Promoting environmental sustainability in intelligent manufacturing

**Industries that integrate** intelligent manufacturing practices in the design and processing of their products and systems, can contribute to a sustainable economy by minimising the environmental impact of their enterprises. These environmental benefits come with an added bonus – intelligent manufacturing practices usually lead to reductions in cost.

**Industry can lower costs** by carrying out environmental audits of the supply chains and manufacturing systems, and especially of energy needs. Research suggests that such audits also help companies develop strategies to reduce waste and move towards sustainable use of the world’s resources. As a consequence, businesses can become more competitive while at the same time demonstrating corporate responsibility.

As consumers of large quantities of energy and raw materials, manufacturers must play a prominent role in developing an economy which is able to react to the issues of climate change, through the sustainable use of energy and commodities. Industrial decisions are also being influenced by public attitudes towards the consequences of climate change and resource management.

In order to respond to these challenges, the researchers suggest that manufacturers use the framework of the ISO 14001 international environmental management standard to incorporate any strategies that are needed to implement an environmentally sustainable enterprise. In addition, industries can also use the Eco-Management and Audit Scheme (EMAS)¹, adopted by the European Commission, which publicly demonstrates commitment to environmentally friendly practices well beyond the minimum legal requirements.

The researchers suggest that manufacturers wanting to move towards intelligent manufacturing ‘pick the low apples’ first where they will reap the greatest gains in the shortest payback time. Research shows that these initial targets include reducing waste, implementing economy measures for sourcing, storing and using water, changing packaging, pursuing ways to reduce the energy demand, including sourcing alternative energy and controlling the use of transport.

Traditional sources of energy have relied heavily on fossil fuels. Energy demands are, however, increasing around the world, especially in developing nations, such as China and India. The researchers point to a number of reports that show global reserves of fossil fuels are finite and are also significant sources of carbon emissions. As a consequence, the researchers advise that manufacturers must develop strategies to reduce energy consumption and exploit alternative energy sources.

Adopting sustainable patterns of living by reducing negative environmental impacts is not incompatible with manufacturers seeking to minimise their costs through environmentally sound practices.

¹ The Eco-Management and Audit Scheme (EMAS) was established by the Council Regulation 1836/93 and replaced by Regulation (EC) No 761/2001 of the European Parliament and of the Council. [www.emas.org](http://www.emas.org)


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