When the exhaust passes through the micro-porous filter walls the soot particles in the exhaust are separated and collected. At the same time the catalytic coating oxidizes the gaseous pollutants of hydrocarbon (HC) and carbon monoxide (CO) to harmless carbon dioxide and water. The catalytic coating also lowers the ignition temperature of the soot to approx. 320 °C and the collected soot is automatically burnt off during operation. At operating temperature less than 320 °C the filter can be equipped with an electrical heater to regularly burn off the collected soot.

The filtration is so efficient that any debris passing through the engine combustion chamber will also be collected (i.e. lube-oil ash, wear metals, intake air debris etc.). This debris should be removed to prevent excessive build-up. The cleaning intervals will depend on the conditions of the engine and operation conditions.

**FUNCTION**

*Purifilter™* from Engine Control Systems (ECS) is an integrated diesel particulate filter and silencer, which efficiently removes particulate (PM) and gaseous pollutants, carbon monoxide, CO, and hydrocarbons, HC. The filtered particles (soot) are automatically burnt off (self regeneration) at exhaust temperatures above 320 °C.

*Purifilter™* is a self regenerating particulate filter system based on Silicon Carbide (SiC), which offers superior thermal durability and extended service life. The advanced base and precious metal catalyst system not only lowers the balance point of the soot but also provides an extremely high reduction of CO and HC.
The system consists of:

- A Purifilter™ which is mounted in the exhaust system in place of the original silencer.
- An indicator lamp, which is mounted in the driver's cab to warn of high backpressure.

**Options**

- A manometer which continuously monitors the backpressure.
- A precatalyst lowering the ignition temperature to 280-300° C.
- Purifilter™ Plus. Electrical heaters inbuilt in the inlet section for regular regeneration of the filter on the vehicle. Electrical cables and control box are supplied.
- A Combiclean™ station for regular maintenance and cleaning of the filter.

**DESCRIPTION**

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- Purifilter™ Plus. Electrical heaters inbuilt in the inlet section for regular regeneration of the filter on the vehicle. Electrical cables and control box are supplied.
- A Combiclean™ station for regular maintenance and cleaning of the filter.
DESIGN

The Purifilter™ housing is manufactured of stainless steel and consists of an inlet section, a filter section, and an outlet section. The sections are assembled with quick-release clamps that allow easy dismantling for inspection and service. The choice of inlet and outlet sections depends on the installation. The filter part is sized according to the exhaust volume from the engine. The inlet and outlet sections are of the same design as is used for ECS’ wellknown Unikat COMBIFILTER, see specification below.

INLET AND OUTLET SECTIONS FOR PURIFILTER

The choice of inlet and outlet sections depends on the installation of the vehicle. All inlet sections incorporate mounting plates for vertical installation. The inlet and outlet sections can be supplied with brackets for horizontal installation on request.

When ordering, please inform us whether you prefer a vertical or horizontal installation and if the inlet section should be equipped with electrical heaters (Purifilter Plus), see options.

<table>
<thead>
<tr>
<th>Inlet section</th>
<th>Outlet section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet section with bottom inlet (axial)</td>
<td>Typ T2 Outlet section with top outlet (axial)</td>
</tr>
<tr>
<td>Inlet section with side inlet (radial)</td>
<td>Typ T7 Outlet section with side outlet (radial)</td>
</tr>
</tbody>
</table>

PRODUCT SIZING

Dimensions

To obtain the proper filter size, the engine make, maximum allowed backpressure and driving conditions must be known. The chart below shows the recommended air intake flow for each filter size. If you do not have the actual OEM intake air flow, use the general equation below to determine the approximate value for four-stroke engines.

Engine intake air flow (m³/h) = \( \text{Engine displacement (liters)} \times \text{max RPM of engine} \times \text{VE} \times \frac{60}{2000} \)

\( \text{VE} = 0.85 \) for normally aspirated engines (NA), 1.7 for turbocharged (TA), 2.0 for turbocharged and aftercooled

Please contact Engine Control Systems or your local distributor for further sizing information.

<table>
<thead>
<tr>
<th>Intake air flow m³/h</th>
<th>Max. cylinder intake volume liter</th>
<th>Model</th>
<th>Weight kg</th>
<th>A mm</th>
<th>C ø mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>2,5 NA</td>
<td>SC02H</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>4,5 TA</td>
<td>SC04H</td>
<td>22</td>
<td>225</td>
<td>70</td>
</tr>
<tr>
<td>350</td>
<td>6,5 NA</td>
<td>SC06H</td>
<td>24</td>
<td>275</td>
<td>70</td>
</tr>
<tr>
<td>650</td>
<td>11 NA</td>
<td>SC13H</td>
<td>29</td>
<td>275</td>
<td>100</td>
</tr>
<tr>
<td>1000</td>
<td>7 TA</td>
<td>SC20H</td>
<td>39</td>
<td>350</td>
<td>100</td>
</tr>
<tr>
<td>1300</td>
<td>10 TA</td>
<td>SC28H</td>
<td>46</td>
<td>380</td>
<td>100</td>
</tr>
<tr>
<td>1600</td>
<td>14 TA</td>
<td>SC34H</td>
<td>70</td>
<td>406</td>
<td>130</td>
</tr>
<tr>
<td>2200</td>
<td>16 TA</td>
<td>SC43H</td>
<td>75</td>
<td>406</td>
<td>140</td>
</tr>
</tbody>
</table>
The Purifilter™ effectively removes particulate (PM) and gaseous pollutants CO and HC from diesel exhaust and is also a silencer.

Typical reduction*:
- Carbon monoxide (CO) 99 %
- Hydrocarbons (HC) 96 %
- Particulate (PM) 91 %
- Silencing > 15 dB

* Tested according to ISO 8178.

Purifilter™ has been tested by Svensk Bilprovning, Motortestcenter, Sweden, Leyland Technical Centre and Millbrook Proving Ground, UK, South West Research Institute, USA, and Environment Canada. We are happy to furnish more details of these tests if required.

**WARRANTY**

Engine Control Systems’ products are warranted for workmanship and defects of material for a period of 12 months or maximum 2000 operation hours. The obligation of this warranty is limited to the replacement of the product. The provisions of this warranty do not apply to the product incorrectly chosen, or installed or operated, nor to any product that has been subjected to damage or negligence. Engine Control Systems shall not be liable for any incidental or consequential damages or for breach of any express or implied warranty.

For further service or for information on our other products, please contact ECS or our distributors.

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