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EQSTRA DESIGNS NEW TRAILER FOR REFRIGERATED GOODS

Eqstra Flexi Fleet, a division of Eqstra Fleet Management and Logistics, has partnered with New Way, Ice Cold Bodies, and Javgro Transport Refrigeration Solutions to design a cold trailer featuring new trailer design and refrigeration technology to power the refrigeration units.

This technology has been designed and engineered in South Africa to meet the challenges of rough terrain, long distances and high ambient temperatures encountered in the SADC Region.

Unveiling the new technology at Automechanika, Jacqui Carr, CEO of Eqstra Fleet Management and Logistics, said that it was part of the company's strategy to keep ahead of current technology to offer customers the most sophisticated and up-to-date systems to ensure increased efficiencies and subsequent cost savings in the day to day operation of their extensive fleets.

"Going green, increased efficiencies and cost savings are the drivers most fleet operators are looking for in today's world," she said.

The trailer was conceptualized by Eqstra Flexi Fleet to support a green initiative. New design elements include a fully curved roof, the first of its kind in South Africa, which increases the strength of the body, improves the aerodynamics of the trailer, fuel consumption and air circulation within the trailer. Side skirts help channel airflow away from the wheels to reduce turbulence.

The rear door opening of the trailer is 2.27 metres high for ease of pallet loading (standard pallet height is 1.8 metres).

"Another design first is that the aluminium extrusion floor is bonded to the floor structure during the vacuum process. This bonding process greatly enhances durability and strength, as do the 3mm stainless steel kick plates," said Burt Gildenhuys, Managing Director at Ice Cold Bodies. "In addition, a newly designed lightweight aluminium bulkhead has been fitted to prevent damage to the front wall while a stainless steel fridge protector has been installed on the outside to protect the cooling unit."

Eqstra selected Goodyear 385/65 R22.5 tyres for the trailer due to their green characteristics. The tyres offer lower rolling resistance than the average tyre of that size at 4.8N per KN (1 newton of rolling resistance for every 21.23 kg of mass) which significantly improves fuel consumption. Other features include low noise levels (70dB) and solid road handling in all weather conditions.

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New refrigeration technology has been designed to power the refrigeration unit on the trailer.

"Truck engines today are designed to meet more stringent emission laws and are significantly more efficient than the diesel engines within the cooling units. It was incumbent on us to develop technology which draws on this sophisticated engineering to make our cooling units more efficient and environmentally friendly," said Johnnie Marais, General Manager at Eqstra Flexi Fleet.

In essence, this technology eliminates the need for the inefficient diesel engine which currently powers the refrigeration unit by utilizing the engine power of the truck pulling the refrigerated trailer.

A Hydro-Joule unit is mounted to the side of the truck and is powered via a hydraulic pump, driven by a clutch independent engine power take off (PTO). Once the system is operational, the hydraulic pump delivers high pressure hydraulic fluid to a hydraulic motor, which in turn powers an AC generator and produces the 400VAC / 50 HZ needed to power the cooling unit. The driver has the ability to switch the system on and off from the cabin by means of an auxiliary PTO switch.

At this point, the cooling unit can run off both its own diesel engine and its electric standby motor. However, by powering the unit from the more efficient, more environmentally friendly truck engine, it will reduce maintenance costs, reduce fuel consumption and most importantly reduce harmful emissions.

"Trucks today are considerably more advanced with regards to lower engine emissions and sophisticated fuel injection systems. Thus it has become viable to harness this energy rather than the less efficient power produced from the industrial engine within the cooling unit. This inherently will allow us to reduce harmful emissions and will result in notable fuel savings as our truck engines evolve" said Kenan Gröss, Managing Director of Javgro who designed and engineered the new system.

Tests on fuel efficiencies were carried out using the Mitsubishi TFV2000D-E cooling unit.

"Current studies of similar hydraulic generators in Europe have shown savings of between 2 to 3 liters per hour with respect to the fuel consumption of the cooling unit," said Gröss. "The cooling unit has a maximum current draw of 16 Amperes when running on 3 phase electrics. This equates to a power consumption of approximately 10.5kW. Taking the power factors and losses from the hydraulic system into account, the true power take-off from the truck engine is in the order of 18 kW - 20kW, which equates to a maximum of 5% - 6% of the power produced by the truck's engine.

Road tests will commence within Q4 of 2017 to quantify the fuel savings and compare these values with our European counterparts.

The new technology also includes a telemetry system, Euroscan MX1 produced by ORBCOMM, which is installed with the cooling unit. The system connects directly to the cooling unit's on-board computer as it shares the same protocols. Every company involved in the transport of chilled or deep frozen food is obliged to set up and maintain a quality management system based on the principals of HACCP. To do so, the company needs to harness data and information reflecting critical processes.

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The Euroscan system monitors the cooling unit's operation and sends alerts in the event of a unit malfunction. An associated smart phone app allows the operator to access the information from the unit, including error codes, temperatures and GPS location. It also allows for two-way communication to enable the operator manipulate certain parameters and functions of the cooling unit from their smart phone.

Additional add-ons include vehicle tracking and driver management systems designed by GPS Tracking Solutions, a division of Eqstra Fleet Management and Logistics. These include Vision Manager, a state of the art video vehicle surveillance system which provides an intelligent and comprehensive platform for live video streaming, GPS tracking, alarm and driver behaviour monitoring. The tracking system will ensure 24-hour monitoring of the vehicle and features a speed governing capability for additional driver safety.

In addition, for added stock protection, temperature monitoring within the trailer is an advanced system with multiple temperature sensors installed. This is connected to the tracking system of the vehicle and will send an early warning alert if there is a temperature change. An exterior monitor allows the driver to monitor the temperature independently. "Should the cooling system fail, the temperature monitoring system alerts responsible parties in good time and ensures improved stock recovery" concludes Marais.

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