

THE DIESEL PROGRESS INTERNATIONAL CLEAN AIR COMPONENTS GUIDE

A look at some of the latest products and news from global manufacturers of clean air technologies.

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Emissions Control/Clean Air Products

ACS Industries manufactures high-temperature exhaust seals for static and dynamic exhaust joint connections. The seals contain a knitted wire mesh core with either composite or graphoil filter, depending on temperature and service. These seals are used from the manifold to the muffler in spring-loaded or clamped connections, providing a durable, low leak joint. ACS also manufactures a wide variety of knitted wire mesh end seals, mesh rings and cushions for diesel oxidation catalyst (DOC), selective catalytic reduction (SCR) and diesel particulate filter (DPF) systems. The mesh rings are designed to contribute to mounting the substrate and to increasing the durability of the system by lowering mat erosion. The company also offers dynamic seal testing at its Rhode Island technical center.

AIRFLOW CATALYST SYSTEMS



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Emissions Control/Clean Air Products

AirFlow provides low-temperature light-off washcoats and catalysts for diesel oxidation catalyst (DOC) and catalyzed diesel particulate filter (DPF) applications. The company specializes in coating difficult-to-coat metallic substrates and fiber materials for diesel exhaust components.

ALBONAIR GMBH



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The new urea dosing system from Albonair.

Emissions Control/Clean Air Products

Albonair, a company of the multinational Hinduja Group, develops and manufactures exhaust aftertreatment systems for on-road and off-road medium- and heavy-duty vehicles.

The product portfolio covers SCR systems, diesel particulate filter systems, diesel oxidation catalysts and catalytic silencers. As a supplier of components as well as a system integrator, Albonair offers customers products and systems to meet regionally applicable exhaust regulations.

Company News

To improve the effectiveness of its selective catalytic reduction (SCR) system, Albonair has developed a new urea dosing system. The new urea dosing system has a more compact design and weighs 1.6 kg. It has an injection nozzle that produces fine droplets with a Sauter mean diameter (SMD) of less than 15 μm , designed to vaporize urea within a few centimeters in the exhaust pipe.

The nozzle can be positioned without difficulty in thermal hot areas of the exhaust system and uses no moving components or sensors fixed at the injection point, a benefit for systems with active regeneration, Albonair said. The nozzle can also be fixed to the exhaust pipe at various positions, depending on system requirements.

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Emissions Control/Clean Air Products

Aristo designs and manufactures cat-

alyst products branded under the Intelligent Catalyst name. The technologies are used for a wide range of diesel and petrol on-highway, off-highway, stationary and marine applications.

BASF CATALYSTS LLC



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A Chinese city bus equipped with BASF's selective catalytic reduction (SCR) catalyst emissions-control system.

Emissions Control/Clean Air Products

BASF Catalysts offers a portfolio of diesel emissions control technologies including diesel oxidation catalysts (DOCs) to reduce total PM, HC and CO. The company also supplies DPX catalytic particulate filters, which are designed to trap diesel particulates and then use a patented catalytic technology to continuously burn them at normal diesel exhaust operating temperatures. BASF also offers selective catalytic reduction (SCR) technologies to meet NO_x control standards, including Zeolite SCR catalysts, which provide high-temperature stability and operating temperature flexibility, the company said.

Company News

BASF has entered into a relationship with Germany and China under the "Moving Ahead Together" initiative that meets Stage 4 national emissions standards. The project showcases BASF's technology to help reduce pollution in Wuhan, China, and improve the air quality of the city.

The aftertreatment system is installed in a city bus to demonstrate the vital role catalysts play in meeting future emission limits in the city of Wuhan. The vehicle is powered by a Yuchai Euro 4 engine equipped with an SCR catalyst from BASF, developed to remove nitrogen oxides from tailpipe exhaust gas to meet Stage 4 national emissions standards. This emissions-control technology was successfully demonstrated in China for public transportation at the Beijing Olympics, BASF said.

The Stage 4 emissions-controlled bus will be used to transport visitors to the German-Chinese Promenade at Sanyang Square, Hankou Jiangtan Park. The Promenade is expected to attract hundreds of thousands of citizens.

BASF has developed SCR technologies to meet nitrogen oxide (NO_x) mobile emissions regulations around the globe. SCR technology can result in a 3 to 8% improvement in fuel efficiency, because the engine itself can be optimized in terms of fuel consumption whereas the catalyst as part of the system ensures emissions reduction. As another advantage, the system does not require ultra-low sulfur diesel fuel, BASF said. The SCR catalyst comprises a catalytically active component coated on a ceramic honeycomb. When a reductant, such as BASF's AdBlue urea solution, is added to the system, the catalyst promotes a chemical reaction that converts NO_x into water and nitrogen.

BAUMOT AG



I innovative Abgasnachbehandlung

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Emissions Control/Clean Air Products

Baumot's diesel particulate filters comprise the BA passive DPF system for heavy-duty vehicles with an average exhaust temperature over 230°C and

the BA-A DPF system with additives for machines with older engines where soot emissions, oil consumption and exhaust gas temperatures are all higher than normal. This allows filter regeneration from exhaust gas temperatures of 280°C.

In addition, Baumot offers the BA-B, which is effective from 200°C and oxidizes carbon monoxide (CO) and hydrocarbons (HC) as the exhaust gases flow through the mutually closed channels of the particulate filter. The soot coming from the engine, which is nothing other than unburned fuel, is collected in the filter and completely burned via a catalytic reaction. This catalytic reaction is initiated by the coating of the ceramic monoliths. Baumot uses a combination of precious metals for the coating.

Depending on the type of engine, the breakdown of the undesirable emissions starts at temperatures of 230°C and above. The average temperature may be significantly lower.

The company also offers the BA-H DPF with an optional heating element, which can be used at extremely low exhaust temperatures, such as with diesel-operated emergency power supply units and generators.

Installed as a modular option, the heating element constantly measures the load condition of the particulate filter. If a certain limit value is reached, the heating element is switched on automatically. While the machine continues to operate, the temperature is raised to the level required for regeneration.

Each certified DPF system from Baumot can be equipped with the heating element module quickly and easily.

Finally, the BA-F DPF with an optional burner element is applicable for any low-temperature vehicle such as school buses, waste haulers and heavy-duty construction equipment. This system allows operation of any type of low-temperature equipment without any action required by the operator, said Baumot.

The BA-F system represents the second generation of active diesel particulate filters at Baumot and combines passive and active DPFs in one device.

Company News

Baumot AG has been active in diesel engines, drive technology and diesel

Company	Diesel Particulate Filter	Diesel Oxidation Catalyst	Fuel Borne Catalyst	NO _x Storage Catalyst	Selective Catalytic Reduction	Catalytic Silencer	EGR Modules	Controls and Governors	Others
ACS Industries					X				Knitted wire mesh products
Airflow Catalyst Technology		X							Low temperature/low lightoff washcoats and catalysts
Aristo Catalyst Technology		X							
Albonair	X	X			X	X			Urea dosing system; complete aftertreatment system integration
BASF	X	X			X				AdBlue diesel emissions fluid
Baumot	X								
CleanAIR Systems Inc.	X	X			X				
Corning	X								Ceramic substrates
Cummins Emission Solutions	X	X			X	X			
Cummins Filtration									Crankcase ventilation systems; diesel exhaust fluid
DCL International	X	X				X			
Donaldson	X	X				X			DPF cleaning systems
Eaton			X		X		X		LNT catalysts, hybrid systems
Eberspächer	X			X	X	X			
Eminox	X	X	X		X				
Emitec	X	X			X		X		Urea dosing system
Emtec	X						X		NO _x reduction for offshore
Engine Control Systems Europe	X	X				X			
Environmental Solutions Worldwide	X	X				X			Wire mesh and SiC substrates
Haldex							X		
Headway Machinery	X								
Heinzmann							X	X	Components for DPF regeneration
HJS	X	X	X		X			X	Industrial silencers; sintered metal filter system
Hug Engineering	X	X				X		X	Catalytic substrates
Hug Filtersystem	X	X							Catalyst substrates
Huss Group	X				X				Piping; silencers; pipe bending; canning of catalyst and DPF; spark arresters
Johnson Matthey	X	X		X	X				Retrofit systems
LiqTech	X								Kiln furniture
Mann+Hummel	X	X	X		X				Centrifuges; preliminary fuel filters; crankcase ventilation systems
Miratech	X	X							Catalytic subbstrates
NGK Europe	X								Advanced substrates; sensors; emissions controls
Notox									SiC substrates
Phillips & Temro Industries		X				X			
Plain Filters	X								
PURI tech	X	X	X					X	Cleaning systems; test equipment for filter traps
Racor Division, Parker Hannifin									Crankcase ventilation systems
Robert Seuffer									Urea sensors
Sensors Europe									Mobile emissions measurement equipment
Süd-Chemie	X	X							
Tenneco	X	X		X					
Walker Engineering									Closed crankcase ventilation systems
Westport Innovations									LNG fuel systems
Wuxi Weifu		X							

TECHNOLOGY of CLEANair

particulate filters (DPFs) for original equipment and retrofitting. In addition to its locations in various European countries, Baumot AG has announced the formation of a U.S. subsidiary — Baumot North America LLC, based in Los Angeles, California, U.S.A.

In order to fulfill and support the increasing demand of DPFs, Baumot AG is also ramping up production through its recent joint venture with a Chinese manufacturing company, as well as launching its own coating facility as part of the expansion at the Swiss headquarters.

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Emissions Control/Clean Air Products

The CleanAIR emissions product line features the CleanAIR Permit filter, which is CARB verified Level 3+, the company said. The catalyzed diesel particulate filter (DPF) was developed to reduce PM by greater than 85% and HC and CO up to 99% in prime power and emergency generators, pumps, construction vehicles, mining and truck applications. The company also produces the Assure diesel oxidation catalyst (DOC), a catalyzed diesel oxidation converter; the Assure TWC, a three-way converter for spark-ignited, stoichiometric engines (enabling EPA – New Source Performance Standards compliance); and the Endure selective catalytic reduction (SCR) catalyst for use in lean-burn and natural gas engines.

Company News

CleanAIR Systems has announced its contribution to the Z-CUBE, a Tier 4 turnkey system for mobile power generation, engineered and manufactured by Girtz Industries. Constructed for higher-horsepower demand and purpose-built to meet stringent upcoming EPA regulations, the Z-CUBE was introduced at the PowerGen conference in Las Vegas, Nev.

Equipped with CleanAIR's E-POD emissions control technology, which reduces NO_x, PM, HC and CO, the ZCUBE is a standardized 40 ft. long ISO container package built primarily for the rental power generation market. Housing a 1 MW generator and compact E-POD emissions control system, the unit also contains onboard urea storage, closed-loop dosing cabinet, internal urea mixing, injection air compressor and all necessary items required for operation.

Engineered by Girtz to be user-friendly, all components of the Z-CUBE can be unbolted, removed, replaced or serviced through the container's access doors or roof. The Girtz Z-CUBE with CleanAIR emissions control technology is a complete system in one box to meet Tier 4 emissions levels.

CORNING INC.

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Emissions Control/Clean Air Products

Corning is a supplier of ceramic substrates and diesel particulate filters (DPFs) to worldwide engine and vehicle manufacturers. Corning offers a broad product portfolio and experience in emissions control design, modeling and engineering. Corning aims to assist customers in developing emissions technologies that help them achieve their objectives for power, fuel efficiency, emissions reduction and system optimization across all petrol and diesel vehicles, including on-road and non-road applications.

Company News

Corning has announced its plan to consolidate its Environmental Technologies segment into a leaner and more efficient organization and align the business to a smaller global automotive market and North American trucking industry. The reorganization will consolidate the management structure of two

divisional operations into one integrated business unit. The streamlined organization will reduce costs, increase manufacturing efficiencies, and enable Corning to better meet the innovation needs of customers, said the company.

"The near-term outlook for growth in the emissions-control products markets is much different than we thought even a year ago, so we must adjust our organization to reflect these new business dynamics," said Peter F. Volanakis, president and chief operating officer. "The pace of regulation is also driving the need for constant product innovation, so we are increasing our agility to respond with new products that solve our customers' emissions-control needs," he added.

Volanakis announced that the new organization will be led by Thomas R. Hinman, senior vice president and general manager, Environmental Technologies.

Corning has also been named a Diamond Supplier for the second consecutive year by Navistar Inc. This award recognizes Navistar's suppliers for meeting or exceeding Navistar's performance expectations for quality, delivery and cost.

Navistar's Diamond Supplier award is given to suppliers who strategically align with the company's business goals, while also demonstrating a commitment to continuous improvement. Diamond Suppliers collaborate technically and commercially with Navistar and play an integral role in growing Navistar's business. In addition, Diamond Suppliers deliver products of distinction to mutual end customers.

Corning and Navistar announced that Corning will provide Navistar with advanced diesel emissions-control products that will enable Navistar to meet the EPA 2010 regulations. The multiyear agreement is for the supply of Corning emissions-control products for medium- and heavy-duty Navistar MaxxForce diesel engines used in Navistar's International brand trucks for North America.

CUMMINS EMISSION SOLUTIONS



TECHNOLOGY of CLEANair

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Emissions Control/Clean Air Products

Cummins Emission Solutions (CES), a business unit of Cummins Inc., designs and manufactures exhaust aftertreatment systems for the on- and off-highway medium- and heavy-duty engine markets, serving OEM, engine first fit and retrofit customers in the EPA 2002, EPA 2007, EPA 2010 and Euro 4/5 markets. On the OE side, CES works with engine manufacturers directly to configure the engine, aftertreatment and exhaust system to meet emissions regulations.

On the retrofit side, CES supplies a range of systems designed to be installed on on- and off-road vehicles and equipment in the field. These include diesel oxidation catalysts (DOCs) that integrate Johnson Matthey's platinum-based flow-through catalyst on a cordierite substrate. The DOC is designed to reduce PM by 20% or more, CO by 50% or more and HC by 50% or more and may be used with low or ultra-low sulfur fuel.

CES also offers passive diesel particulate filters (DPFs) that are verified by EPA and CARB and may be applied across a wide range of on-road engines 1994 and newer. The DPFs use John-

son Matthey's Continuously Regenerating Technology (CRT). The next generation Catalyzed Continuously Regenerating Technology (CCRT) system is designed to work in lower temperature applications.

Other products available include the Partial Continuously Regenerating Technology (PCRT2), which can be used on all engine makes and model years up to 447 kW. It delivers PM reductions of at least 50%, depending on the application and also reduces HC and CO by at least 90%. Based on a two-stage filter patented by Johnson Matthey, the PCRT2 combines an oxidation catalyst with a partial filter and the combination provides the attributes of both a flow-through substrate and a wall-flow filter to achieve PM reduction while minimizing filter plugging, CES said.

CES can also combine its DOC with a Cummins Filtration closed crankcase ventilation (CCV) kit. The combined system has been verified by EPA for on-highway, medium- and heavy-duty diesel engines, model years 1991 to 2003.

CUMMINS FILTRATION



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Emissions Control/Clean Air Products

Cummins Filtration designs and manufactures filtration and chemical technology products for all engine-powered equipment, with products such as the Fleetguard brand of filtration, coolant and chemical products. Cummins Filtration serves a diverse customer base with over 30,000 points of distribution around the globe. The product line covers a variety of applications on the market including transportation, mining, agriculture, construction, oil and gas, power generation, marine and industrial applications.

Company News

Cummins Filtration's Direct Flow filter uses a rectangular "V-Block" configuration that optimizes space normally wasted in the inner diameter of a typical cylindrical air filter configuration. The total dust-holding capacity increases, and the physical size of the product can be decreased by up to 50% for a given dust capacity, Cummins said. This design also provides the ability to mount the air cleaner in a location previously not suitable with cylindrical air cleaners.



Cummins Filtration's Direct Flow filter uses a rectangular "V-Block" configuration.

As well as minimizing space, the Direct Flow technology is designed to offer better engine protection and lower maintenance costs. Also included are extended air filter life and extra protection with optional pre-cleaner and secondary filter. The filter is also engineered to be rust-free and optimized for the most rugged environments.

The Direct Flow air intake system has been designed and integrated with Cummins off-highway engines to provide customers with enhanced engine performance and optimized costs for Tier 4 interim applications. More than 100 integrated Tier 4 systems will be delivered to customers with the Direct Flow air intake system by early 2010, Cummins said.

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Emissions Control/Clean Air Products

DCL manufactures catalytic converters, catalytic mufflers, flow-through filters and wall-flow diesel particulate filters for on- and off-highway vehicles and stationary engines. DCL supplies to worldwide-based engine manufacturers, original equipment manufacturers and aftermarket retrofit.

Company News

CARB has reviewed the DCL International Inc. application for the verification of the Mine-X Sootfilter diesel particulate filter (DPF) system. Based on the evaluation of the data provided, CARB has verified that the Mine-X Sootfilter DPF system reduces PM emissions by 85% or greater and meets the January 2009 NO₂ limit (Level 3 Plus) for stationary prime and emergency standby (E/S) generators powered by certified Tier 1, Tier 2 or Tier 3 off-road engines that are certified to a PM emissions limit of less than or equal to 0.15 g/bhp-hr.



DCL's Mine-X Sootfilter diesel particulate filter system installed on a Caterpillar D8T dozer.

DCL has also received CARB Level 3 Plus verification for its Mine-X Sootfilter system for off-road vehicles using off-road diesel engines.

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Emissions Control/Clean Air Products

Donaldson is a worldwide provider of

filtration systems including air, lube, fuel, coolant, hydraulic and crankcase filtration products for medium- and heavy-duty equipment and vehicles, as well as emissions reduction products for diesel engines.

Company News

Donaldson Co. has received Level 3 Plus verification by CARB for two new on-road emissions retrofit devices. The new approvals extend the LNF muffler system verification for select high NO_x engines and verify the new LXF muffler system for select low NO_x engines.

CARB extended the previously verified Donaldson Low NO₂ Filter (LNF) muffler system to cover additional high NO_x 1993 through 2006 model-year diesel engines. The extension added engine families between 75 and 112 kW and high NO_x 2002 to 2006 engines used in on-road applications.

CARB verified the Donaldson Low NO_x Filter (LXF) muffler system for select 2002 to 2006 model-year diesel engines used in on-road applications. The verification covers select low NO_x engine families that did not come from the OEM with an oxidation catalyst.

"We are pleased to have received the CARB verification and verification extension of both our LNF and LXF Muffler Systems," said Fred Schmidt, director of Donaldson Retrofit Emissions. "We are pursuing a final verification extension for the LXF Muffler System to cover low NO_x engines with OEM oxidation catalysts and hope to obtain that approval in the next couple of months. Once verified, these products will provide broad engine coverage for vehicles subject to the upcoming regulatory deadlines of the California Diesel Risk Reduction Program."

The LNF and LXF Muffler Systems offer vehicle and fleet owners DPF products for vehicles with sufficient duty cycles to permit a passive DPF.

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Emissions Control/Clean Air Products

Eaton offers a lineup of hybrid power systems for commercial vehicle applications. Eaton hybrid-electric, plug-in hybrid-electric, parallel and series hydraulic power systems are available on truck models from International, Peterbilt, Kenworth, Freightliner and Ford and buses manufactured by Foton and Solaris. Eaton said its hybrid power systems have accumulated more than 30 million miles of road-tested service around the world.

Eaton has also developed supercharger technology for diesels, engine valve and valvetrain systems and advanced traction technology designed to help manufacturers around the world boost power and performance, while at the same time helping to reduce fuel consumption and improve emissions.

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Emissions Control/Clean Air Products

Eberspächer's product line includes OEM and aftermarket/retrofit products. For manufacturers of commercial and off-road vehicles and automobiles, the company's product line includes complete exhaust gas systems and components: catalysts, diesel particulate filters (DPFs), soot filters, integrated SCR systems, NO_x storage catalysts, mufflers (sound design included), pipes or manifolds. Aftermarket products include mufflers, catalytic converters and retrofit particulate filters.

With the series production of SCR systems for passenger cars and commercial vehicles for Euro 4/5 compliance

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as well as combination systems for Tier 2 Bin 5, Euro 6 and EPA 2010, Eberspächer offers exhaust systems for the post-treatment of diesel exhaust emissions for many OEM needs.

The SCR works to reduce NO_x, while combination systems composed of diesel oxidation catalysts, DPFs and SCR technology meet the most stringent emissions limits.

Company News

At the end of 2009, Eberspächer GmbH & Co. KG, Robert Bosch GmbH and Deutz AG, announced an agreement to set up a joint venture for diesel exhaust aftertreatment.

The joint venture started operations in January 2010 with the name Bosch Emission Systems GmbH & Co. KG and is headquartered in Stuttgart, Germany.

The objective of the joint venture is to use the core exhaust aftertreatment competencies of the three companies involved to offer complete aftertreatment systems for construction and agricultural machinery, as well as for commercial vehicles with stricter emissions regulations from 2011 onward.

Series production will likely start in the third quarter of 2010, the companies said.

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Emissions Control/Clean Air Products

Eminox manufactures the continuously regenerating trap (CRT), used in Europe to reduce particulate matter, hydrocarbons and carbon monoxide.

The diesel oxidation catalyst by Eminox removes up to 90% of carbon monoxide and hydrocarbons, said the



A cutaway of Eminox's SCRT system, which combines continuously regenerating trap technology with selective catalytic reduction.

company, and it can also reduce particulate matter by up to 30%.

Eminox's fuel borne catalyst (FBC) reduces particulate matter emissions by more than 90% while also reducing NO₂ levels by up to 70%, said the company. It is available with an active regeneration option for vehicles with lower average exhaust temperatures.

The selective catalytic reduction (SCR) by Eminox focuses on removing NO_x, with a specially formulated catalyst in the SCR system that converts it to water and nitrogen.

Company News

Eminox's SCRT system combines continuously regenerating trap (CRT) technology with SCR. The SCRT system is designed to remove over 90% of particulate matter, hydrocarbons and carbon monoxide, plus 65 to 80% of NO_x.

As concerns mount about the levels of PM and NO₂ present in Europe's air, the Eminox SCRT system is increasingly being used to help cities across Europe meet the tougher limits set by Europe's Ambient Air Quality Directive.

Eminox has worked with urban governments and bus operators in Paris, France; London, U.K.; and Flanders, Belgium, to meet local air quality requirements by retrofitting its emissions control systems on city bus fleets.

The company's SCRT was chosen for one of Europe's largest combined PM and NO₂ retrofit programs, which is now nearing completion. More than 300 Eminox SCRT systems were supplied for the program.

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Emissions Control/Clean Air Products

Emitec develops metallic substrates for catalytic exhaust aftertreatment, such as DOCs, SCR systems, three-way catalysts, lean-NO_x traps and particulate filters with application in two- and three-wheeled vehicles, passenger cars, medium- and heavy-duty vehicles, off-road machinery, stationary and utility.

The company manufactures catalytic converter substrates in a variety of diameters, lengths and cell densities.

PM-Metalit, the company's continuously regenerating DPF for serial and retrofit applications, was designed to be maintenance free with less backpressure, according to Emitec.

The pre-turbo catalyst, PT-Metalit, is designed to improve oxidation using the turbulent flow conditions and a higher temperature level in front of the turbine, not only in cold-start, but also during cold phases of actual and future test cycles.

Emitec's SCR metal substrate catalysts are available in a number of different geometries for installation inside the engine bay.

Emitec also developed a complete urea-dosing system, consisting of a urea tank, a delivery pump, a control valve, an injection unit and an electronic control system complete with sensors and pipes.

The system can operate independently from the engine management system, which makes it suitable both for serial applications and retrofit purposes.

Emitec is also introducing the SCRi system for combined PM and NO_x reduction, using its PM-Metalit particulate filter in a twin function.

Besides its PM-trapping capabilities, the unit can convert the injected urea to ammonia and improve its distribution in the exhaust gas flow. In this way the following reduction catalyst can be scaled down. The lower operating conditions without active regeneration of the partic-

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ulate filter reduce the aging of the SCR coating, the company said.

Company News

Emitec introduced a new version of its SCR system with the development of the SCRadvanced (SCRa). The SCRa capitalizes on the potential offered by metal catalyst substrates and uses a turbulence-generating structure for maximum performance with minimum installation space. An internal catalyst is used for mixing and flow equalization, and a variety of flexible designs are offered.

The SCRa system is a multistage process that consists of a close-coupled module, including an oxidation catalyst, urea injection and an SCR catalyst. The ring-shaped oxidation catalyst deflects exhaust gas and flows it back through an inner tube.

Urea is injected into the deflection chamber to produce an optimum mixture so hydrolysis occurs inside the component. The first SCR unit is fitted downstream, still close to the engine.

The close-coupled design of these compact metal components ensures rapid heating for catalyst light-off and is effective for engine cycle conditions commonly found in nonroad applications, Emitec said.

NO_x emissions are already reduced in the first SCR stage. In combination with a second SCR unit, the system can achieve NO_x conversion rates up to 90 to 95%.

With these NO_x conversion rates, NO_x engine-out emissions can exceed 5 to 6 g/kWh and still meet the requirements of EU Stage 4, Emitec said. This is intended to allow a larger degree of freedom in the design and tuning of the engine, for further improved fuel efficiency.

Emitec said that modern engines with high-pressure fuel injection and highly effective turbocharging will require no other emissions control technology than its SCRa system to achieve EU Stage 3b or even Stage 4.

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Emissions Control/Clean Air Products

Engine Control Systems Europe (ECS), a Catalytic Solutions Inc. company, offers a full range of verified products for OEMs and the aftermarket and retrofit markets to reduce exhaust emissions created by on-road, off-road and stationary diesel engines.

ECS diesel oxidation catalyst and diesel particulate filter products have been proven in the most severe conditions, said the company, including underground and open pit mining, tunnelling, cargo handling, industrial and stationary power generation applications, urban transit, school bus and other on- and off-road fleets.

Company News

Engine Control Systems Europe AB (ECS) has launched its Actifilter DB, a particulate filter system and silencer that regenerates with a diesel burner. There are no duty cycles or exhaust temperature requirements for this system, and fuel consumption is low due to a short regeneration time of 5 to 15 minutes when the vehicle is idling.

The Actifilter DB particulate filter part is the same as is used in the company's Unikat Combifilter, which is able to reduce PM up to 99%, said the company.

ENVIRONMENTAL SOLUTIONS WORLDWIDE INC.



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Emissions Control/Clean Air Products

Environmental Solutions Worldwide Inc. (ESW) is the parent company of ESW Canada Inc., which specializes in the design and manufacture of emissions control products. ESW America Inc., also a subsidiary, specializes in engine/vehicle/product emissions testing and certification. Air Testing Services (ATS) is the verification division of ESW, providing services such as complete engine exhaust analysis for certification/verification of vehicles, engines and/or emissions control products.

ESW's product portfolio consists of proprietary wire mesh and silicon carbide substrates, catalytic converters, custom catalytic mufflers, and a variety of passive and active diesel particulate filter (DPF) systems, all designed to help achieve emissions compliance for internal combustion engines used in on- and off-road vehicles, stationary engines, military, locomotive and marine applications. The lineup includes the Level 3+ ThermaCat active DPF, the Level 2 Particulate Reactor, and the Level 1+ Clean Cat and Clean Cat HP diesel oxidation catalyst (DOC), suitable for on-road and off-road applications.

ESW America houses ESW's emissions testing lab, which is capable of performing engine emissions verification test protocols by the EPA and CARB. The lab incorporates seven dedicated engine and vehicle dynamometer test cells.

HALDEX HYDRAULICS AB



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Emissions Control/Clean Air Products

Haldex offers the Varivent EGR pump. A venturi-based unit that efficiently pumps exhaust gases back into the intake manifold and at the same time mixes the air and exhaust, explained Haldex.

TECHNOLOGY of CLEANair

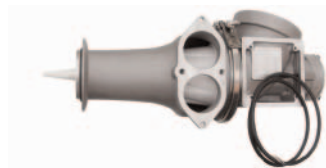
Haldex stated that the product is able to save 3 to 5% fuel, compared to other systems.

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The Haldex Varivent EGR pump.

Emissions Control/Clean Air Products

Headway Machinery Co. Ltd. — located in Zhucheng, Shandong Province, China — entered into an agreement with Clean Diesel Technologies Inc. last year under which Clean Diesel Technologies will license its wire mesh filter (WMF) technology to Headway, enabling the Chinese company to provide particulate matter emissions reduction products for China-based truck manufacturers.

The licensing arrangement has served to lay important groundwork for Headway to fulfill its mission of bringing China in line with the Euro 4 particulate matter emissions standards for light- and medium-duty trucks. China adopted the Euro 4 emissions standards on Jan. 1, 2008.

Headway customers include automakers in the country, such as Beiqi Foton, China National Heavy Duty Truck Group (Sinotruk) and Zibo Automobile Factory.

Apart from air filters and spin-on filters, the company is also a major supplier of fuel tanks for vehicles, construction machinery and agricultural equipment.

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Emissions Control/Clean Air Products

With its emissions control components, Heinzmann targets off-highway applications, e.g., construction machinery and stationary equipment.

In the field of EGR modules, the company produces wastegate and butterfly throttle valves of different sizes for gas temperatures up to 720°C, EGR dual poppet valves for cooled EGR, actuators and governors for hot environments, with and without water cooling.

Heinzmann also offers control units for complete exhaust gas aftertreatment management.

The company's portfolio also includes components for DPF regeneration, such as HC and fuel dosing units, safety shut-off valves, air control valves, HC atomization nozzles, and the corresponding actuators and sensors.

Company News

A recent development at Heinzmann is the Apollon range of throttle-valve-controlled EGR-TV valves operated by high-performance actuators. The control electronics allow the size of the opening to be calculated precisely without the need for a position sensor.

The throttle valve in the low range benefits from the higher resolution of flow rate and metering accuracy. The high holding force provided by the actuator means the valve is not sensitive to



The Apollon range of throttle valve controlled EGR-TV valves from Heinzmann.

pulsations in the exhaust, Heinzmann said.

The EGR-TV valve has higher dynamic response due to its faster opening, which maximizes the exhaust gas recirculation rate. Conversely, rapid closing of the valve prevents unwanted soot blow-off during transitions to low load on the engine.

The functional unit formed by the throttle valve and the stepper motor can be customized according to the intended application. The two components can be mounted separately or as a combined unit.

Heinzmann said it developed the EGR-TV valve with a more robust design to decrease the sensitivity to contaminants, making it ideal for deployment in the harsh environment of a diesel engine exhaust system. The compact design and flexible installation options allow the valve to be used universally in a variety of engine applications, said the company.

HJS FAHRZEUGTECHNIK GMBH & CO. KG



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Emissions Control/Clean Air Products

HJS offers an array of aftertreatment products for commercial vehicles, mobile machinery and stationary applications (OE and retrofit).

The product and service range entails active and passive diesel particulate filter (DPF) systems, SCR systems, SCRT systems, industrial silencers, system components as well as canning and housing.

Company News

HJS has developed an aftertreatment system for critical applications of particulate filter systems or NO_x reduction systems in regards to the operating temperature of the exhaust gas.

To ensure regeneration or dosing during engine operation, HJS has developed a burner technology with a new

TECHNOLOGY of CLEANair

degree of freedom for thermal management of aftertreatment technologies. Besides being an OE component in aftertreatment systems engineered by engine manufacturers, this component enables HJS to upgrade existing Tier 3 or Stage 3a engines to Tier 3b or Stage 3b engines. With this component, thermal management can be controlled by independent aftertreatment with full OE capabilities as an onboard diagnosis (OBD).

HJS has also extended its product range of CRT systems for on-road commercial vehicles such as trucks. The CRT systems are designed to be easy to install and fit in the original silencer space without the need for interface modifications, said the company.

The SCRT system for retrofitting city buses has been demonstrated in a number of new applications. The HJS SCRT system not only reduces particulate emissions down to the limit of detection but reduces all other gaseous pollutant emissions as well, said HJS. NO_x reduction rates of up to 90% are achieved. With the use of an SCRT System, Euro 3 vehicles are able to meet the stringent Euro 5 and EEV standard, HJS said.

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Emissions Control/Clean Air Products

Hug Engineering is a full-service manufacturer and supplier for exhaust gas purification systems for various types and sizes of engines used in stationary plants as well as in mobile installation.

For stationary applications, the CombiKat product range has been installed since 1983 in many plants from 200 to 40 000 kW, reducing all kinds of emissions, Hug said.

For mobile and rail applications from

200 to 5000 kW, the product range Mobiclean has been also very widely used.

For applications on yachts from 200 to 5000 kW, the product Nauticlean is a certified system for marine implementation.

For mobile on- and off-road applications from 15 to 650 kW, the Mobiclean R system is offered by Hug (see Hug Filtersystems AG).

All products are modularly designed and adaptable for the needs of the customers, said HUG, and all products can be designed to reduce particulate matter, carbon monoxide, hydrocarbons and nitrogen oxides.

The company produces all main components (substrates, filters, control systems, etc.) in-house in the factory in Switzerland.

Company News

Hug products are being continuously upgraded. A team of experts in the research and development department is permanently focused on innovation of products, processes and technology.

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Emissions Control/Clean Air Products

HUG Filtersystems AG provides diesel particulate filter systems for engines from 15 to 650 kW, mainly used in on- and off-road applications.

Company News

Hug Filtersystems AG, a subsidiary of the advanced technology company Hug Engineering AG located in Winterthur, Switzerland, launched an all-in-one filter to the market.

Mobiclean R Advanced, the round filter for engines from 15 to 650 kW, reduces particulate matter by 99.9%, Hug said. Additionally, a specialized catalyst reduces CO and HC output.

The Mobiclean R Advanced is a closed

filter system with passive regeneration, which functions at exhaust temperatures from 170°C through the catalytic coating of silicon carbide. VERT certification demonstrated the effectiveness of the filter even after extended usage. Mobiclean R filter systems have been tested under extreme conditions and were shown to be maintenance free over the lifespan of a vehicle. The retrofit kit was designed to be safe, easy and quick to install.

In addition to this new filter system, Hug Filtersystems AG is also offering a broad assortment of filters under the Mobiclean R brand for all classes of diesel engines.

Hug Filtersystems is working closely with partners and subsidiary companies all over Europe and the U.S.A. The latest addition is the company Hug Filtersystems Inc. in Austin, Texas, U.S.A.

HUSS GROUP

HUSS

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Emissions Control/Clean Air Products

The liquid-phased silicon carbide (LPS-SiC) filter material won the Fraunhofer award in 2009 and has been approved by CARB for sales in the U.S. market.

CleanDieselCeramics (a company of the Huss Group) aided in the design of the channels and the honeycombs of the particulate filter, composed of the LPS-SiC. The polygonal outer shape of the honeycombs increases the mechanical stability, said Huss.

The filter offers the possibility of a wide variety of outer forms by assembling the honeycombs differently. The triangle shape grants 15% more filtration surface.

The Huss Group also launched an active retrofit solution for middle-weight trucks, using its active diesel-post-injec-

TECHNOLOGY of CLEANair

tion technology (MD system), which helps prevent filter channels locking, power loss and engine shutdown.

Company News

The companies of the Huss Group produce products for the exhaust after-treatment of diesel engines, with focus on both first installation and retrofit of off-road and heavy-duty applications.

CleanDieselCeramics, a producer of LPS-SiC ceramic for particulate traps, and noise reduction and metalworking company Metpela, are the production facilities of the Huss Group. Retrofit solutions are represented by Huss in Germany, Switzerland and North America as individual entities. Authorized partners are located internationally to serve customers' needs.



Huss produces aftertreatment systems for first installation and retrofit of off-road equipment and heavy-duty vehicles.

In 2009, employees of the locations in Nuremberg, Germany, and Palm Springs, California, U.S.A., moved to new premises, with a doubling of space in Nuremberg and a triplication in California.

JOHNSON MATTHEY PLC – EMISSION CONTROL TECHNOLOGIES (ECT)



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Emissions Control/Clean Air Products
Johnson Matthey offers a broad range

of engine emissions control technologies including diesel oxidation catalysts (DOCs) for reducing emissions of CO, HC and PM; catalyzed soot filters that offer more than 90% PM reduction; SCR catalysts for up to 90% reduction of NO_x; NO_x adsorber catalysts; and three-way catalyst for reducing CO, HC and NO_x from petrol engines by more than 90%.

The company's CRT, CCRT and SCRT technologies are applied to light- and heavy-duty, on- and off-road vehicles and equipment for both OE and retrofit applications.

Company News

Johnson Matthey's Compact Soot Filter (CSF) for light diesel engines has been recognized in both the International Trade and Innovation categories of the Queen's Awards for Enterprise 2009.

Johnson Matthey has expanded its capabilities with the acquisition of the assets of Applied Utility Systems Inc. (AUS) from Catalytic Solutions Inc.

AUS specializes in SCR systems for reducing NO_x emissions from gas turbines, boilers and process heaters and is a direct fit with Johnson Matthey's SEC emissions control business for coal-fired power plants, process industries and internal combustion engines for power generation, locomotive and marine applications.

Johnson Matthey's AdvCCRT (Advanced CCRT) system, the second-generation benchmark CCRT filter technology for 2.5 g NO_x EGR and non-EGR engines, has been verified by the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) for reducing PM by more than 90%, while meeting stringent NO₂ slip requirements.

The system uses three distinct catalyst formulas specifically engineered for optimum performance. Upstream, a Johnson Matthey oxidation catalyst coated on a flow-through substrate optimizes conditions for the second, downstream catalytically coated wall-flow filter to burn off virtually all PM. The third catalyst, an NO₂ decomposition catalyst, then reduces NO₂.

LIQTECH A/S

LiqTech
Keeps the sky blue

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Emissions Control/Clean Air Products

The LiqTech DPF filter is made of SiC (silicon carbide) in a honeycomb structure. It's a wall flow filter in porous SiC and produced in ranges from 90 to 250 CPSI in any required shape or length, said LiqTech.

LiqTech now delivers the DPF in all the available diameters in 200 CPSI for both light- and heavy-duty vehicles.

The LiqTech 200 CPSI DPF is targeted toward active regeneration systems and passive systems with repeated regeneration. The company said its 200 CPSI filters have shown positive results with catalytic coating, due to the increased pore size and porosity that does not compromise pressure drop.

LiqTech filters are sold both for retrofit applications and the OE market. They were developed for high soot loading capacity, efficient heat conductivity and low backpressure.

Company News

LiqTech A/S has plans to introduce two types of LiqTech kiln furniture: infiltrated SiC (SiSiC) for furnaces going up to 1380°C in an oxidized atmosphere and recrystallized SiC (ReSiC) for 2000°C in an inert atmosphere.

The kiln furniture will be made in SiC, bringing the heat conductivity and durability characteristics from DPFs to other applications.

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TECHNOLOGY of CLEAN air

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The SintROC filter from Mann+Hummel is available in six sizes for engines ranging from 75 to 600 kW.

Emissions Control/Clean Air Products

Mann+Hummel manufactures various DPF systems, such as the SMF-AR, a passive DPF with a diesel oxidation catalyst; an active DPF system using FBC technology with an automatic and discontinuous additive dosing system; and the latest addition, the SintROC, a passive DPF system also with FBC technology and automatic and discontinuous additive dosing system.

The company's passive DPF system was developed for engines up to 560 kW with a constant exhaust gas temperature between 260° and 450°C. Typical applications are on-road vehicles. The filter was designed to be a lifetime product and is easy to clean; no exchange of the filter element is necessary.

The SMF-AR is a system for engines with low or variable exhaust gas temperatures. It is an active system as the filter regenerates without any machine downtime. The filter was designed to last the lifetime of the machine.

It is approved by the Mine Safety and Health Administration (MSHA) with 99% filter efficiency.

Mann+Hummel manufactures the diesel oxidation catalyst (DOC) for the passive DPF and the DT7, an iron-based additive for the SintROC and SMF-AR filters. The company also offers an SCR system with DPF for generator sets.

Among the other products that contribute to reducing fuel consumption and emissions, Mann+Hummel offers the FM centrifuges to improve engine oil quality; the PreLine, a preliminary fuel filter to reduce water content in diesel fuel;

and the ProVent, a closed and open crankcase ventilation system.

Company News

Mann+Hummel's latest development for diesel particulate filters is the SintROC filter to reduce soot and NO₂ emissions of diesel engines.

The series was developed for non-road vehicles and includes six sizes for engines with outputs ranging from 75 to 600 kW.

SintROC combines Mann+Hummel's passive DOC systems and SMF-AR diesel particulate filters (DPFs) in one product. As with a DOC system, SintROC regenerates continuously without downtimes. However, it does not require constantly high exhaust gas temperatures, simply higher than 380°C for 10% of the operating time. This requirement is usually satisfied in the engine output range for which SintROC was designed, said the company.

The SintROC, like the SMF-AR, is a filter targeted toward applications with intermittent exhaust gas temperatures.

The filter element has a high ash-holding capacity and can easily be cleaned with a power-wash device. Its element was designed to be robust and to last for the life of the machine.

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Emissions Control/Clean Air Products

Miratech develops emissions control technologies for industrial engine applications, focusing on natural gas and diesel reciprocating engines used in natural gas production, oil and gas drilling, power generation, locomotive, marine and fluid pumping markets. In addition, the company provides engineering, service and support. Its product line includes NSCR, SCR, DPF catalysts,

catalyst housings, which include silencers, and control systems to reduce NO_x, CO, VOC, diesel particulates, HAPs and noise.

NGK EUROPE GMBH



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Emissions Control/Clean Air Products

NGK is a ceramics manufacturer of products for emissions control technology.

The company's products include substrates for automotive and industrial emissions control applications such as three-way catalysts, diesel oxidation catalysts, lean-NO_x traps, and selective catalytic reduction systems.

With its structure and ability to vary a lot of parameters like size, shape, wall thickness, cell density and porosity, NGK's substrates are able to meet customer specific requirements and optimize the combined engine and emissions control system.

NGK manufactures a ceramic wall flow filter, based on its Honeyceram technology, capable of reducing particulate matter more than 95% in mass and particulate numbers, said the company.

The DPF is made of cordierite or sintered silicon carbide (Si-SiC) — materials used for passenger cars, heavy-duty vehicles and nonroad applications.

The filters are either segmented (Si-SiC) or monolithic (cordierite) and can have a honeycomb pattern with symmetric or asymmetric cell structure, depending on customers' requirements.

NGK's materials were developed for low pressure drop performance, high filtration efficiency and high thermal shock resistance. Porosity and mean pore size can be easily adjusted to fit

TECHNOLOGY of CLEAN air

catalyzed DPFs and DPFs with or without fuel additives.

The NGK ceramic Honeyceram substrate is flexible in shape and dimensions due to the extrusion technology used.

It has a honeycomb pattern with square or hexagonal cell structure for low pressure drop requirements. Honeyceram lights off quickly for high conversion efficiency due to high geometric surface area and low specific heat mass.

NGK also produces a smart NO_x sensor, a stand-alone sensor to measure variable exhaust gas components like NO, NO₂, NH₃, binary Lambda and O₂.

The sensor is available in 12 V and 24 V variants and is implemented through a Data link via Can 2.0 (EU) and SAE-J-1939 (US). The lead wire length between sensor and sensor electronics is up to 1200 mm, and an under-/over-voltage detection function is available.

The full line of exhaust gas sensors by NGK is used for NO_x onboard diagnostics and closed-loop control of SCR systems for diesel passenger cars and heavy-duty trucks. The exact dosing of urea injection amount can be enabled.

Company News

NGK has introduced two new substrates — the hexagonal cell with increased hydraulic diameter to reduce pressure drop and give a better uniform catalyst distribution, and the high-porosity substrate for higher washcoat loading to increase performance and reduce pressure drop.

NGK has also announced a more advanced NO_x sensor under development, expected to be launched in 2010. It will be engineered with an improved performance and better dynamics.

NOTOX A/S

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Emissions Control/Clean Air Products

Notox is a supplier of honeycomb structured diesel particulate filters (DPFs) constructed of silicon carbide (SiC). This configuration is designed to have a higher maximum safe soot load without being sensitive to uneven distribution of soot in the filter. The combination of the SiC material and the thermal design secures a filter monolith with durability and performance, the company said.

Notox manufactures filter substrates in almost any standard size, and the company can also deliver oval designs or any other cross section.

Company News

Notox has developed and matured a ceramic technology for the production of silicon carbide diesel particulate filters, which was acquired last year from the German filter company AFT GmbH. The technology has a porosity up to 70% and a special microstructure enabling reduced pressure drop while retaining the durability of SiC filters. The company also announced that an existing North American customer has received CARB verification on its filter system based on the Notox MD200HP filter substrate.

PARKER HANNIFIN CORP., RACOR DIVISION



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Emissions Control/Clean Air Products

The Racor Division of Parker Hannifin manufactures and markets filtration products and system components for engines and equipment including fuel and oil filtration systems, engine air filters, and crankcase emissions filtration systems.

Company News

Racor's alternative fuel filters are designed and tested for new alternative fuels — compressed natural gas (CNG),

liquid natural gas (LNG) and liquid propane gas (LPG). CNG, LNG and LPG have the same problems that plague diesel and petrol — particulate contamination collects during handling, water condenses in tanks, and compressors leak oil into the fuel stream.

Racor offers a line of alternative fuel filters/coalescers to meet the need for ultra-fine filtration at the pressures required by compressed natural gas.

FFC series filters are designed to protect critical engine components in CNG-, LNG- and LPG-powered vehicles. Contaminants can be introduced into a vehicle's fuel tank when being fueled or may come from compressors or storage facilities. A grade 6 coalescing filter is specifically designed to remove oil, water and solid contamination from compressed natural gas. The patented coalescing filter removes 99.97% of all aerosols in the 0.3 to 0.6 micron range.

These fuel filter/coalescer filters are produced by a patented process of arranging micro-glass fibers into a tubular form. During operation, fuel is forced through the coalescing media from the inside of a cartridge through a tubular wall to the outside, where large droplets fall to the bottom of the housing.

PHILLIPS AND TEMRO INDUSTRIES

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Emissions Control/Clean Air Products

The Phillips and Temro line comprises engine exhaust silencing and emissions control technology, such as the EM Products Combo-NO_x combination silencer/catalytic converter system for stationary industrial natural gas and diesel engine applications from 149 to 3728.5 kW. The company also offers standard industry sizes of three-way and oxidation replacement catalyst elements

TECHNOLOGY of CLEANair

along with Micro-NO_x compact (37.3 to 186.4 kW) and EC-NO_x three-way (233.7 to 1491.4 kW) catalytic converters.

PTI also offers air intake and coolant heating systems designed to improve cold starts and reduce emissions for a broad range of diesel and petrol engine applications, as well as the Cab Power idle reduction system, a series of pre-wired, modular components installed in the sleeper cab of over-the-road trucks to provide distribution of 120 Vac power to run hotel loads for a driver's comfort during nondriving intervals. The system is designed to be used with mobile idle reduction technology, such as in auxiliary power units (APUs) or deep-cycle battery-operated systems, and can also be directly connected to shore power.

PLAIN FILTERS LTD.



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Company News

Plain Filters Ltd. has recently developed two new lines of DPFs for 4.0 L engines with an output range of 100 kW or below and 8.0 L engines with an output range of 175 kW or below.

The company is a member of the Xinxiang Aviation Industry Group and is based in Xinxiang, Henan Province, China. It currently supplies DPFs to vehicle manufacturers in China, including Jiangling Motors, Iveco and Qingling Motors, for use in their up to 3.0 L, 70 kW engines. They have also been installed as retrofits on light trucks across the country, Plain Filters said.

The new 4.0 L specification products target mainly medium- to heavy-duty construction equipment and distribution vehicles such as postal trucks, as well as

medium buses undergoing retrofitting.

The new 8.0 L line has been developed specifically to cater to the needs of heavy construction machinery and distribution vehicles, as well as to support retrofitting programs of large transport vehicles.

Production of these two new lines is expected to start in 2010, upon completion of prototype testing.

PURI TECH GMBH & CO. KG

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Emissions Control/Clean Air Products

PURI tech offers diesel particulate filter systems with or without oxidation catalyst and with or without HC dosing for trucks, buses and coaches, off-road machinery, construction equipment, marine and locomotive applications and stationary engines. The PURI tech diesel particulate filter range features 11 different types.

The company also manufactures diesel oxidation catalysts in several dimensions and coatings for a wide scope of applications.

Two fuel-borne catalysts complete the range of emissions aftertreatment products — the DAS system, a combination of FBC, HC dosing and catalytic exothermal catalyst (precat); and the SCA and SVA system with FBC and automatic onboard dosing system.

PURI tech also manufactures electronic components, dosing systems for additives, CPUs for dosing and control of FBC, and HC dosing.

Company News

PURI tech has introduced a new particulate filter system with HC dosing for low-temperature operations.

The particulate filter system was tested for the reduction of NO_x and NO₂ on a chassis dynamometer at the University of Graz – Austria. The test vehicle was

a Mercedes-Benz Euro 3 Citaro city bus.

The test was done under the city drive cycle 9040 and shows significantly lower exhaust gas temperatures than any other city cycle, such as the Braunschweig cycle.

PURI tech reported that NO_x was reduced by 21%, NO₂ by 61%, HC by 83%, CO by 99.7% and PM by 95%. The average exhaust gas temperature was 230°C. The HC dosing unit was not activated during the test in order to have the most challenging conditions possible. When NO₂ reached 90%, the HC dosing unit was activated.



PURI tech's new particulate filter reduces NO_x and NO₂ and has HC dosing for low-temperature applications.

PURI tech said the system is more cost-effective for vehicle operations with lower exhaust gas temperatures and demanding NO_x and NO₂ reductions, such as city bus operations.

PURI tech has also developed a new active filter system in the lower price segment for OEM applications to achieve Stage 3b and Tier 4 and for the retrofit of small engines, 22 to 60 kW.

Also new are two systems for additive dosing: a dosing unit for microdosing and a dosing system for additives with an integrated pressure sensor to ensure longer service intervals, lower ash loading and lower consumption of the additive.

PURI tech has also founded a new subsidiary in the United States, and CARB verification is in progress to enter California's off-road market. In addition, Low Emission Zone and Non-Road Mobile Machinery certifications are in progress to enter the U.K. market. PURI tech has already opened a branch in the U.K.

PURI tech was chosen by Daimler AG as the exclusive partner for the retrofit of Mercedes Benz trucks in Europe.

The company is planning its entry into other markets in Europe, such as Belgium, the Netherlands, Scandinavia, Hungary, the Czech Republic and Brazil.

ROBERT SEUFFER GMBH & CO. KG



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Emissions Control/Clean Air Products

Robert Seuffer produces S³LQL and S³LQM urea sensors. S³LQL is a system to measure the fill level and quality of fluids based on ultrasonic technology. This system is suited for the analysis of fill levels in motor vehicle technology and home appliances.

The appropriate analyses of the ultrasonic signal allow for additional data to be collected from just one sensor. This allows the evaluation of the quality of the fluid, such as temperature, concentration of an additive or particle, viscosity and others. The system is self-calibrating.

The product comes in a version resistant to almost all types of fluid media and can come in direct contact with urea, for example. The device is already in use to measure the level of urea in commercial vehicles.

S³LQM is a compact system for measuring the quality of fluids and operates on a capacitive basis without moving parts. The quality of the fluid is evaluated by the collected electric data.

S³LQM is suitable for determining the quality and aging of motor oils and gearbox oils, even while the engine or machine is running. In principle, the technology can also be used on other fluids.

With the aid of S³LQM, maintenance interval schedules can be improved, even further optimizing the mileage of commercial vehicles and maximizing the durability and use of the oils.

SENSORS EUROPE GMBH



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Emissions Control/Clean Air Products

Sensors Europe is an affiliate of U.S.-based Sensors Inc., a manufacturer of advanced in-use emissions test systems. The company said that by using proprietary analytical techniques, its products accurately measure all criteria pollutants emitted by internal combustion engines, whether generated in a test cell on the production line or under real-world operating conditions. Sensor's rugged systems make accurate, repeatable measurements under harsh conditions for the measurement of CO, CO₂, NO, NO₂, THC, NMHC, O₂ and particulate mass.

Company News

Sensors' newest product is the Semtech-AM, which incorporates an OBD 2 diagnostics interface, a GPRS/GMS module and a GPS position tracking system. The collected data is transmitted to a server, which provides the data for post processing and analyzing.

Sensors has also relocated its European office from Ratingen, Germany, to a new facility in Erkrath. The larger facility was necessary to accommodate Sensors' recent growth, and the new site includes 600 m² dedicated to research and development activities in the fields of optics and particulate matter and also supports sales and administrative tasks.

SÜD-CHEMIE AG



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Emissions Control/Clean Air Products

Süd-Chemie is a manufacturer of oxidation catalysts, three-way catalysts, CARB-verified level 3-PLUS catalyzed diesel particulate filters (cDPFs) and diesel oxidation catalysts for spark-ignited and compression-ignition engines and gas turbines.

TENNECO INC.



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Emissions Control/Clean Air Products

Tenneco's emissions control products are designed to enable diesel engines to achieve mandated emissions levels in a cost-effective manner, the company said. Among the technologies offered by the company are diesel oxidation catalysts in round and oval configurations that can be combined in a single package with silencing devices, DPFs and NO_x abatement technology; and diesel particulate filters available in a variety of substrate materials and as part of either a coated, uncoated or additive-based system.

Tenneco also offers a burner thermal generator system using Smart-Fire technology that can be used for DPF regeneration or for supplemental heat to improve effectiveness of SCR systems and SCR catalysts.

The company has also developed the DeNO_x Converter, a NO_x adsorber system designed for smaller (under 3.0 L) engines.

WALKER ENGINEERING ENTERPRISES



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Emissions Control/Clean Air Products

The Walker AIRSEP is a closed-crankcase system that incorporates three systems in one. It includes a washable high-performance air filter, a crankcase fumes disposal feature and an integrated air intake silencer, all in a more compact package. Retrofit kits are available for all makes and models of diesel engines and a variety of configurations make the system flexible for any application, the company said.

Walker also offers the FUELSEP fuel treatment device, engineered to improve the combustion of diesel fuel to burn more completely, resulting in less soot, reduced noise and improved fuel economy. The Walker ALGAESEP is a self-contained fuel/water separator designed to be bulkhead mounted. Available in 12 and 24 V packages, the system removes water, algae and contaminants from diesel fuel without the engine running. It is also available in a 110 V package for land-based fuel storage or processing plants.

WESTPORT INNOVATIONS INC.

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Emissions Control/Clean Air Products

Westport offers the Westport GX engine and liquefied natural gas (LNG) fuel system designed to provide reduced exhaust emissions while maintaining horsepower, torque and efficiency equivalent to the base diesel engine. The LNG system is based on the Cummins ISX engine and meets standards set by the

U.S. EPA for 2010 heavy-duty on-road applications while offering up to 27% reductions in greenhouse gas emissions. Westport offers the LNG fuel system in 298, 336 and 354 kW ratings.

WUXI WEIFU ENVIRONMENTAL CATALYSTS CO. LTD.



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Chinese manufacturer Wuxi Weifu offers a range of catalysts that comply with Euro 2, 3 and 4 standards.

Emissions Control/Clean Air Products

Wuxi Weifu Environmental Catalysts Co. Ltd. (WFEC) has worked closely with OEMs to develop several series of three-way catalysts, offering products to meet stringent Euro 3 and Euro 4 emission legislations.

Both the WFEC305 and WFEC405 series have been designed using WFEC proprietary technology and the principle of minimizing usage of precious metals.

In the WFEC305 catalysts, a proprietary washcoat is applied on the surface of the substrate, which is made of high-quality ceramic or metal honeycomb. The washcoat is composed of porous metal oxides with high thermal stability and BET-specific surface area.

WFEC's loading technique ensures that nanoparticles of the active compo-

nents, i.e., precious metals such as Pt, Pd and Rh, firmly adhere to the surface of the washcoat and will not migrate over the surface and agglomerate into larger particles at high temperatures. This means that smaller amounts of precious metals are needed, compared with conventional three-way catalysts, to meet the high operating temperature required for close-coupled catalysts, as well as the 80 000 km durability prescribed under Euro 3 emissions standards.

The oxygen storage material made up of a special complex metallic oxide enables the catalyst to maintain high efficiency within a wider range of air-to-fuel ratio for better implementation of engine control strategies, as well as better support to the OBD systems to ensure robust diagnosis.

The WFEC405 is an upgraded line built on the strength of WFEC305. A double layer of Pd/Rh coating is used to meet the more stringent Euro 4 emission standards.

Thermal stability is further improved through controlling the physical properties of the ingredients of the washcoat and modifying the composition and structure of the oxygen storage material, said the company. A base metal oxide is further added to the washcoat to suppress odor from the hydrogen sulfide in the exhaust gas. These enhanced features enable WFEC405 to meet the 100 000 km durability required by Euro 4 legislation, while keeping the amount of precious metals used to the minimum.

WFEC405 has an extended scope of applications, including manifolds, close-coupled and under-floor converters.

Company News

Wuxi Weifu, headquartered in Wuxi, Jiangsu Province, China, has developed a comprehensive range of catalysts to comply with Euro 2, 3 and 4 standards. Among its major customers are Chinese automakers such as Tianjin FAW, Geely, Chery, Beiqi Foton, Shanghai Maple, Shenyang Qinbei and Jiangnan Alto. Applications include gasoline-powered cars and diesel vehicles, motorcycles, LPG (CNG) engines, and nonroad and industrial equipment.

To contact these companies, please visit DirectLink at www.dieselprogress.com