Press release

IMMEDIATE RELEASE

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New gCCS system modelling technology used for Shell Peterhead project

PSE gPROMS-based software enables evaluation of design for flexible operation

LONDON, 31 July 2014 --- Process Systems Enterprise (PSE), the Advanced Process Modelling company, today announced that the Shell Peterhead carbon capture and storage (CCS) project will be the first commercial UK user of its gCCS® systems modelling environment for whole-chain CCS design and operation.

As part of the Department of Energy and Climate Change (DECC) CCS Commercialisation Competition, Shell and SSE Generation Limited are seeking to develop the world's first full-scale energy project capturing carbon dioxide from a gas-fired power station. CO_2 emissions from the Peterhead power plant will be captured and stored in the Goldeneye field.

gCCS is the world's first process modelling environment for support of design and operating decisions across the full CCS chain, from power generation through CO_2 capture, compression and transport to injection. It is specifically designed to allow developers across the chain to address issues of interaction and interoperability between different chain components.

The gCCS software will be used during the Front-End Engineering Design (FEED) study phase of the project to provide insight into the transient behaviour of the amine-based capture unit, and its effect on operations when integrated within the full system. In particular it will help to demonstrate the flexibility of the capture process design within the wider CCS chain through simulation of normal and off-design operational scenarios, and thus help reduce technology risks in this first-of-a-kind CCS project.

Alfredo Ramos, PSE's head of Power & CCS and leader of the development, said "this is precisely the type of large-scale CCS application that gCCS was developed to support. For the first UK commercial use, we are very pleased to see it being used on such an important development."

gCCS, launched earlier this month, is the commercially-supported product resulting from the £3m Energy Technologies Institute (ETI) funded CCS Systems Modelling Tool-kit project. The project was established to support the future design, operation and roll-out of cost-effective CCS systems in the UK and involved E.ON, EDF, Rolls-Royce, CO2DeepStore, PSE and E4tech.

gCCS is implemented on PSE's gPROMS advanced process modelling platform, and is already used widely in universities and research consortia around the world.

For Editors

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'About' information: www.psenterprise.com/news/pr140731.html

About the Peterhead project

Further information: http://www.shell.co.uk/gbr/environment-society/environment-tpkg/peterhead-ccs-project.html.

About gCCS®

gCCS is the world's first whole-chain CCS system modelling environment. It is designed to allow stakeholders across the CCS chain to address issues of interoperability between different chain components in support of design and operational decisions, and is implemented on PSE's gPROMS® advanced process modelling platform.

gCCS includes engineering-level models for conventional generation (pulverised coal and gas-fired), new generation (gasification and oxycoal), solvent-based carbon capture, compression, transport and injection. It also includes implementations of the SAFT equation of state specifically tailored for CCS, for accurately predicting solvent-CO_2 thermodynamic properties and phase behaviour of CO_2 streams with impurities.

gCCS is used to support design and operational decisions for specific areas such as amine plants (for example, start-up and shutdown dynamic studies); to investigate partial-chain operations (for example, to evaluate the impact of safety critical events); or to analyse interactions across whole CO_2 transmission networks with multiple sources and sinks.

The tool-kit also allows interfacing of commercial and proprietary software packages such as E.ON's PROATES®, allowing companies to preserve existing IP and workflows. In addition, an advanced custom modelling capability means that it is easy to add models of new processes and combine them with existing flowsheeting components.

gCCS is the commercially-supported product resulting from a £3m Energy Technologies Institute-funded project that included participants E.ON, EDF, Rolls-Royce, CO2DeepStore and E4tech. It is used by industrial and research organisations in Europe, Korea and the USA, on the Peterhead CCS commercialisation project, by commercial solvent developers for testing new solvents, and in over 20 universities around the world.

About Process Systems Enterprise Ltd (PSE)

PSE (www.psenterprise.com) is the world's foremost provider of Advanced Process Modelling software and services to the process industries. Companies apply advanced process models to explore the process decision space rapidly and effectively, in order to reduce uncertainty and make better, faster and safer design and operating decisions.

PSE provides gPROMS family products built on its gPROMS® advanced modelling platform. These include the general-purpose gPROMS ModelBuilder environment and the domain-specific gSOLIDS®, gCRYSTAL®, gFUELCELL®, gCOAS®, gCCS®, gFLARE® and gWATER® products. The company also provides expert Consulting services based on its tools.

Use of PSE's technology and services results in faster innovation, improved process and product designs, enhanced operations, reduced risk, more effective R&D and experimental campaigns and better capture and transfer of corporate knowledge across the organisation. Results are achieved with relatively low investment compared to alternative approaches, with rapid returns on investment.

PSE's global customer base of process manufacturing companies is served by operations in the UK, USA, Switzerland, Japan and Korea, and agencies in Abu Dhabi, China, Thailand, Malaysia and Taiwan. PSE is a spin-out of Imperial College London, and its software is used in over 200 universities around the world.

PSE is committed to defining, developing and driving the adoption of next-generation process modelling software and workflows. The company's own ability to innovate was recognised with the award of the prestigious Royal Academy of Engineering MacRobert Award for Engineering Innovation, the UK's highest engineering prize.