This document contains the highlights of the articles produced as a result of the EPOS press conference held on September 14, 2017.

Process integration across sectors

THREE Humberside process industry giants are participating on a European industrial efficiency project to promote cross-sector integration.

The Humberside Salt End Chemicals Park (Credit: INEOS)

The businesses in question, INEOS, Cemex and Omya – representing the petrochemical, cement and minerals industries respectively – are aiming to overcome issues of data confidentiality to improve energy and resource efficiency.

Central to their efforts is the EU Horizon 2020 and SPIRE-funded project called EPOS (Efficiency and Performance in process industry Operations via onsite and cross-sectorial Symbiosis), which provides a management tool to help foster collaboration within industry clusters.

EPOS Sector Blueprints

A key aspect of the tool is the use of sector blueprints, which characterise and visualise typical processes, units and utilities within a sector, alongside heat, electricity and material streams.

This allows companies to identify, for example, where by-product waste streams created by one sector could be utilised as feedstocks in another, providing economic or environmental benefits.

Greet Van Eetvelde

Greet Van Eetvelde, who is head of energy and innovation policy at INEOS and professor of energy and cluster management at Ghent University, Belgium, said that the blueprints allow businesses to share what they are doing without disclosing sensitive intellectual property.

"When you do not have a way to come up with some facts and figures, it is very hard to start a discussion and share with a company from another sector that you do not know, or have any information on," Van Eetvelde said. "So that is why we actually decided to go one level higher and make sector blueprints."

The virtual profiles have been made initially for all five sectors targeted in EPOS – steel, cement, chemicals, minerals and engineering. They can be rapidly screened via computer modelling to identify opportunities to optimise a possible 34 indicators: including reducing cost and carbon emissions, or maximising job creation.

"This is meant to trigger the chief engineer running the programme – trigger the creativity. Then the work of EPOS is over, you have to let go. Industry talks to each other in the spirit of a community to close the deal," she said.

EPOS encourages collaboration between different process sectors that are located in clusters

Primary liquid fuel valorisation

In Humberside, this has already led to a business case progressing between INEOS and Cemex on primary liquid fuel valorisation.

Dave Skeldon

Dave Skeldon, process technology manager of INEOS manufacturing, Hull, said: "We've got a non-disclosure agreement in place with Cemex now, which is always the first step towards getting there. Then we're moving on to resolving all the technical issues that are below the EPOS level, if you like."

The basis of the collaboration is to split waste fuel from INEOS into organic and acid fractions. The combustible organics can be sent to Cemex to substitute some of its primary fuel consumption in cement production, and the latter valorised by INEOS internally.

This would reduce utility costs, improve resource efficiency and minimise emissions. INEOS expects to invest £0.85m–0.9m (US$1.16-1.22m) on the project and break even after two years, while Cemex's involvement should pay for itself after three years, following an outlay of less than £0.4m. Carbon benefits of 1.2–1.4 kt CO_2eq/year are also predicted.

Another opportunity identified within the Humberside cluster is for Omya to provide waste chalk to Cemex, as a feedstock for clinker production. In return, Omya would receive kiln dust for continuous

reclamation activities in quarry operations. It has also been suggested that companies could share an investment in wind power at the site.

Stephen Elliott, chief executive of the Chemical Industries Association (CIA) has applauded the initiative, and hopes that similar projects can be realised through BEIS' forthcoming Chemical Sector Decarbonisation and Energy Efficiency Action Plan under the Chemistry Growth Partnership.

"We hope that by these and other innovative approaches and technologies the action plan will help our sector to further decarbonise while remaining competitive," he said.

Several PhD students are using modelling approaches to identify collaborative opportunities within clusters

EPOS is currently a year into its four-year lifespan, and is currently structured around five industry clusters across Europe. It involves two further multinational businesses, Veolia and ArcelorMittal, alongside five research and innovation-minded SMEs, Ghent University and École Polytechnique Fédérale de Lausanne.

https://www.thechemicalengineer.com/news/process-integration-across-sectors/

Industrial symbiosis comes to Hull

A first-of-its kind industrial project linking three major process industries in the UK's Humber Estuary has been launched in Hull.

EPOS, a four-year EU SPIRE Horizon 2020-funded project, has developed a 'toolbox' allowing regionally linked process industries to reduce their carbon emissions, while improving both the efficiency and economics of their operations. Its aim is to enable regional clusters of cross-sectorial companies to benefit from industrial symbiosis – using waste streams of one industry as fuels or material feedstocks for another.

Three companies operating in the Humber Estuary – INEOS, CEMEX and Omya – in the petrochemical, cement, and minerals sectors, respectively – are the first in the UK ready to implement the initiative, following research by PhD students based in the UK, Switzerland, Belgium, and France. The wider EPOS project includes clusters in France, Switzerland, and Poland, with ArcelorMittal and Veolia, five SMEs, and two research institutes – École polytechnique fédérale de Lausanne, Switzerland, and Ghent University, Belgium – completing the partnership.

Credit: INEOS
Caption: (L–R) PhD students Stéphane Ogé, Hélène Cervo, Project Coordinator Greet Van Eetvelde, Franz Wolf, and Sebastián Arias.

The project's PhD researchers have developed blueprints for each energy-intensive sector within the project's scope – chemicals, cement, steel, minerals, and engineering – allowing companies to share a generic view of their sector's heat, electricity, and material stream profiles with other companies, without divulging confidential industry data specific to their own processes.

'It started with INEOS, where we had a willingness to share our results, to share what we are doing, but not to share our data […] these blueprints are the heart of the toolbox,' EPOS Project Coordinator, Professor Greet Van Eetvelde explained. Through access to the blueprints, chief engineers and plant managers can identify opportunities to make best use of their industrial neighbours' waste streams.

Waste becomes fuel

At the launch, the researchers demonstrated the use of EPOS to develop a symbiotic resource management process between INEOS and CEMEX – a case which features in the Chemistry Growth Partnership's upcoming *Developing a Low Carbon Future for the Chemical Industry* report, prepared by SCI.

Currently, INEOS sends waste liquid fuel to its utility provider to produce steam to be fed back into INEOS, while CEMEX derives 20% of its fuel from primary sources – presenting an opportunity for CEMEX to increase its secondary fuel proportion by re-using the waste from INEOS.

The process involves valorisation of high-calorie waste liquid fuel from INEOS, by separation of its acid and high-calorific organic components. The latter can then be delivered directly to CEMEX for use as a fuel, while the former can be fed back into INEOS' process. The researchers estimate that this will deliver equivalent savings of 1,200–1,400 tonnes of CO_2 per year. It requires investment from both companies,

but a payback timeline estimates that the process will break even and then continue to deliver savings in two years for INEOS and three for CEMEX.

Before INEOS and CEMEX can begin their industrial symbiosis, however, new permits will be required – some materials currently classified as hazardous waste require reclassification to be transported and re-used. Professor Van Eetvelde told SCI that it is not investments that will hamper the implementation of EPOS, but waste legislation, which presents different challenges regionally. 'We need policymakers to come with us,' she said.

Stephen Elliott, CEO of the Chemical Industries Association said, 'We applaud this symbiosis initiative by INEOS and CEMEX under the EPOS project. This is a good demonstration of the carbon and cost savings which can be achieved through industrial symbiosis in a cluster. We aim for further such savings to be realised through the forthcoming Chemical Sector Decarbonisation and Energy Efficiency Action Plan with BEIS under the industries' Chemical Growth Partnership. We hope that by these and other innovative approaches and technologies the action plan will help our sector to further decarbonise while remaining competitive.'

http://www.soci.org/news/general-news/industrial-symbiosis-comes-to-hull

CEMEX participating in EPOS project

Company's South Ferriby cement plant taking part in European industrial efficiency project CEMEX announced this week that they are participating in the European Union-supported EPOS project, which is designed to allow cross-sector industrial symbiosis. The project is highlighting case studies exemplifying ways for companies to use wastes from other industries to deliver greater efficiency, save raw materials, and contribute to more sustainable processes.

Within the framework of the EPOS project, CEMEX's South Ferriby cement plant, in north Lincolnshire, has worked with other companies, including the INEOS chemical company based in the UK, to determine how waste from INEOS's production could be used as part of the cement manufacturing process.

Kevin Groombridge, South Ferriby cement plant environment manager, commented: 'It is a privilege for CEMEX's cement plant in South Ferriby to participate in this project, collaborating with other companies and partners across Europe. This helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities.'

Sebastian Arias, CEMEX's EPOS project co-ordinator, added: 'This project has enabled CEMEX to envision its process in new and different ways. Reviewing every stage of our manufacturing process internally and externally with other companies has enabled us to identify both cement resources and production efficiencies.'

Mr Arias added: 'I'm confident that other companies would benefit from adopting this cross-sector approach of industrial symbiosis.'

In addition to South Ferriby, CEMEX Poland, from the production side, and CEMEX Research Group AG in Switzerland, from the research and development side, are also representing CEMEX in the EPOS project.

http://www.agg-net.com/news/cemex-participating-in-epos-project

Cemex participates in cross-sector EPOS project

Cemex is participating in the European Union supported EPOS project designed to foster cross-sector industrial symbiosis. The project will highlight case studies exemplifying ways for companies to use wastes from other industries to deliver greater efficiency, save raw materials and contribute to more sustainable processes.

Cemex's South Ferriby cement plant in the UK has already worked with the UK-based INEOS chemical company, to determine how waste from INEOS's production could be used as part of the cement manufacturing process.

"It is a privilege for Cemex's cement plant in South Ferriby to participate in this project, collaborating with other companies and partners across Europe. This helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities," said Kevin Groombridge, the plant's environment manager.

"This project has enabled Cemex to envision its process in new and different ways. Reviewing every stage of our manufacturing process internally and externally with other companies has enabled us to identify both cement resources and production efficiencies. I'm confident that other companies would benefit from adopting this cross-sector approach of industrial symbiosis," said Sebastian Arias, Cemex EPOS project coordinator.

In addition to South Ferriby, Cemex Poland and the CEMEX Research Group AG in Switzerland will also represent Cemex in the EPOS project.

https://www.cemnet.com/News/story/162479/cemex-participates-in-cross-sector-epos-project.html?source=9170a36c4bfeb5515fabaa6c932687b2

Cemex participates in European Union industrial efficiency research

UK/Europe: Cemex's South Ferriby cement plant is participating in the European Union (EU) supported enhanced energy and resource efficiency and performance in process industry operations via onsite and cross-sectorial symbiosis (EPOS) project. Designed to enable cross-sector industrial working, the project highlights case studies exemplifying ways for companies to use wastes from other industries to deliver greater efficiency, save raw materials, and contribute to more sustainable processes.

The South Ferriby plant has worked with other companies, including the INEOS chemical company, to determine how waste from INEOS's production could be used as part of the cement manufacturing process. In addition Cemex Poland and Cemex Research Group in Switzerland will also represent Cemex in the project.

"It is a privilege for Cemex's cement plant in South Ferriby to participate in this project, collaborating with other companies and partners across Europe. This helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities," said Kevin Groombridge, South Ferriby Cement Plant Environment Manager.

http://www.globalcement.com/news/item/6551-cemex-participates-in-european-union-industrial-efficiency-research

Cemex participates in EPOS project

Cemex has announced that it is participating in the European Union supported EPOS project. The project is designed to enable cross-sector industrial symbiosis, highlighting case studies that exemplify ways for companies to use wastes from other industries to deliver greater efficiency, save raw materials, and contribute to more sustainable processes.

Within the framework of the EPOS project, Cemex's South Ferriby cement plant (UK) has worked with other companies, including the INEOS chemical company (UK), to determine how waste from INEOS's production could be used as part of the cement manufacturing process.

"It is a privilege for CEMEX's cement plant in South Ferriby to participate in this project, collaborating with other companies and partners across Europe. This helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities," said Kevin Groombridge, South Ferriby Cement Plant Environment Manager.

"This project has enabled CEMEX to envision its process in new and different ways. Reviewing every stage of our manufacturing process internally and externally with other companies has enabled us to identify both cement resources and production efficiencies. I'm confident that other companies would benefit from adopting this cross-sector approach of industrial symbiosis," said Sebastian Arias, CEMEX EPOS Project Coordinator.

In addition to South Ferriby, Cemex is also represented in the EPOS project by Cemex Poland, on the production side, and the Cemex Research Group AG in Switzerland on the research and development side.

https://www.worldcement.com/europe-cis/15092017/cemex-participates-in-epos-project/

Cemex en proyectos mundiales de uso de residuos

Monterrey, N L- CEMEX participa en EPOS, proyecto respaldado por la Unión Europea, diseñado para facilitar la simbiosis intersectorial de la industria.

El proyecto destaca casos de estudio que ejemplifican maneras en las que las compañías emplean residuos de otras industrias para aumentar eficiencia, ahorrar materia prima y contribuir a procesos más sostenibles.

En el marco del proyecto EPOS, la planta de cemento de CEMEX en South Ferriby (Reino Unido) ha trabajado junto a otras compañías, incluyendo la compañía química con base en el Reino Unido INEOS, para determinar cómo los residuos del proceso de producción de INEOS podían ser incorporados al proceso de manufactura de cemento.

"Es un privilegio para la planta de cemento de CEMEX en South Ferriby el participar en este proyecto colaborando con otras compañías y aliados en toda Europa. Esto nos ayuda a garantizar que operamos nuestra planta de cemento de la forma más eficiente posible, a la vez que aprendemos lecciones que podemos aplicar en otras instalaciones", dijo Kevin Groombridge, Gerente ambiental de la planta de cemento en South Ferriby.

"Este proyecto ha permitido a CEMEX concebir su proceso en nuevas y distintas maneras. Revisar interna y externamente cada etapa del proceso de manufactura junto a otras compañías nos ha permitido identificar eficiencias tanto en recursos del cemento como en la producción. Tengo la certeza de que otras compañías se verían beneficiadas al adoptar este enfoque de simbiosis en la industria", dijo Sebastian Arias, Coordinador del proyecto EPOS en CEMEX.

Además de South Ferriby, CEMEX cuenta con representación en el proyecto EPOS a través de CEMEX Polonia, en la parte de producción, y el CEMEX Research Group AG en Suiza, en la parte de investigación y desarrollo.

http://revistasietedias.com/2017/09/nuevo-leon-cemex-proyectos-mundiales-uso-residuos/

CEMEX participe à un projet européen favorisant l'efficacité industrielle

Cemex annonce sa participation au projet EPOS, soutenu par l'Union européenne. Visant à encourager la symbiose entre différents secteurs industriels, ce projet met en lumière des études de cas qui montrent comment des entreprises peuvent utiliser les déchets d'autres secteurs industriels pour être plus efficaces, économiser des matières premières et contribuer à l'émergence de processus plus durables.

Dans le cadre du projet EPOS, la cimenterie CEMEX de South Ferriby (située au Royaume-Uni) a collaboré avec d'autres entreprises, dont la firme chimique INEOS (elle aussi au R-U), pour voir comment les déchets de production d'INEOS pouvaient être utilisés dans le process de fabrication du ciment.

« Pouvoir participer à ce projet en collaborant avec d'autres entreprises et partenaires en Europe est une vraie chance pour la cimenterie CEMEX de South Ferriby. Cela nous permet de vérifier que nous exploitons notre usine aussi efficacement que possible, tout en tirant de cette expérience des enseignements que nous pouvons appliquer à nos autres sites », explique Kevin Groombridge, Responsable de l'environnement de la cimenterie de South Ferriby.

« Ce projet a permis à CEMEX de voir son process sous un nouvel angle. En examinant chaque étape de notre process de fabrication avec d'autres entreprises, du point de vue interne et externe, nous avons pu identifier des gains d'efficacité touchant à la fois les ressources et la production de ciment. Je suis convaincu que d'autres entreprises pourraient tirer profit de cette démarche trans-sectorielle de symbiose industrielle », ajoute Sebastian Arias, coordinateur du projet CEMEX EPOS.

Outre South Ferriby, CEMEX Pologne, côté production, et le CEMEX Research Group AG de Suisse, pour la recherche et développement, représentent également CEMEX dans le projet EPOS.

http://www.theconstructionindex.fr/news/view/cemex-participe-un-projet-europen-favorisant-lefficacit-industrielle

CEMEX Participates in European Industrial Efficiency Project

MONTERREY, Mexico--(BUSINESS WIRE)--CEMEX, S.A.B. de C.V. ("CEMEX") (NYSE: CX) announced today that it is participating in the European Union supported EPOS project. Designed to enable cross-sector industrial symbiosis, the project highlights case studies exemplifying ways for companies to use wastes from other industries to deliver greater efficiency, save raw materials, and contribute to more sustainable processes.

Within the framework of the EPOS project, CEMEX's South Ferriby cement plant (located in the United Kingdom) has worked with other companies, including the INEOS chemical company based in the UK, to determine how waste from INEOS's production could be used as part of the cement manufacturing process.

"It is a privilege for CEMEX's cement plant in South Ferriby to participate in this project, collaborating with other companies and partners across Europe. This helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities," said Kevin Groombridge, South Ferriby Cement Plant Environment Manager.

"This project has enabled CEMEX to envision its process in new and different ways. Reviewing every stage of our manufacturing process internally and externally with other companies has enabled us to identify both cement resources and production efficiencies. I'm confident that other companies would benefit from adopting this cross-sector approach of industrial symbiosis," said Sebastian Arias, CEMEX EPOS Project Coordinator.

In addition to South Ferriby, CEMEX Poland, from the production side, and the CEMEX Research Group AG in Switzerland, from the research and development side, represent CEMEX in the EPOS project.

CEMEX is a global building materials company that provides high-quality products and reliable services to customers and communities in more than 50 countries. CEMEX has a rich history of improving the well-being of those it serves through innovative building solutions, efficiency advancements, and efforts to promote a sustainable future. For more information on CEMEX, please visit www.cemex.com.

For more information about EPOS, please visit www.spire2030.eu/epos.

http://www.businesswire.com/news/home/20170914006237/en/

Companies unite in name of improving efficiency

Industrial Collaboration to make savings

THREE large companies based in the region have collaborated as part of a new industrial project to utilise resources to make savings and improve sustainability.

INEOS, based at Saltend, CEMEX, based at Alexandra Dock and OMYA, in Melton, have all become involved in the Hull cluster of the EPOS project which aims to provide companies with transferable cost-saving solutions by utilising each other's waste resources.

The project is part of the SPIRE Horizon 2020 programme, and will see similar collaborations between businesses in other locations in Europe. The three companies in Hull will work together in the pioneering industrial project to optimise resources.

One example of the collaboration will see CEMEX's South Ferriby plant working with INEOS, and other regional companies, to determine how waste from INEOS production could be used in the cement manufacturing process.

Across the three companies, and external partners, the companies will work alongside EPOS academics to locate where energy-intensive processes can be made more efficient by using waste resources.

Head of Energy & Innovation Policy at INEOS Europe, Greet Van Eetvelde, is leading the project and says it has enormous potential to help businesses across sectors save money and resources.

"INEOS is convinced by the potential opportunities presented by working across process industries," said the project coordinator.

"Projects that build on this first of its kind cross-sectorial management tool present enormous potential to improve the competitiveness and energy efficiency across the UK manufacturing sector;

"EPOS brings together scientists and entrepreneurs to help industry face a challenge while simultaneously strengthening its own capability."

INEOS is currently engaged in three projects that have the potential to benefit the Hull region.

Kevin Groombridge, South Ferriby Cement Plant Environment Manager for CEMEX UK, said: "It is a privilege for CEMEX South Ferriby to participate in this project, collaborating with other companies and partners across Europe and locally in the Humber Region.

"It helps to ensure that we operate our cement plant as efficiently as possible, while learning lessons that we can apply to our other facilities."

The project hopes to pioneer a new method of co-operation between businesses in different sectors.