

# THINKING CAPS



High-quality energy reservoirs are characterised by high energy and power density, cyclical life and perfect energy efficiency – pictured above is the bulkier stack of ultracapacitors seen on the 2008 prototype

**HAMBURG, GERMANY** – Claimed to be the world's first diesel truck with energy recovery, Still's RX 70 Hybrid that was first seen at CeMat 2008 has now been fine tuned and gone into production in 3-tonne and 3.5-tonne load capacities. Payback time could be as little as 3,000 hours, due to the reduced fuel consumption of up to 15%.

As an enhancement of the standard RX 70, which won an FLTA Award for Excellence in 2008, the new version features two energy storage systems. Aside from the usual diesel tank, a stack of ultracaps (now greatly reduced in size from the prototype) is mounted on top of the rear counterweight. These high-performance double-layer capacitors provide a reservoir for the intermediate storage of the kinetic energy created when the truck brakes.

Ultracaps are ideal for this task because they can be quickly charged with high currents and release the energy equally fast – as well as silently.

#### Extra torque

This energy is then used by the generator (which, just like the standard RX 70, is usually powered by an IC engine) to power the electric drive motor during acceleration. This extra torque takes around 30% of the load off the engine, with a reduction in rpm of around 6%, which helps reduce noise emissions, as well as fuel consumption. It also means that the standard model's VW 44kW engine can be replaced with a 36kW version to achieve the same turnover.

All the related drive and lift systems are linked up by the electronic controller, which also controls charging and discharging of the additional energy storage. The hydraulic pump is electrically adjustable.

When the 'Blue Q' button – a feature seen on several other Still models – is pressed, the truck switches immediately into efficiency mode, intelligently optimising the drive characteristics and switching off secondary electrical consumers. A 10-20% energy saving is possible depending upon application profile and truck configuration.

The ideal application for the RX 70 Hybrid is in industries requiring frequent braking and acceleration, such as the loading and unloading of lorries in the beverage industry.

#### Quick turnaround

Designed for the high turnaround of loads, the standard RX 70 was already claimed by Still to offer class-leading fuel consumption, with its minimum fuel requirement of 2.5 litres/hour and therefore the lowest CO<sub>2</sub> output in its class.

Other environmental benefits include its excellent recycling capability of 95%, the transmission of power without gear oil, and the longer service intervals. But by capturing a large part of the kinetic energy from braking that would otherwise be lost as heat, and encourage the formation of fine dust, the hybrid version is also able to greatly reduce dust contamination.



IVT May/June  
2007 p44  
RX 70  
IN DEPTH