

## **Emission reduction for existing machinery used in landscaping and municipal operations – for series production and retrofit**

International legislation specifies strict emission limits for engines used in mobile machines (construction, agricultural engineering), which will require efficient emission control systems from 2011. The statutory provisions in Europe and the US will apply to new engines from that date. Diesel engines for mobile machines with emission control systems are currently being developed. Series production will start in 2011 (EU Stage IIIb) and 2014 (EU Stage IV).

Local authorities have to develop and implement a range of measures to comply with EU air quality targets relating to health protection and immission control by reducing particulate matter and nitrogen dioxide (NO<sub>2</sub>) emissions, which frequently exceed statutory limits, to a permissible level. Several cities have already introduced low emission zones but have so far focused on stricter particulate matter limits, which can be met by state-of-the-art machinery or by retrofitting particle reduction systems. Apart from pollution caused by particulate matter, NO<sub>x</sub> emissions, which have to be substantially reduced since they are precursors of NO<sub>2</sub> pollution, have increasingly become the focus of attention. The large number of machines in use and their long service life means that for immediate improvements to be cost-effective existing machinery would have to be fitted with emission reduction systems and old machines would have to be replaced by new ones when they reach the end of their service life.

Several specialist teams are working at national and international level to define guidelines for retrofitting and for the certification of retrofit solutions relating to particle and NO<sub>x</sub> reduction systems. The overall aim is to enable local authorities and landscaping companies that are actively promoting environmental and health protection to dramatically cut emissions from their machinery in line with international standards and specify the use of low-emission machines for outsourced services.

### **A complete solution for original equipment and retrofitting**

Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, the specialist for exhaust aftertreatment and world leader in metal catalyst substrates, supplies state-of-the-art systems and components as original equipment and as retrofitting solutions that reduce particulate matter and NO<sub>x</sub> emissions.

Emitec developed a continuously regenerating particulate filter, the PM-METALIT, which has had an excellent track record in car and truck series production for many years. The PM-METALIT is also used in agricultural and construction machinery that has to comply with the EU Stage IIIb emission standard. Due to its compact size it can be integrated in

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the silencer close to the engine. The filter is designed to be maintenance-free for the service life of the machine. The robust all-metal construction is ideally suited for agricultural and landscaping applications.

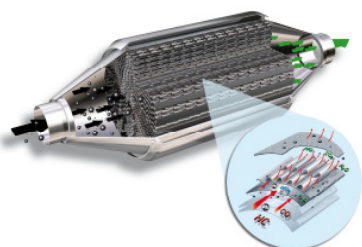
The system relies on selective catalytic reduction (SCR) to reduce NO<sub>x</sub>. The process involves small, precisely measured quantities of an aqueous urea solution (AdBlue) that are injected into the exhaust gas and converted to ammonia, which is then used to convert the nitrogen oxides in the catalyst to form the natural components of air: nitrogen, water and carbon dioxide.

A continuously operating, maintenance-free PM-METALIT particulate filter is integrated in Emitec's SCRi<sup>®</sup> system. The filter not only reduces particulates but also uniformly blends the exhaust gas with the AdBlue and generates ammonia by completely evaporating the injected solution.

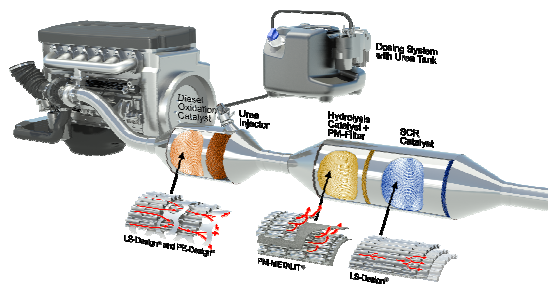
Emitec developed a complete AdBlue dosing system for SCRi<sup>®</sup>, which consists of an AdBlue tank, a delivery pump, a control valve, an injection unit and an electronic control system with dedicated sensors and lines. The system is able to operate independently from the engine management system.

This makes the dosing system a perfect solution for original equipment and retrofitting.

Emitec will be presenting a comprehensive overview of its complete range of innovative exhaust aftertreatment technology at stand **B-294**.



**PM-METALIT**



**SCRi**

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**SCR-Dosing System  
(air assisted)**



**SCR-Dosing System  
(airless)**

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