

Case Study:

Dung Quat Oil Refinery, Vietnam

THE CHALLENGE

We were approached to provide a Master Clock System for a brand new Oil Refinery Plant in Vietnam, the first of its kind. The Refinery is run by PetroVietnam.

The requirement was to provide a standard time source for date and time stamping events in the refinery sub-systems involved with processing, electrical, safety and emergency events.

The Master Clock System was also required to synchronise the various sub-systems:



- Distributed Control System (DCS)
- Entrance Control Processor
- Electricity Management Control System (EMCS)
- Analogue and Digital Slave Clocks
- Synchronous Digital Hierarchy (SDH) Data Transportation Network
- Closed Circuit Television (CCTV) Server
- Local Area Network (LAN) Server

THE SOLUTION



We supplied a **M211 Modular Timing System** which serves as the central master clock, configured with the following:

- Option 70 & 71 Remote Head-end GPS Receiver Antenna & Demodulator – provides a stable GPS time input overcoming any signal loss experienced when routing the GPS L1 carrier over long cable lengths to the master clock system.
- Option 17 Octal Serial Module - provides 8 output channels for time data and status, each of which can be configured to provide either an RS232 or RS422 Interface via a 62 way density and a half socket.
- Option 72 Intelligent 5-channel Timecode Module - generates five independent timecode outputs. Intelligent data processing is achieved through an on-board CPU.

- Option 33 Telecom Frequency Output Module - provides three 2.048MHz outputs for use with E1 Megastream systems. The frequency outputs are locked to the received time broadcast signal and conform to CCITT Recommendation G.703.
- Option 27A NTP Time Server Module - provides the functionality of a Stratum 1 Time Server effecting time distribution via Local or Wide Area Networks.
- Dual Power Supply 230V AC +/-10%, 48 – 62Hz – to provide backup in case of power outages



Ten M210 Modular Timing Systems take a feed from the M211 Master Clock (acting as buffer units) which in turn feed into the various control sub-systems and clock displays. They are each equipped with the following:

- Option 32 Octal Serial Interface with Precision Time Input Module - provides seven fully independent serial outputs and a single independent serial input specifically configured for the receipt of accurate time synchronisation messages, offering a high level of functionality within a single option slot of the chassis.
- Option 72 Intelligent 5-channel Timecode Module, IRIG-B Time code Output, or Option 27A NTP Time Server Module (as per M211 above)

In addition, we supplied **eight M355 LED Digital Time Displays** and **eight M385 Analogue Clocks**, all of which are driven by an RS-422 signal from the M210 buffer units.



THE RESULT

- Increased efficiencies in the oil refinery processes through a proper synchronised control system and electricity management system.
- With entrance control and the CCTV system properly time synchronised, security at the oil refinery plant is enhanced.
- Data transmission via the SDH is improved with high accuracy G.811 frequency synchronization of the SDH system.
- Consistent time stamps for information captured by the computer servers.

Our Products Used in the Dung Quat Oil Refinery Solution

M211 Modular Timing System

- Ideal where synchronisation of many different output interfaces is required
- 9-slot module output capacity
- Choice of clock synchronisation options
- Choice of master clock accuracy
- Large range of output options
- 3 U high standard 19" rack mount
- 5 button front panel keyboard for equipment configuration and control
- Alphanumeric display of time, date and status
- Equipment configuration stored in non-volatile memory
- Synchronised to an external time and frequency source
- High accuracy internal oscillator options available
- Remotely controllable

M210 Modular Timing System

- 3-slot module output capacity
- Choice of clock synchronisation options
- Choice of master clock accuracy
- Large range of output options
- 1 U high standard 19" rack mount
- 5 segment front panel button for equipment configuration and control
- Large alphanumeric display of time, date and status
- Equipment configuration stored in non-volatile memory

M355 LED Digital Time Display

- Clear indication of time for interior applications
- Single-sided display
- Seven segment high-intensity LED digits
- Choice of 4 digit or 6 digit
- Available in Serial/Timecode or NTP versions (see below)
- Excellent readability through clear acrylic window
- Wall or desk mounting options available
- Range of colours and styles available

M385 Analogue Clock Display

- High-quality traditional and contemporary designs
- Large range of sizes, colours & styles available
- Hands: Hours & minutes, or hours, minutes & seconds
- Choice of Pulse, Intelligent or NTP versions
- Wall or ceiling mounting options available
- Choice of standard number dial, Roman numerals or non-numeric markers.