Transnet Pipelines' National Operations Centre, Durban, South Africa

Transnet Pipelines (TPL) is the custodian of South Africa's strategic pipeline assets, handling the transit of 16 billion litres of liquid fuel and more than 450 million cubic metres of gases annually. The liquid products include crude oil as well as diesel, leaded and unleaded petrol and aviation turbine fuels.

PROJECT LOCATION
Durban, South Africa

CUSTOMER
Transnet Pipelines

APPLICATIONS
Oil and Gas National Operating Centre

PRODUCTS USED
48 x VS-70HEF120
6 x VS 60HEF120

INSTALLATION
EEU Taltronics (Pty) Ltd

FURTHER INFORMATION
Mitsubishi Electric Europe B.V.
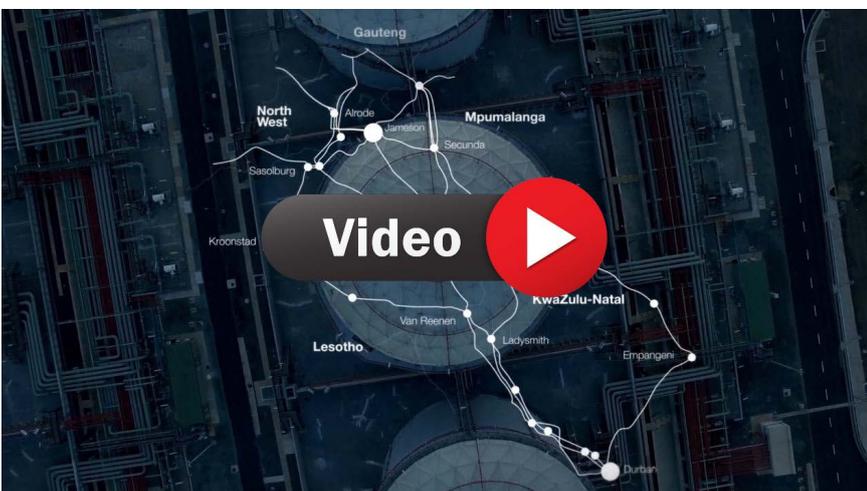Nijverheidsweg 23a,
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BACKGROUND

The pipeline network under TPL's management extends to 3,800km, with a further 555km recently added as part of its ambitious Multi-Product Pipeline (MPP) project, one of the largest construction projects in Africa. Until 2018, TPL's network was monitored from a control room at the company's central Durban headquarters office building, with various other management functions dispersed across numerous remote locations. In 2017, TPL decided to centralise all of its control operations within a new, purpose-built National Operations Centre (NOC) on the outskirts of Durban. The NOC was designed to take over the management of both the existing pipeline network and the MPP, allowing far greater operational efficiency and effectiveness.

PROBLEM & SOLUTION

The primary role of the NOC control room is to enable operators complete oversight of the assets under their control and to improve their situational awareness through the ability to quickly access and display comprehensive and detailed information on any aspect of pipeline operations. To achieve this, Systems Integrator EEU Taltronics was commissioned to deliver two video wall systems, dedicated to Process Control Systems (PCS) and Security respectively, with a further system for the display of general content, such as TV or internet-derived data.

System reliability was of paramount importance. Taltronics chose a combination of 60" and 70" Mitsubishi Electric 120 Series DLP cubes and Jupiter controllers; a system of proven long-term reliability. In addition to the exceptional operational lifespan and minimal maintenance requirements of the Mitsubishi cubes, the fact that all the video walls shared the same model projection engine allowed spares inventory requirements to be minimised to reduce maintenance and service overhead.

To cater for the remote possibility of a Jupiter failure in service, all the 48 X input sources for both video walls (PCS & Security) are connected in parallel to both Jupiter 4000 controllers via 1:2 Kramer Distribution Amplifiers. Should one of these two Jupiters fail or become unresponsive, operators are still able to display any input source on the other video wall.

Specifications	
Model	VS-70HEF120
Technology	LED video wall cube
Overall Size	64,6 m^2
No. of Modules	48
Cooling system	Air cooling system with efficient cooling pipe and aluminum plate (No liquid)
Type	DLP™ technology (0.65" DLP™ 1 chip), DarkChip3™, BrillantColor™
Resolution	Full HD, 1920 x 1080 pixels (per module)
Light Source	Redundant LED (RGB)
Light Source Service Life	≤ 100,000 hrs.
Brightness	580 cd/m2 bright mode 460 cd/m2 normal mode 340 cd/m2 eco mode 140 cd/m2 advanced eco mode
Contrast Ratio	1500: 1
Power Consumption	80 W in advanced eco mode 95 W in eco mode 131 W in normal mode 172 W in bright mode

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MITSUBISHI ELECTRIC
Changes for the Better

Specifications

Model	VS-60HEF120
Technology	LED video wall cube
Overall Size	6,0 m²
No. of Modules	6
Cooling system	Air cooling system with efficient cooling pipe and aluminum plate (No liquid)
Type	DLP™ technology (0.65" DLP™ 1 chip), DarkChip3™, BrillantColor™
Resolution	Full HD, 1920 x 1080 pixels (per module)
Light Source	Redundant LED (RGB)
Light Source Service Life	≤ 100,000 hrs.
Brightness	780 cd/m2 bright mode 620 cd/m2 normal mode 460 cd/m2 eco mode 190 cd/m2 advanced eco mode
Contrast Ratio	1500: 1
Power Consumption	80 W in advanced eco mode 95 W in eco mode 131 W in normal mode 172 W in bright mode

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INSTALLATION RESULTS

The three video wall systems were installed against three walls of the NOC control room. The front-access Mitsubishi Electric cubes allowed them to be fitted flush against the walls, using plinths and finishing panels custom-built by Taltronics. The three individual Jupiter video wall graphic controllers were installed in separate 19" racks located in the ICT server room in the basement, one floor below the NOC. Interconnections between the video walls and racks were via a fibre optic cabling system to overcome the challenge of distance-related signal loss due to the 80m cable run between rack and display. Digital and analogue signals from Transnet's security and SCADA network serve as inputs to the Jupiters, and any of this data can be displayed on the video walls according to user-definable wall layouts created by NOC operators and supervisors via the content management functions of their workstations. Despite a very tight and physically challenging installation schedule, Taltronics completed the installation and commissioning on time.

CUSTOMER REACTION

The NOC was officially opened in July 2018 at a ceremony attended by Transnet Group CEO Siyabonga Gama, TPL COO Sibongiseni Khathi and Transnet COO Mlamuli Buthelezi. During the opening ceremony, Mr. Gama noted the contribution that the considerable infrastructure investment being made by Transet is making to the broader economic development of the country's Oil & Gas industry, a crucial element of the government's National Development Plan.

The contribution of the NOC to Transnet's long-term strategy is matched by the immediate benefits to TPL's day to day operations the enhanced oversight it brings, and in particular, its commitment to successfully balance social, environmental and economic sustainability. The MPP, managed by the NOC, is itself facilitating economic growth and uplift throughout the country. Additional benefits are the reduction of road congestion and maintenance costs and the lowering carbon emissions associated with transporting petroleum products.

120 SERIES CUBES FROM MITSUBISHI ELECTRIC

With over 89,000 displays installed worldwide, Mitsubishi Electric is a world-leader in mission-critical control room display. Mitsubishi's 120 Series displays deliver both outstanding performance and an impressively low total cost of ownership, thanks to their virtual zero-maintenance design. With a lifetime of at least 100,000 hours*, equal to more than 11 years of operation, Mitsubishi Electric video wall cubes are designed and built to meet the most demanding requirements of the end user.

Mitsubishi's proprietary air-cooled projection engine requires no routine maintenance, making it extremely cost-effective. Multiple redundant LED light sources ensure total reliability. 120 Series displays include advanced Smart 7 features to ensure accurate color and brightness balance is maintained across the entire video wall automatically. Digital graduation and color space control ensure excellent screen uniformity and perfect color reproduction. To further enhance system reliability, an optional redundant power supply is available on some models.

Integration is simplified thanks to the DisplayPort™ 1.2a, real 4K (3840x2160) high resolution images can be displayed through daisy chain. Versatility is further enhanced by the inclusion of an Intel™ OPS slot, making 120 Series displays ideal for Pro-IP based systems.

* WE120 model delivers min 100,000 hours operation in all brightness modes. HE120 models deliver min. 100,000 hours in Advanced Eco-mode only.

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