Less Fuel – Less CO₂

Innovative Solutions for the Waste Collection from the members of EUnited Municipal Equipment
EUnited Municipal Equipment represents the leading manufacturers of mobile machines used in municipalities and other public areas. We are the largest European network and service provider for the sector. Within EUnited Municipal Equipment the manufacturers of refuse collection vehicles, sweepers and winter maintenance equipment work jointly on promoting eco-friendly and safe equipment and supporting customers in finding the best solution for their challenges.

For more information please see www.eu-nited.net/municipalequipment

Fuel Consumption Test for RCVs – Work in Progress

Today there is standardised information on fuel consumption available for vehicles like passenger cars and motor bikes but not yet for trucks or indeed refuse collection vehicles. As a consequence manufacturers as well as users determine fuel consumption via own measuring or calculations under very diverging assumptions.

A reasonable common RCV fuel consumption test would support customers in comparing RCVs and avoid expensive individual tests. Based on an initiative of the German refuse collection contractors, municipalities and RCV manufacturers, EUnited Municipal Equipment is active in developing a fuel consumption test with the final objective of a standardised and Europe-wide test method.
Fuel costs account for a considerable share in the total costs of waste collection and city cleaning. In addition “green procurement” requirements force equipment purchasers to include the CO₂ performance – and by this fuel consumption – in their buying decisions.

While for a standard truck the fuel consumption is mainly related to the load and distance travelled, the considerations for a refuse collection vehicle (RCV) are more complex – a simple reduction of the engine size is not sufficient.

The members of EUnited Municipal Equipment have developed numerous solutions that achieve efficiency improvements in waste collection in order to reduce fuel consumption and consequently CO₂ emissions. This brochure highlights some of the latest innovations offered by the leading European manufacturers of refuse collection vehicles.

All of these innovations can be seen at IFAT – the members of EUnited Municipal Equipment invite you to come and see the latest innovations at their stands!
Summary

Energy efficiency is the goal of AMS with the side loader CL1-Electric endowed with a hybrid system with a lithium battery pack.

AMS focused on a Hybrid system to transfer the energy from the engine of the chassis to the equipment. This technology allows energy efficiency enhancement. Electrical energy is produced and stored during the RCV transfer when the chassis engine efficiency is high. Moreover, the energy produced by the vehicles braking system is recovered to provide electrical energy stored in the battery pack to operate all the mechanical functions of the AMS equipment.

The battery pack is made of Lithium-Ion cells that allows high current to be produced and high number of cycles of charge/discharge without “memory-effect”. The choice of this maintenance-free technology insures long life to the battery pack. Electrical parts cooling is provided by a simple and reliable closed circuit system and one auto-motive standard heat exchanger. The AMS Hybrid optional weights approx 300 kg and may be installed on every AMS models, all components are installed on the chassis, taking advantage of the space available around AMS lifting device.

The analysis made on 24 months Customer field continuous operating experience shows that 10% fuel reduction is achieved.

AMS supplied five new side loader equipment CL1-Electric 22m³ and 27m³ capacity provided with the AMS hybrid system and more are in production.

For more information please visit AMS at IFAT: Open air ground F6, booth 614/7

www.amsrsu.it
Dennis Eagle’s electric vision for refuse collection

**Summary**
Dennis Eagle’s latest concept RCV showcases a new hybrid drivetrain to help tackle environmental and operational challenges.

Dennis Eagle’s electric concept shows off a tantalisingly low-waste future, where RCVs haul 30% greater payloads and emit half as much carbon dioxide, making waste collection and recycling less expensive and better for the environment.

A redesigned chassis and smaller turning circle help the agile RCV navigate the confines of urban areas. The results are quicker, quieter collections with substantially reduced fuel consumption and particulate emissions.

For more information please visit Ros Roca at IFAT: Open air ground F5, booth 515/3

www.dennis-eagle.co.uk
Summary

The energy recovery system by Farid allows to optimize the energy resources saving about 10% in fuel consumption and reducing the emissions of CO₂ and noise.

The energy recovery system by Farid is a very simple and economic system based on fixed displacement pumps that allows to optimise the energy resources used by acting in parallel on two fronts:

1. If the vehicle is in motion a group of hydraulic accumulators transforms into potential hydraulic energy the kinetic energy of the vehicle during the braking phase.

2. When the vehicle is stationary the group of accumulators stores the energy coming from the engine when idling.

The stored energy can then be released during operational phases like bin emptying, compaction, or both. The equipment in this way is able to operate at very low engine speed, while maintaining the same capacity of compaction and lifting and the same speed of a standard equipment. Additionally the energy recovery system by Farid acts as a retarder, i.e. as an auxiliary braking system, irrespective of the fact that the accumulators charge is low or full. The intensity level of the braking assistance is adjustable.

The benefits that are obtained by using the energy recovery system consist of a reduction in fuel consumption and emissions of CO₂ of about 10%. In addition there is a significant decrease in the sound pressure in the phases of bin emptying and compaction.

For more information please visit Farid at IFAT: Open air ground F6, Booth 614/5
FAUN’s “ECOPOWER” options for a clean environment

Summary

FAUN has developed with ECOPOWER three different eco-systems for refuse collection vehicles to save emissions, fuel consumption and to reduce noise.

Under the name ECOPOWER options FAUN will demonstrate these innovative eco-systems at IFAT.

The HYDROPOWER option offers a hydraulic accumulator which is charged by the hydraulic pump during braking. The accumulated energy is then used to run the lifter.

Another option is the battery set that is charged via the “plug-in process”. With E-POWER vehicles, a battery pack which can be charged overnight at low power consumption times provides the energy for the electrical drive of the body and lifter.

With the DUALPOWER option FAUN has created an optimized drive train with its own diesel-electric power unit. The chassis engine is switched off during collection. In addition to the energy-intensive compressed air brakes, DUALPOWER vehicles are equipped with electric brakes which ensure energy recovery and less brake wear. When used in combination with an additional diesel generator switched on at the right time, fuel and CO₂ emissions are reduced up to 40 – 50 % (depending on the regional circumstances).

For more information please visit FAUN at IFAT: open-air ground F5, booth 514/1
Geesinknorba’s hybrid vehicle has been given a major upgrade to increase efficiency and fuel savings while further reducing environmental impact.

The first LI-ON Power has gone into service almost one year ago and has received positive feedback.

The vehicle’s loading and compaction runs on electricity and is able to finely compact up to 10 tons of refuse. The truck produces considerably fewer harmful emissions and less noise. In fact, analysis has shown that three LI-ON Power rear loaders on biogas chassis produce the same level of CO₂ emissions as one conventional diesel refuse truck. The LI-ON Power even generates electricity itself. The lithium-ion battery is being charged as the vehicle drives along.

The hybrid vehicle was launched in 2003 after years of development, trial and refinement in Scandinavia. In 2013 the LI-ON Power has made its entrance in the world of innovative hybrid technology. Due to the lightweight lithium-ion battery the vehicle maintains a high loading capacity and uses less fuel while driving.

A fully charged battery can power the vehicle for an entire collection round. The PTO facility still exists but for a typical urban round where the vehicle spends much as 70% of its time lifting, loading and packing it will normally not be needed.

For more information please visit Geesinknorba at IFAT: open-air ground F5, booth 513/8
New at M-U-T refuse collection vehicles is the use of L/S = LOAD SENSING HYDRAULIC SYSTEM – it reduces fuel consumption as well as pollutant emission and extensively decreases the noise-level during operation! The M-U-T bodies are driven by a „load-sensing“-variable capacity pump.

The flow-capacity of the pump will be regulated through the load-sensing-pressure, and therefore through a load-sensing-modulator mounted on the pump in dependence of the loads. The pump only delivers this quantity of oil, that is actually needed! The quantity of oil for the lifting device will actually been delivered at idle speed – noise-level-reduction!

Another Highlight of M-U-T refuse collecting vehicles is the proved bin washing system – a system which is unique in an economic and ecologic way! The bins will be emptied and washed with hot water and 2 rotating washing heads in one process. This action will only last 6-8 seconds and occurs via a high pressure pump with a capacity of 140 bar/140 lit. per minute. The water-supply is ensured through fresh and dirty water tanks with a volume of 1500 and 650 lit.

All our refuse collecting vehicles can be equipped with the bin washing system.

For more information please visit M-U-T at IFAT: Hall B4 – booth 235/236 or open-air ground F5, booth 514/1
 Terberg Ecotec, present energy efficient, low voltage, quiet electric bin lifts.

Summary

Terberg Ecotec offer an electric bin lift range developed to deliver fuel savings up to 14%, reduce carbon and operational noise levels to below 57 dBA.

Terberg Ecotec offer an electric bin lift range developed to deliver fuel savings, reduce carbon and operational noise levels, now it might seem inconceivable that a bin lift could make a significant difference to the fuel efficiency of diesel RCV but the solution Terberg has developed does just that.

Their new patented electric drive technology uses a low voltage 24V DC power source with a modular design that can be applied across their range of bin lifts. Whilst looking like a traditional hydraulically powered lift, once in operation, it’s clear that the low voltage, low noise bin lifts are different.

The key element instrumental in the fuel saving is that Terberg’s electric lifts eliminate the need for increased engine rev on the RCV during operation, they can even operate while the engine is off. The familiar “whine” associated with electrical drives is also absent. Therefore operational noise levels are below 57dBA.

Terberg’s line of electric lifts help deliver a very significant efficiency saving, whilst actual savings vary from model to model, measured field trials have proven real fuel savings between 8-14% on the overall fuel consumption of an RCV, translating into healthy CO₂ savings as well as the noise reduction.

For more information please visit Terberg Ecotec at IFAT: Open air ground F6, booth 614/6

www.terbergecotec.com
Zöller-Kipper –
New electric power systems

Summary
Zoeller-Kipper moves forward in developing electrical powered waste collection systems, which will finally result in a reduction of the CO₂ emissions in the work cycle.

In the last two years ZOELLER-KIPPER improved and extended her range of electrically powered Body and Lifter systems. The MEDIUM XLS PLUG IN is an electrically powered body with battery package, which ensures a full day tour with the performance of a conventional body controlled by the auxiliary drive.

The E-PTO is an electric drive system that replaces the conventional power take-off on a truck. The system consists of a battery module, an electronics module and a hydraulics module mounted on the truck chassis frame. The battery is charged with power from the grid and operates the work functions of the vehicle while compulsion of the vehicle is still driven by the truck’s diesel engine.

The reduction of the CO₂ emissions and a significantly reduced noise level in the work cycle are the advantages of the concept. An engine start-stop function, activated at the rear by the operator, additionally optimizes these values.

Additional to the previous introduced 230/700V electrical lifter Systems we will present our new 24 V powered Delta Lift systems. The 24V powered lift Systems can be used both in combination with a Plug In unit as well as powered by an extended chassis battery. Both Systems resulted in a further reduction of the CO₂ emissions and reduction of the noise level.

For more information please visit Zöller-Kipper at IFAT: open-air ground F5, booth 513/1

www.zoeller-kipper.de
Here are the RCV manufacturers of EUnited Municipal Equipment

1. AMS  
   F 614/7
2. RosRoca/Denis Eagle  
   F 515/3
3. Farid  
   F 614/5
4. Faun  
   F 514/1
5. Geesinknorba  
   F 513/8
6. M-U-T  
   F 514/1
7. Terberg  
   F 614/6
8. Zöller-Kipper  
   F 513/1

EUnited Municipal Equipment

Diamant Building  
Bd A. Reyers 80  
1030 Brussels  
Belgium

Phone  +32 2 706 82 29  
Fax     +32 2 706 82 10  
E-mail  municipal-equipment@eu-nited.net  
Internet www.eu-nited.net

EUnited Municipal Equipment is a sector group of EUnited aisbl – the European Association of the Engineering Industry