

# COAL-FIRED IGCC PLANTS

Two key wins for Milan team



“We are extremely pleased to win two IGCC-related contracts. The trust that these two clients have placed in Foster Wheeler stems from our proven track record and comprehensive experience with IGCC, hydrogen and methanol production technologies and applications.”

**Marco Moresco**  
CEO, Foster Wheeler Italiana

## C.GEN win

Our Milan Team has been awarded a feasibility study by C.GEN N.V. for a 400-MWe coal-fired integrated gasification combined-cycle (IGCC) plant to be built in northern Europe.

C.GEN is a company belonging to the same group as Cobelfret, aimed at the development of new energy projects focused on coal and environmentally friendly solutions. Cobelfret is a transport and logistics group based in Europe.

This contract is the first award to Foster Wheeler Italiana under the terms of a framework agreement with C.GEN signed in 2007.

We will evaluate the benefits and issues associated with the production of electricity, as well as hydrogen or methanol, from a 400 MWe IGCC plant using coal as feedstock. We will also develop several technological solutions, with and without capture of carbon dioxide, and will evaluate potential plant performance and develop cost estimates.

## EPRI award

The same Italian team has won a contract from US-based Electric Power Research Institute (EPRI) for a feasibility and optimisation study covering the *“Engineering and economic assessment of IGCC coal power plants for near-term deployment.”*

We will undertake a technical and economic evaluation of thirty IGCC designs, processing different coals with five alternative gasification technologies, with and without carbon dioxide capture. The study is scheduled for completion by March 2008.

This work is being performed as part of EPRI's *CoalFleet for Tomorrow Programme*, a collaboration involving more than 60 power industry companies to encourage the early deployment of advanced coal power generation technology.

## About coal-fired IGCC plants

**Integrated gasification combined cycle (IGCC) power plants burn coal, or other solid fuels, to generate power. However, unlike a conventional coal-fired power plant, the first step in the IGCC process involves gasification of the coal.**

To generate power from coal, IGCC technology has a number of advantages over conventional coal-firing technology.

IGCC involves a sequence of processing steps. Coal is first milled to produce a fine powder, which is fed to the subsequent gasification step either pneumatically or as pumped water slurry.

Gasification takes place in a pressurised vessel, known as the gasifier, the configuration of which will vary depending on the gasification technology chosen. In the gasifier, coal makes contact with oxygen and is converted to syngas, fundamentally a mixture of hydrogen, carbon monoxide and carbon dioxide.

The hot syngas leaving the gasifier is cooled in a waste heat boiler that generates steam, and scrubbed with water to remove soot, ash, halogens and other contaminants. The syngas

is then scrubbed with solvents to remove impurities, such as hydrogen sulphide, carbonyl sulphide and carbonyls. The clean syngas is then used in a combined cycle (gas turbines and steam turbines) to generate electric power with high efficiency and extremely low sulphur, nitrous oxide and particulate emissions to the atmosphere.

IGCC can be adapted easily to capture and sequester carbon dioxide, with the use of efficient and reliable pre-combustion capture technologies.

To enhance the profitability of the investment it is possible to combine IGCC for power production with other processes for the production of hydrogen and other syngas-derived products such as methanol, dimethyl ether, and substitute natural gas.