

Case Study: Energy Efficiency Best Practice Lighting

Ford Australia Geelong Manufacturing Plant

Improving performance and saving energy

By retrofitting their existing lighting system, Ford Australia saved \$349,000 per annum, abated 828 tonnes per annum of carbon and received a return on their investment in just over one year.

The opportunity: save money and energy

Ford Australia's Stamping Plant, located in Geelong, manufactures car panels and various other sub-assembly parts.

In 1997, Ford Australia became the first Australian automotive manufacturer, and one of the first within Ford globally, to be recommended for ISO 14001 Environmental Management Systems certification. In 2007, Ford recognised the opportunity to improve their ageing lighting system, which was inefficient and costly to operate.

The existing 400 W metal halide lamps could be retrofitted with 350 W pulse-start metal halide lamps, reducing energy consumption by 19%.

The solution: review and upgrade the current system

Step 1: Origin Energy were appointed to assess and document the savings that Ford estimated to achieve from the conversion of 1100 existing 400 W metal halide lamps, which ran on constant wattage control gear.

Step 2: The lamps were changed to 350 W pulse-start metal halide lamps, operating on reactor/ignitor control gear, which could be also retrofitted into the same luminaire.

Pulse-start metal halide lamps provide better performance compared to standard metal halide lamps. The specific benefits are higher efficacy, improved lumen maintenance and longer life. One key to better lamp performance is heat management. In standard arc tubes, uneven heating prevented optimum arc enhancement. Pulse-start metal halide lamps have a higher operating temperature, which draw more halides into the stream, resulting in more light being generated.

Lumen output does not decay as rapidly over life with pulse-start metal halide lamps, as opposed to standard metal halide lamps. Mean lumens are improved dramatically, up to 50% higher in some wattages.

The reduction in energy consumption is based on the initial load of each luminaire being 400 W lamp and 65 W constant wattage control gear losses being replaced with a 350 W lamp and 28 W reactor/ignitor control gear losses.

The benefits: leaner, greener production

The cost of retrofitting the existing lighting system was \$378,000, with expected energy savings of \$349,000 annually. Based on energy cost savings alone, this resulted in a project payback of just over one year.

The key outcomes were:

- retained minimum lighting levels based on AS.1680 requirements
- reduced electricity consumption by 630,630 kWh p.a
- reduced electricity demand by 99 kW
- reduced greenhouse gas pollution by 828 tonnes of carbon.

For more advice

The The Energy Efficiency Best Practice Guide to Lighting is a step-by-step guide to gaining maximum efficiency from your lighting system.

The ResourceSmart Business program helps businesses across Victoria improve resource efficiency and manage the risks and opportunities presented by climate change. For further information on making your business ResourceSmart, visit www.resourcesmart.vic.gov.au or call 1300 363 744.

"Our employees are very happy with the increased amount of light and they are amazed when we tell them that the new lights use less power than the old lights. The lighting upgrade really is a 'win win' for both Ford and the environment."

*Andrew Higginbotham,
Stamping Plant Manager, Ford Australia*