

## **IPTC 12848-PP**

# **LIP Control & Protective System Upgrade - proving a case for consideration of human factors in design**

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### **Abstract**

Esso Australia Pty Ltd has recently completed a control and protective system upgrade at its LPG fractionation plant at Long Island Point in Victoria. The upgrade included a new control building, new process control system, new instrument equipment room, field instruments and upgrade of the plant's relay based shutdown system.

This paper describes how the project incorporated contemporary human factor principles in its design of the new control building and the control system. The control room design considered its purpose and role of the operator. The control system graphic displays were developed to provide operators with an effective interface by presenting information in a consistent manner and prioritised through use of colour, shape and line dynamics. Established Alarm Management principles were used to capture, validate and prioritise alarms. In the event of an abnormal situation, feedback and guidance is made available to the operator for appropriate action.

Innovative features were implemented in the control system to reduce human error and enhance reliability of operation. Intelligent software reset facility has improved efficiency of restarting the plant after a shutdown. A pop-up display table informs the operator of any interlock conditions affecting plant operation. Access to Asset Management System of intelligent field devices is made available from the operating face plates. Commonly known Windows style formatting for all indications and operator actions facilitated steep learning for a workforce unfamiliar with screen based operating systems.

There was an extensive and ongoing involvement of plant personnel in all phases of the project. All graphic displays were planned, reviewed and tested with the involvement of operators. The outcome of considering human factors in design has been end user acceptance with benefits of enhanced safety and opportunity for improved productivity.