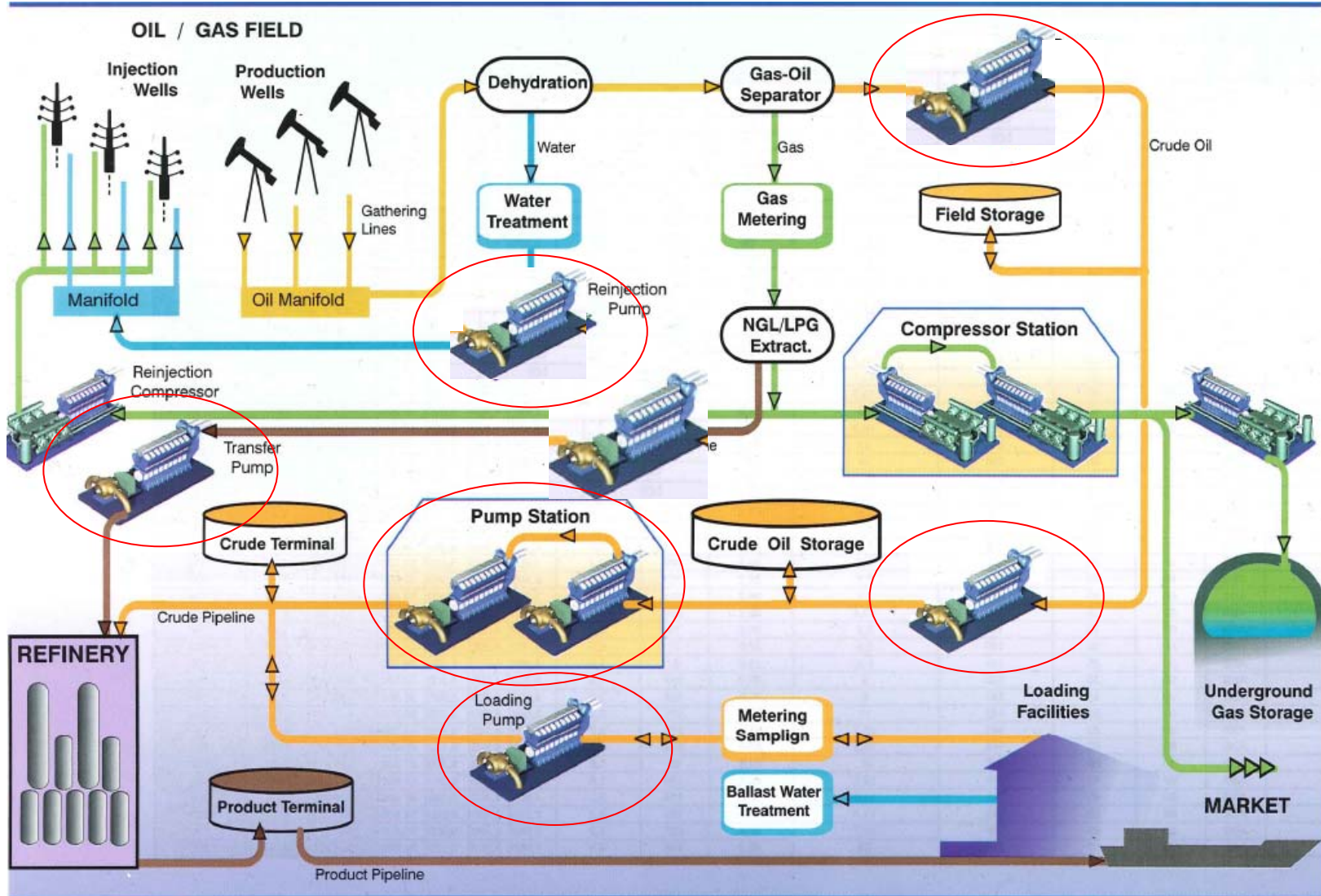


# Even more energy available





# Not only electric power.....



# References: Storage

## Gas engines as compressor drivers

### REN - Armazenagem, S.A, Portugal

Gas storage in salt caverns

- 100 000 Nm<sup>3</sup>/h; 37 -> 187 bar
- 2 x 16V25SG + reciprocating compressor
- in operation since 2005



### Lentransgaz, Russia

Gas Storage aquifer

- 440 000 Nm<sup>3</sup>/h; 45 -> 150 bar
- 4 x 18V28SG + reciprocating compressor
- in operation since 2005



# To remember

*Flaring can be reduced and the gas can be used with high:*

1. Fuel flexibility
2. Power flexibility
3. Fuel-to-power efficiency

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FLARING REDUCTION  
& GAS UTILISATION

