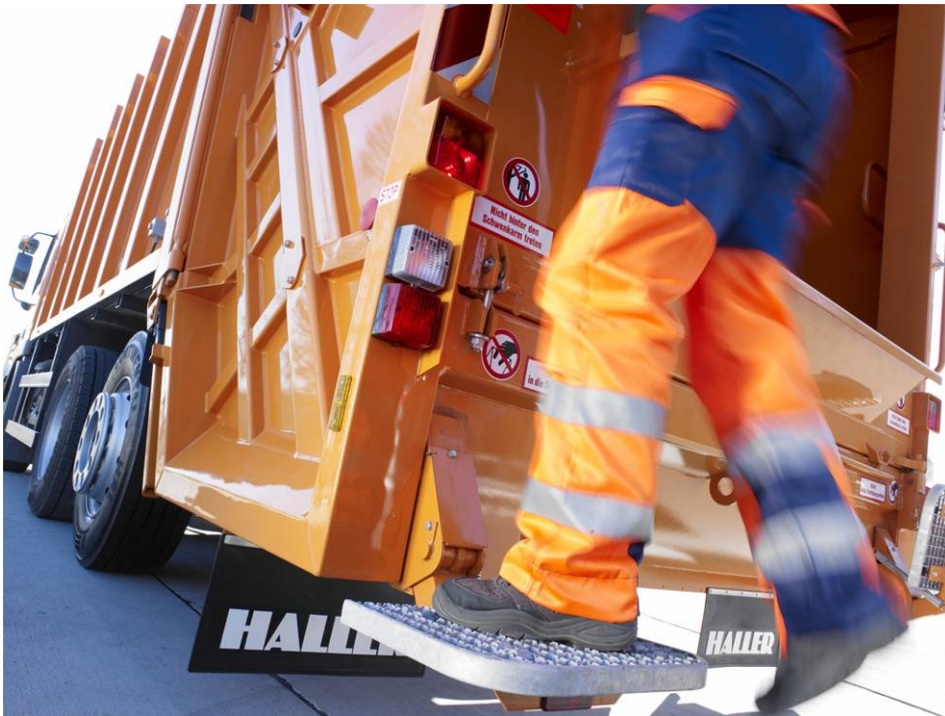


Press Release

PI 063/08
2008-06-16

Refuse collection vehicle with hydraulic hybrid drive from Rexroth

Hydrostatic Regenerative Braking System (HRB) from Rexroth reduces fuel consumption in the "x2eco" waste disposal vehicles from Haller Environmental Systems



When equipping their x2eco series with a fuel-saving, hydraulic hybrid drive, Haller selected the Hydrostatic Regenerative Braking system (HRB) from Rexroth.

IFAT, the world's biggest trade fair for environmental technology – held in Munich May 5 - 9, served as a stage for Haller Environmental Systems as they presented the first refuse collection vehicle with a full-hydraulic hybrid drive. The basis of this drive is the Hydrostatic Regenerative Braking system (HRB) from Rexroth, that according to manufacturer's information results in a 25 percent reduction in fuel consumption with correspondingly attractive positive impacts on costs and CO₂ emissions.

HRB achieves these reductions by storing the brake energy that is normally converted to heat and thus lost during the conventional braking operation. When the vehicle begins to move the HRB system releases the stored energy in a controlled manner, supporting the diesel engine. The more frequently the vehicle brakes and starts back up again, the greater the reduction in fuel consumption. For refuse collection vehicles with high start-stop frequencies, fuel savings of up to 25 percent are possible.

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HRB functions through the use of a hydraulic axial piston unit that is integrated in the mechanical drive train by means of a gearbox. Upon braking this unit acts as a pump and uses the released brake energy to charge a hydraulic accumulator (bladder accumulator) with hydraulic oil. Electronics control this procedure via a hydraulic valve control block and give the signal to reverse the process when the vehicle begins to move. The pressurized oil is then released from the accumulator in a controlled manner and flows back through the axial piston unit. This unit is driven by the oil flow and thus functions as a motor, delivering its power to the mechanical drive train while a pressure relief valve ensures maximum safety.

Additional benefits for the vehicle owner: The efficiency in the work regime increases through the additional acceleration torque and brake wear drops considerably. The extended service life of the mechanical brake lowers costs on top of the savings achieved through reduced fuel consumption. The environment also benefits from the full recovery of the brake energy as the amount of particulate matter and CO₂ emissions of the combustion engine drop accordingly.

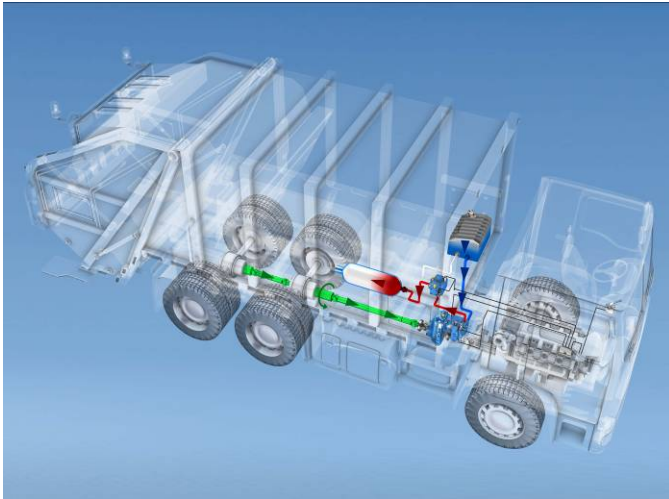
The hybrid drive is suitable for use on any commercially available utility vehicle chassis. By means of the "add-on design", no special chassis is necessary for the parallel HRB.

Following the IFAT in May, the prototype of the x2eco series refuse collection vehicle from Haller will undergo an extensive field test with the Berliner Stadtreinigung sanitation company. Vera Gäde-Butzlaff, chairwoman of the executive board of Berliner Stadtreinigung, gathered impressions of the new hydraulic hybrid technology from Rexroth during the trade fair at the Haller stand and is looking forward to the test.

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By hydraulically storing brake energy, the hydrostatic regenerative brake system (HRB) from Rexroth reduces fuel consumption of commercial vehicles with frequent start-stop cycle by up to 25 percent.

Bosch Rexroth AG is one of the world's leading specialists in the field of drive and control technologies. Under the brand name of Rexroth the company supplies more than 500,000 customers with tailored solutions for driving, controlling and moving machinery used in industrial and factory automation as well as in mobile applications. As The Drive & Control Company, Bosch Rexroth develops, produces and sells components and systems in more than 80 countries. In 2007 Bosch Rexroth AG, part of the Bosch Group, achieved sales of about 5.4 billion Euro with approximately 33,000 employees.

For more information please visit: www.boschrexroth.com

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