

Spreading industry best practice

The steel industry is tackling climate change through technology transfer. Steelmakers are involved in many programmes to help transfer efficient technologies to speed up the replacement of outdated plants.

Modern steel plants operate very close to the limits set by physics. Advanced technologies maximise the efficiency of production and minimise emissions of CO₂ to the atmosphere. The integrated iron and steel mills in Europe feed all their waste gases back into the production process, thus increasing carbon efficiency, reducing external energy needs and reducing greenhouse gas emissions to a minimum.

Yet a great many steel plants around the world operate nowhere close to such efficiency levels. Only 39% of the world's steel industry is located in countries that are party to the Kyoto Protocol. The World Steel Association (worldsteel) and its members see the tackling of CO₂ emissions as a global issue, and one that requires a global solution.

Technology transfer the key

worldsteel member companies see technology transfer as a key part of the solution – bringing all the major steel-producing countries up to industry best practice standards as fast as possible. The objective is to encourage developing countries to upgrade their steel production industries, without compromising their drive to improve the social and economic well-being.

One such technology transfer initiative is the Asia Pacific Partnership (APP), which involves Australia, China, India, Japan, South Korea and the US. Together, these countries account for almost 60% of the world's crude steel production and almost half of its CO₂ emissions (from all sources).

APP encourages cooperation on the development and transfer of best practice technology, with the goal of radically reducing CO₂ emissions. APP agreements cover other industries as well as steel, each of which has its own dedicated task force. The APP steel task force has established several projects, and plans to publish the 'State of the Art Clean Technologies Handbook', which will contain information on best practices and energy saving technologies in the steel industry.

Investing in new technologies

Steel industries in developing countries are also active participants in the Clean Development Mechanism (CDM) – a financing initiative launched as a result of the Kyoto protocol. The main purpose of CDM is to bring about a reduction in emissions of greenhouse gases, and it guides investment to this end in new technology projects within developing countries. To be eligible, projects must be able to deliver additional reductions in CO₂ emissions over and above normal investments.

The Japanese steel industry is closely involved in technology transfer initiatives. To facilitate such transfer activities, the Japan Iron and Steel Federation (JISF) has come together with the China Iron and Steel Association (CISA) to organise a series of workshops to share information and expertise.

In Europe, worldsteel is an important source of technology transfer information. Its members regularly exchange information through projects and working groups. worldsteel is also recognised as a world leader in life cycle assessment data for the world steel industry.

Importance of recycling

Steel is a material which is indefinitely recyclable at a higher level than any other material. This recyclability contributes significantly to the sustainability of steel, as the need for virgin resources is reduced significantly.

Recycled steel also entails much lower energy consumption – manufacturing steel from recycled steel scrap requires about a third of the amount of energy needed to produce steel from the raw material of iron ore.

Ensuring that the developing world makes the most of the recycling opportunities, and in a clean manner, is therefore critical to reducing overall emissions of CO₂. For example, Europe currently recycles more than 90% of the steel used in automobiles. However steel's durability and long life often means that there is not enough scrap to meet demand.

Pushing the research envelope

Aside from transferring technology to raise environmental standards around the world, steel producers are also pushing the research envelope to improve production efficiency, and hence reduce greenhouse gas emissions, even further. Take for example the ultra-low CO₂ steelmaking (ULCOS) project in Europe. ULCOS, which was launched in 2004, groups together all the major EU steel companies as well as several energy and engineering partners, research institutes and universities in the search for new solutions to CO₂ reduction.

ULCOS is a 'concept development' programme that calls for breakthrough levels of innovation in steel manufacturing, as extensive research and development will be needed to bring any new production processes to maturity. The programme involves 48 organisations in 15 European countries, under the coordination of ArcelorMittal and with major input from the main steel producers in Europe. Fully supported by the European Commission, it is one of the largest on-going European programmes of all in terms of the budget (€59 million) and the size of the partnership.

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