

Case story | VACON® AC drives

Pumping oil in Fujairah, UAE



Fujairah is one of the seven emirates in the United Arab Emirates and an increasingly important regional hub for the international oil and gas trading business. At a new distribution terminal in Fujairah, VACON® AC drives control the oil pumps used in ship loading.

Fujairah has a strategically significant location in the outer Gulf, along the Gulf of Oman, and is an increasingly important regional hub for the international oil and gas trading business. Horizon Terminals Limited, a subsidiary of Emirates National Oil Company (ENOC)*, has recently commissioned a new distribution terminal in the close vicinity of the Port of Fujairah. In an open, international competitive bidding process, ENOC

and Audex Pte Ltd in Singapore – the main engineering, procurement and construction contractor for the new distribution terminal – selected Vacon as the AC drives supplier for the oil pumps used in ship loading.

Improved process control with constant torque discharge flow

Vacon's scope of supply included VACON® Active Front End (AFE) units in common DC bus configuration with a total power of 6 MW. The VACON® AFE units control five centrifugal cargo pumps and two heavy fuel oil positive displacement (PD) pumps with constant torque. These pumps are driven by five 700-kW motors and two 665-kW motors. VACON® units are linked via the Profibus communication

protocol to the main distribution control system (DCS) installed in the control room. The VACON® units can also be controlled locally by using the keypad.

The use of VACON® AC drives improves process control at the oil terminal. The VACON® AFE units maintain a constant discharge flow, irrespective of the varying oil level in the tank. They also enable the pump to operate at a reduced suction flow rate which is needed in tank stripping, i.e. when collecting the last residues at the bottom of the tank.

Low harmonic VACON® AFE (active front end) units eliminate the need for over-sizing in the upstream feed transformers and diesel generators, resulting in substantial cost savings. A

non-standard Common DC bus with redundant AFE feeders ensures a high degree of redundancy, availability and flexibility for maintenance and operations. The enclosures were designed in a compact back-to-back arrangement to save space in the motor control center.

Successful completion

The VACON® AC drives were delivered to Fujairah in 2012 and commissioned in May-June 2013. Vacon's scope of service has covered technical support, engineering, testing, installation supervision, site testing and final commissioning, and co-ordination with both the EPC contractor and the pump vendor.

The EPC contractor Audex Pte Ltd in Singapore has expressed its gratitude to Vacon after a successful project completion:

“We have been very pleased with working with Vacon. Timely engineering and technical support during both the bidding and the project phases, on-time-delivery and a good quality product ensure that we can hand over a world-class terminal to ENOC,”

says Mr Murugesan, General Manager, Audex Fujairah LL FZE.

Ismo Korhonen, Vacon's Regional Sales Director for the Gulf Region, is very

pleased with the success of the project. “This is one of the largest active front end, common DC bus systems in the region. We are very delighted that we had the chance to show our abilities. The oil terminal in Fujairah is one of Vacon's major key references in the Middle East oil and gas segment.” Mr Korhonen also expressed his thanks to his team for the successful execution of the project, which helped Vacon secure a similar tank terminal project for HTL/ENOC in Jebel Ali through Flowserve, a leading manufacturer and aftermarket service provider of flow control products and services.

In detail

Emirates National Oil Company (ENOC) is wholly owned by the Investment Corporation of Dubai (ICD), which is owned by the Government of Dubai. ENOC provides the energy behind Dubai's phenomenal growth. Drawing on the growth of the UAE as a strategic hub for global trade and aiming to meet the fast-growing demand for bulk liquid terminals, ENOC created Horizon Terminals Limited (Horizon) in 2003. Operating from UAE as a holding company, Horizon consolidated the company's existing terminal investments and is expanding the business globally.

This case story was originally released before the merger of Vacon and Danfoss Power Electronics was fully completed on 15 May 2015. As a result, Vacon as a company brand no longer exists and contact persons mentioned in the story may have changed. Future case stories on VACON® products will be released on behalf of the new organization – Danfoss Drives – which is part of the Danfoss Group.



Vacon has successfully commissioned low harmonic VACON® Active Front End units at the new oil distribution terminal in Fujairah. The VACON drives control five centrifugal cargo pumps and two heavy fuel oil positive displacement (PD) pumps with constant torque. These pumps are used in ship loading.

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