

# Mega ASUs for IGCC



Air Liquide,  
the world  
leader  
for oxygen  
to IGCC

IGCC (Integrated Gasification Combined Cycle) is today an advanced solution offering high efficiency conversion of coal, petrol residues and other low -or negative- value feedstocks.

Air Liquide has been associated to the development of this technology for more than 30 years and is the world leader for oxygen to IGCC.

# Mega ASUs for IGCC

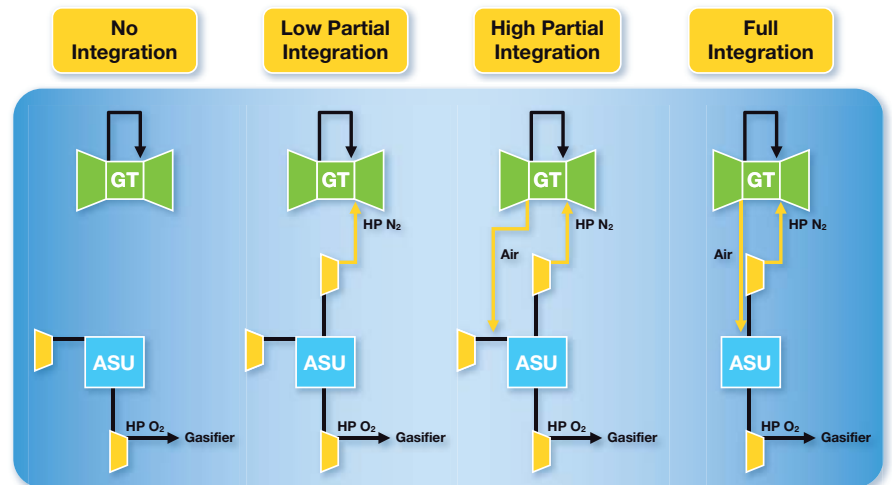
Mega ASUs for IGCC are designed and customized for specific requirements, such as impure (~ 95% O<sub>2</sub>), high pressure (up to 100 bar) oxygen and nitrogen production. More than 70% of IGCC capacities worldwide use Air Liquide technology, taking advantage of all the possible process integration schemes between gas turbine and Air Separation Units (ASU).



335 MW Elcogas project (Spain): full integration (heat, air compression, products). Today the only reference of this kind in the world.

## Mega ASUs for IGCC are designed for projects ranging from 1 500 tpd to 10 000 tpd:

- High pressure / Low purity (95% O<sub>2</sub>) Oxygen
- Nitrogen: depending on the need to dilute syngas (or H<sub>2</sub>) for combustion in Gas Turbine (GT).



## Air Liquide offers unique expertise for the IGCC market:

- Extra low energy ASU:
  - Low pressure distillation cycle (for low N<sub>2</sub> production)
  - Elevated pressure distillation cycle (for high N<sub>2</sub> production)
- Partial or total integration:
  - Air: Air from GT feeds the ASU
  - N<sub>2</sub>: Nitrogen from ASU is injected in GT
- Advanced process control: Fast load changes (operating up to 5% / minute)

With units operating all over the world, Air Liquide Engineering & Construction enjoys a strong experience in design, construction and operation of ASUs integrated with IGCC.

Project	MW (Net)	Oxygen (t/d)	Contract Type	Gasifier	Start-up
Wabash River (USA)	262	2 050	Plant Sale	ConocoPhillips	1996
Elcogas (Spain)	335	2 400	Plant Sale	Krupp-Koppers	1997
ISAB (Italy)	512	2 x 1 850	Gas Sale	GE (Texaco)	1999
Sarlux (Italy)	550	2 x 2 300	Gas Sale	GE (Texaco)	1999
Exxon-IPG (Singapour)	173	1 600	Gas Sale	GE (Texaco)	2000
Negishi (Japan)	342	2 400	Plant Sale	GE (Texaco)	2003
ENI-Sannazzaro (Italy)	150	1 540	Gas Sale	Shell	2005

## Air Liquide Engineering & Construction Cryogenics Europe

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Air Liquide is the world leader in gases for industry, health and the environment, and is present in 80 countries with 42.300 employees. Oxygen, nitrogen, hydrogen and rare gases have been at the core of Air Liquide's activities since its creation in 1902. Using these molecules, Air Liquide continuously reinvents its business, anticipating the needs of current and future markets. The Group innovates to enable progress, to achieve dynamic growth and a consistent performance.