

OCC3 – Panel Session

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The 3 components of oxy-CCS

- Oxyfuel Boilers
 - There are now many operating pilot facilities that have tested a range of conditions, test coals, materials and process conditions.
 - There is the Callide Oxyfuel Project 30 MWe operating as an oxyfuel power station within an electricity Grid
 - There are several vendors of oxyfuel boilers with pilot and demo plant experience (Alstom, B&W, IHI, Hitachi, Foster Wheeler, and others with).
 - Let us not forget China – working quietly in the background, self reliant, a huge market of its own, and capable to making very large technological steps in a very short space of time.
- CO2 Capture Plants
 - There are a number of operation CO2 capture plants: (LCO2 - Vattenfall Cottbus; Callide A; and Ciuden; and GCO2 at Lacq for EOR).
 - We have a number of vendors which are developing capability and have been fortunate to gain experience through the various pilot and demo projects (Air Liquide, Linde, Air Products and others).
- Characterization of large CO2 Storage reservoirs to support large scale storage (e.g., the Surat Basin in Queensland, Mt Simon in Illinois, the North Sea and several basins in China).
- We also now have the FutureGen 2.0 167 MWe; White Rose 426 MWe; and Shenhua 200 MWe and others.

Looking Ahead – Buyer’s perspective

- As the customer, direct involvement in pilot and demo projects is very important – we need to be an informed buyer, and we will have to operate the plant and live with the success or otherwise of the investment.
- Facilitate and encourage competition amongst our vendors – we want to be able to buy from multiple suppliers.
- Continue to foster collaboration: between projects, with researchers, and within industry groups such as the IEA Greenhouse Gas R&D Programme.
- Probably we now need to establish a User Group for Utilities (to share the learnings, especially what went wrong and what was done to fix it.)
- More generally, to encourage sharing of information. There is a lot of private money sitting behind the R&D facilities, pilot projects and demo projects, but equally there is also a lot of Public money involved. There is an obligation to reasonably share what has been learned with the support of public money and to communicate effectively with public stakeholders about what we are doing.
- The Mantra is Safety, Environment and Reliability: Our common endeavour is develop and deploy technology (in this case OF technology) that is safe, results in improved environmental outcomes, and is reliable – it cannot be commercial if these three outcomes are not achieved.

Introduction of new technology

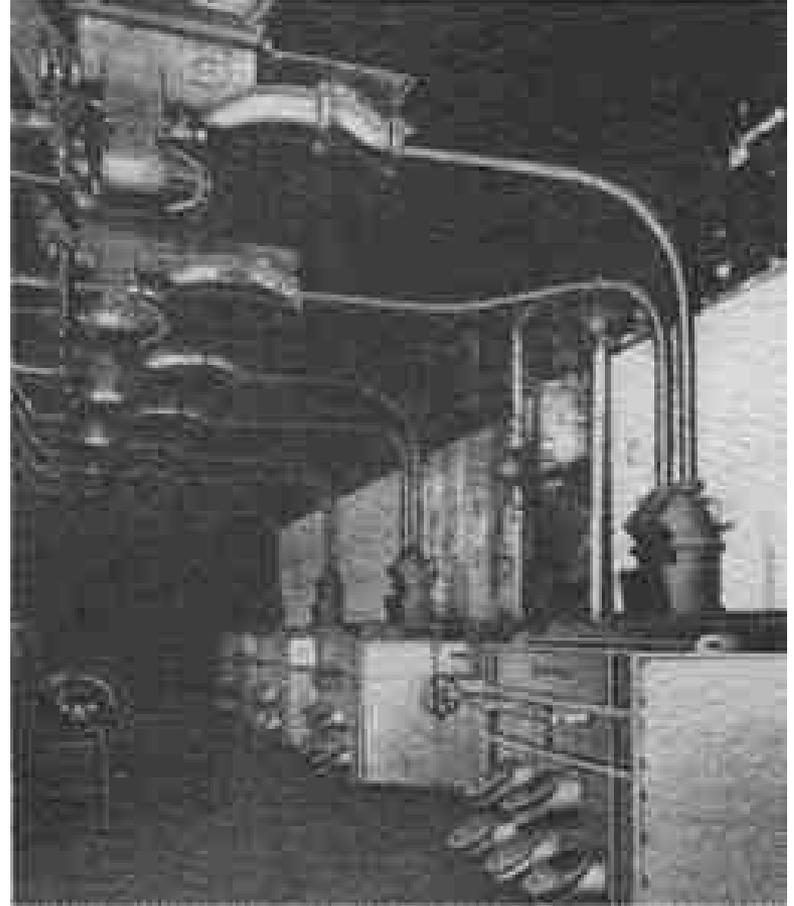
1st trial of PC combustion for power generation was done in 1918 at Oneida Street power plant (Milwaukee USA).

The result: boiler efficiency was dramatically increased to 81% (now we achieve 90% HHV basis).

Water-screen (water walls) were developed in 1920 to solve furnace slagging problems.

PC technology was not introduced commercially until about 1950.

Now of course PC technology is very mature and completely commonplace.



Concluding comments

- OCC3 has clearly showcased how far we have come on the development trail.
- Research infrastructure, pilot plants and demo plants are being developed and a number of vendors are positioning themselves in the market place.
- Right now there are some speed-bumps/traffic controllers (not road-blocks) which will dictate the rate of deployment – but there are many stakeholders, the investments going forward are very significant, and the time has to be right, but in the meantime, capability and confidence is building.
- Coal is so bountiful, that in one way or another it will remain a major source of primary energy and hydrocarbon feedstock.
- Therefore it is inevitable that Oxyfuel technology (on the combustion side as well as on the capture side) at least in terms of the underlying unit operations, will be applied as part of coal resource utilisation.

