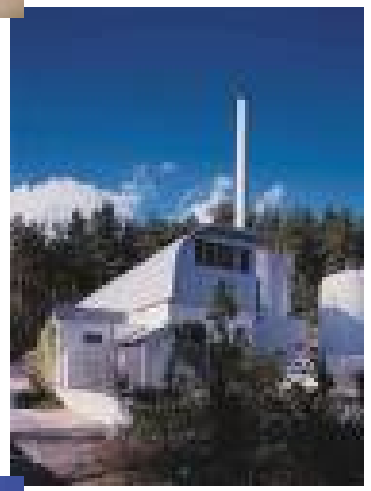
Stationary Engine Applications

By Johan Boij Wärtsilä finland Oy

Market Definitions



Operational mode approach

- BASELOAD
- INTERMEDIATE
- PEAKING

Infrastructure approach

- CENTRALIZED
- DECENTRALIZED
- DISTRIBUTED

Focus market of Wärtsilä Power Plants

Wärtsilä serves power generation needs in the Decentralized power market focusing on the intermediate load applications but also serving the base load and peaking needs

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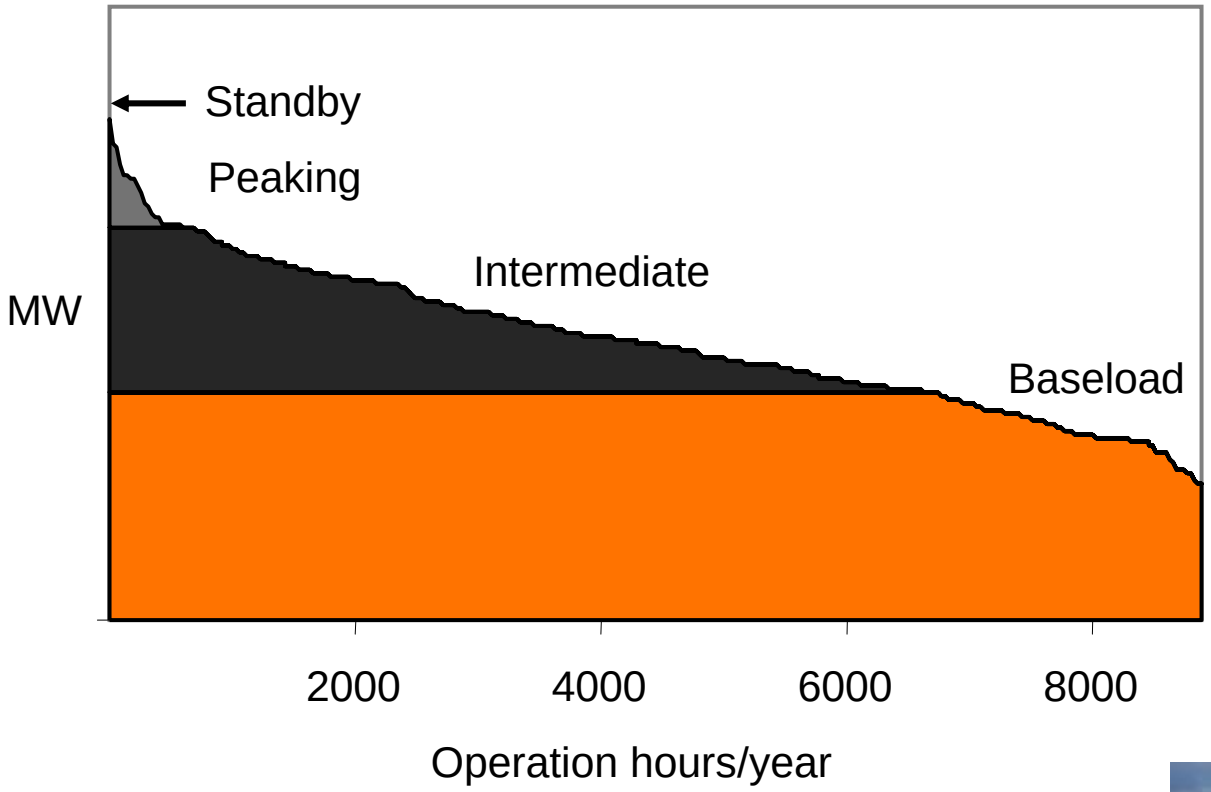
Market Definitions by operation mode



We are Power Plants

- Wärtsilä is the leading supplier for flexible power plant solutions in selected niches.
  - We supply flexible **baseload power solutions** for the developing world, islands and remote areas
  - We supply solutions for **grid stability and peaking** needs for industries
  - We supply solutions for **industrial self-generation and bio-fuel** power plants
- No matter what the solution, efficiency, flexibility, and versatility come with the package.

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Heavy Fuel Oil

PAVANA III, HONDURAS

MAIN DATA:	
Name:	Pavana III
Type:	Oil power plant
Location:	Honduras
Owner:	Luz y Fuerza de San Lorenzo S.A. (Lufussa)
Delivered:	2004
Engines:	16 x Wärtsilä 18V46
Total electrical output:	267.4 MW

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Gas Power Plants

WESTERN 102, USA

MAIN DATA:	
Name:	Western 102
Type:	Baseload, Gas power plant
Location:	Nevada, USA
Owner:	Barrick Goldstrike Mines, Inc.
Delivered:	2005
Engines:	14 x Wärtsilä 20V34SG
Total electrical output:	115.6 MW

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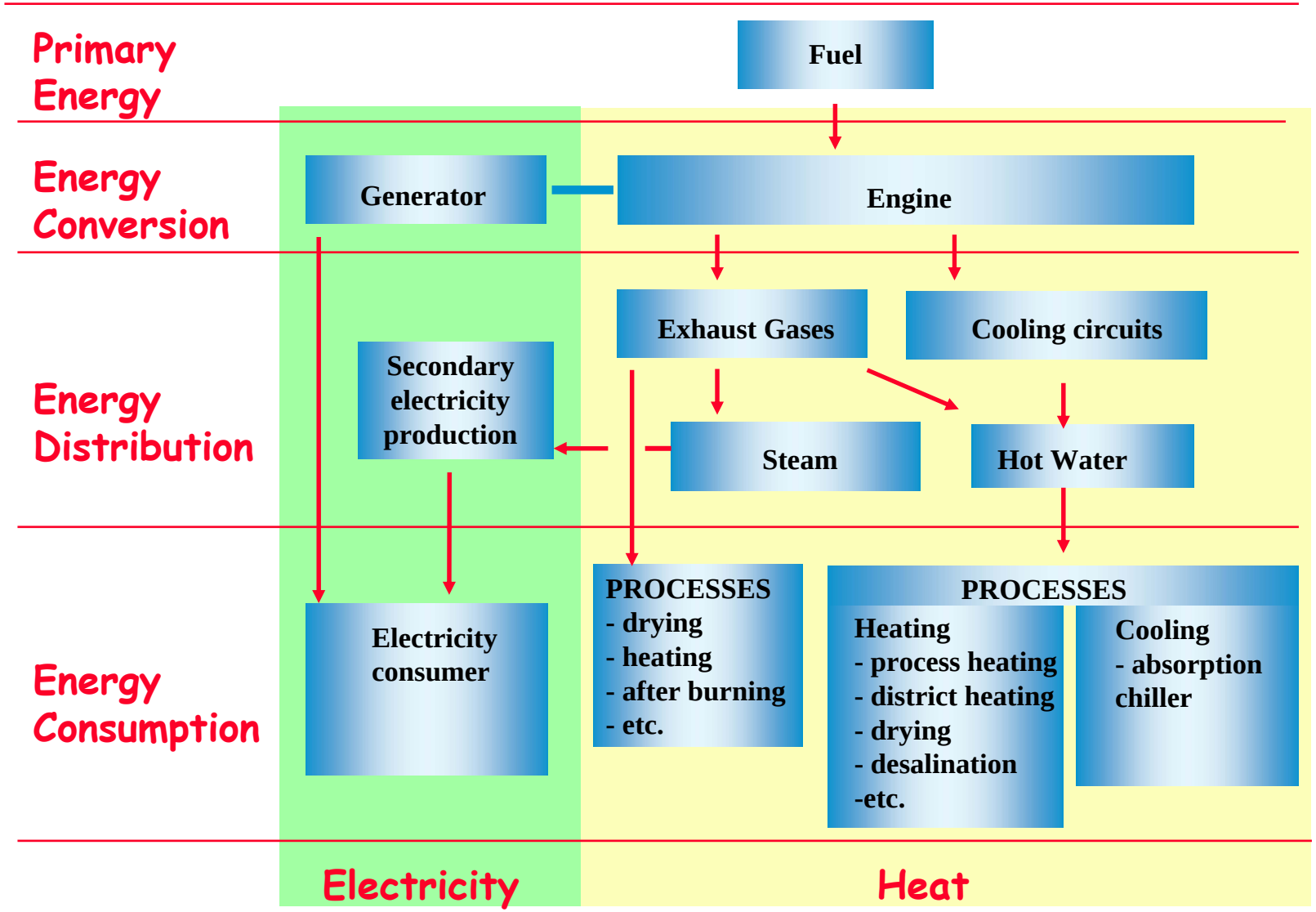
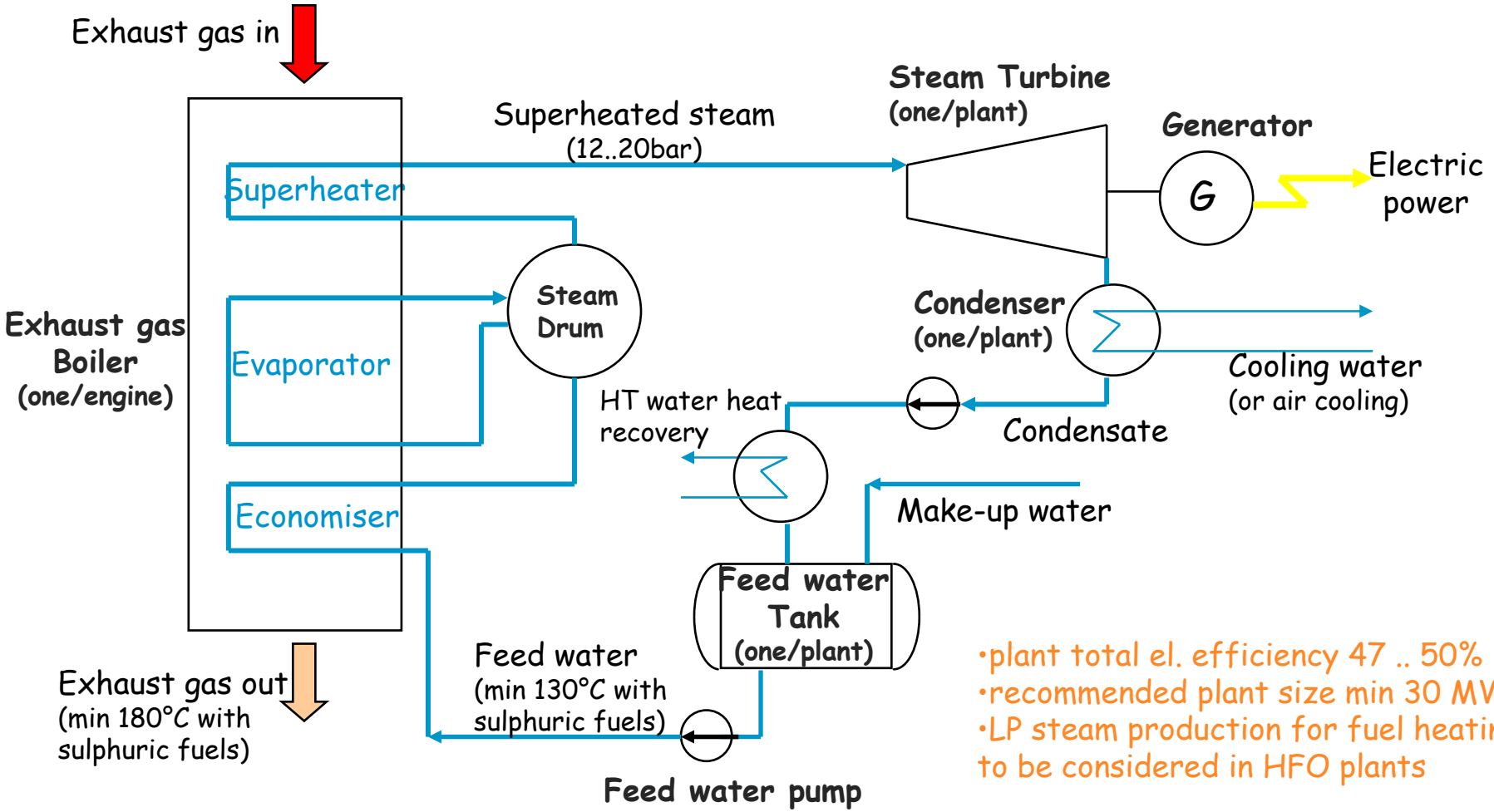
ULE system - Plains End, USA, 20*18V34SG

CHPs & CC applications



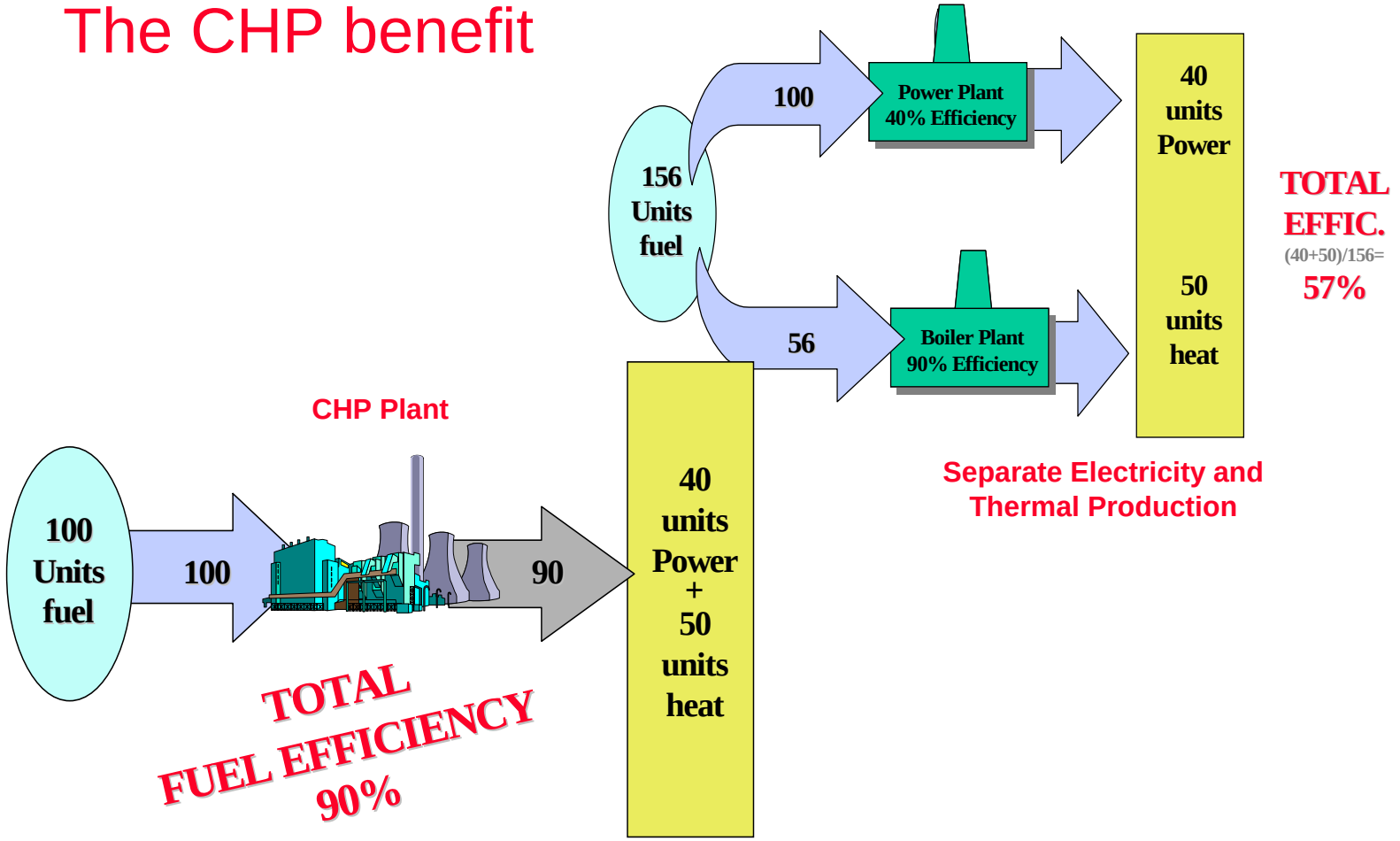
Combined cycle system



- plant total el. efficiency 47 .. 50%
- recommended plant size min 30 MWe
- LP steam production for fuel heating to be considered in HFO plants

CHP (Gas) Benefit

The CHP benefit



CHP (Gas) Reference

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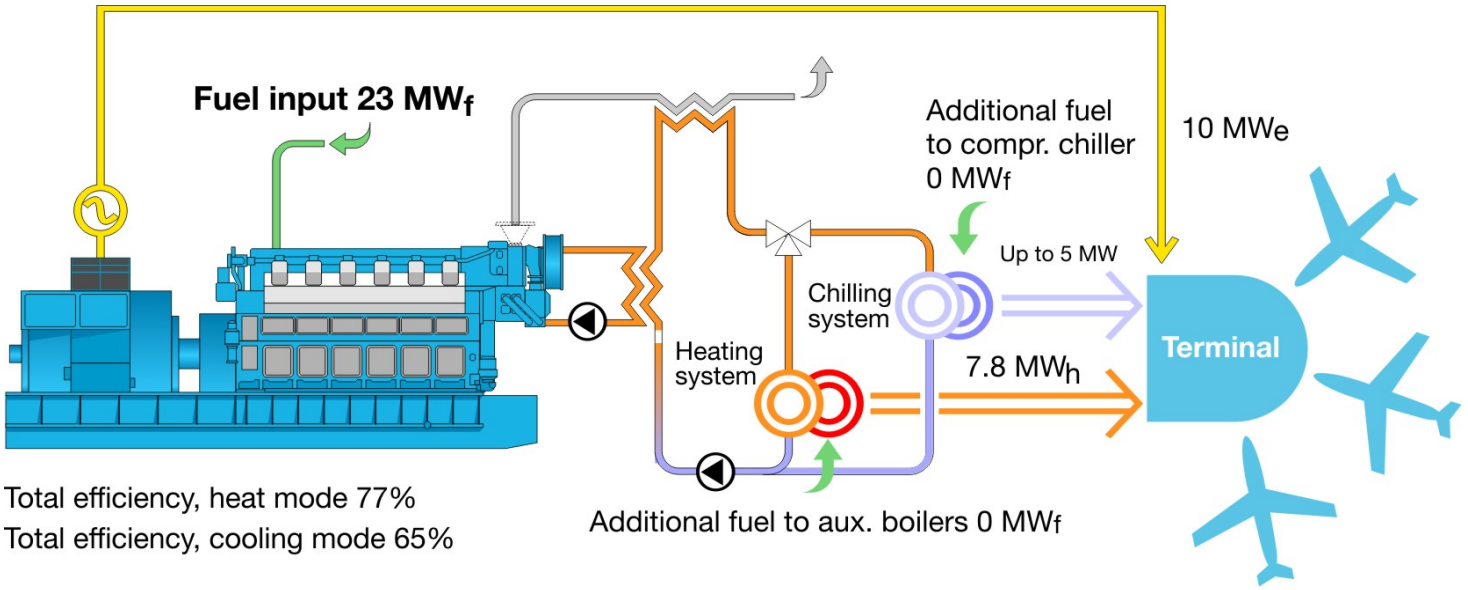
Trigeneration

Solutions for airports

**Trigeneration: power generation,
heat generation and absorption cooling**



Trigeneration

Trigeneration references

Barajas Airport, Spain

Engines: .....……6 x Wärtsilä 18V32DF
Total electrical output: ….33,600 kWe
Total heating output: .....24,000 kWth
Total absorption
cooling output: ……18,000 kWc
Total efficiency……74%

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Oil and Gas applications

1 st pumping station, BTC, Turkey 2002,
4+1x 18V34SG

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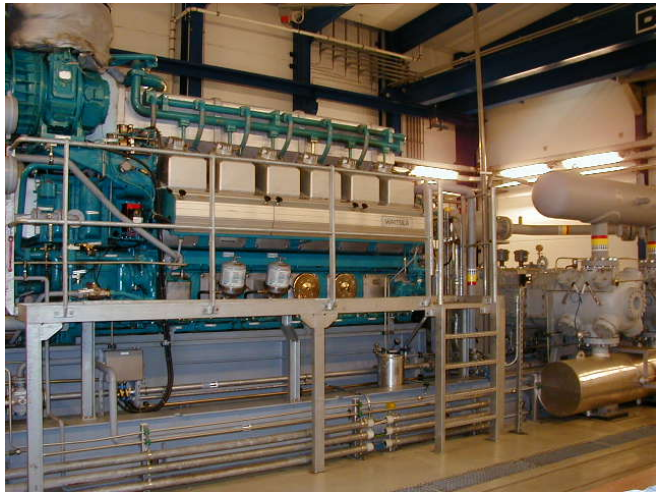
Gas engines as compressor drivers

Bucholz, Germany
Gas storage in aquifier
- 60 000 Nm^3/h; 60 -> 140 bar
- 1 x 12V25SG + reciprocating compressor
-in operation since about 2000



Moss Bluff, Houston, USA
Extension of underground gas storage facility
- 100 000 Nm^3/h; 34 -> 138 bar
- 1 x 18V34SG + reciprocating compressor
- in operation since 2000

Oil fields / Associated Gases

- **Dygoil, Equador**
- 2 x Wärtsilä® 16V32GD
- 11MWe
- The power plant started up in March 2004, and it operates with oil field associated gas as the main fuel, and Crude oil as supplementary fuel.
- The plant is designed to utilise the associated gas and to minimise the need for flaring, and unnecessary CO_2 emissions are avoided

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Bio-Oil

Pentesilea

Monopoli, Italy

3 x Wärtsilä® 18V32

24 MW running on liquid biofuel

The power plant, which started up in August 2004 operates with vegetable oil as fuel. Since the fuel is renewable, the CO_2 added to the atmosphere is negligible.

SCR for NOx abatement is installed.

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