**Oil Filter-Basics**

**Filters** - Device for separating solid particles from a fluid

**Real World Contamination** (See below photomicrograph)

**Wear Causing Agent**
- Soot
- Wear Metal

**Filter Plugging Agent**
- Fuel
- Solvents
- Sludge...etc

**10μm**

**What causes damages to engine?**

- Most damage is caused by particles in the 5 to 15 micron* range
- Removal of these particles greatly reduces engine wear

*Micron: 0.000001 meter

**Dust Size vs. Wear**

<table>
<thead>
<tr>
<th>Dust Size (Microns)</th>
<th>Wear (mg/hr per bearing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>2.5-5</td>
<td></td>
</tr>
<tr>
<td>1.25-2</td>
<td></td>
</tr>
<tr>
<td>0.1-1</td>
<td></td>
</tr>
</tbody>
</table>

- Increasing soot level in the engine is one of the concerns for our current engine which highly developed system meets the requirement of today’s emission regulation.

**Mechanism & Tips**

- **Mechanism of Combination Filter**
  - By limiting the flow of the fluid, the velocity will increase. Venturi is an effective mechanism for bypass media in which fluid can hardly pass through because of its very fine texture.

- **Full Flow Filter Media**
  - Cellulose
  - Microglass fiber

- **Full-Flow Filter**
  - Its function is to get rid of wear metal and soot that are contained in the oil.
  - Same function as conventional filter except for its media (Cellulose→Polyester & Polymers)

- **Combination Filter**
  - Integrated filter of full-flow filter and bypass filter.
  - Bypass filter portion through which 3 to 5% of the oil passes has filter papers with finer mesh than that of full-flow to increase filtration performance filtering carbon particles (Soot) mainly.

**Efficiency**

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>Cellulose</th>
<th>Polyester &amp; Polymers</th>
</tr>
</thead>
<tbody>
<tr>
<td>30μm</td>
<td>98.7%</td>
<td>98.7%</td>
</tr>
<tr>
<td>10μm</td>
<td>30.0%</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

**Genuine vs. Imitation**

- Microglass is more efficient to capture smaller particles than cellulose

**Media makes the differences!!**

**Oil Change Interval**

- The oil change interval has been extended from conventional every 250 hours to every 500 hours, thanks to the adoption of high quality Komatsu genuine oil and oil filter, and improvement in engine.

- Improvement of combustion chamber & Optimized oil pan

**Interval for conventional machines**

- **500H**

**Model**

- PC200-7 and after

**Engine Size**

- Φ107

**Filter Type**

- Full Flow

**Filter Media**

- Blending of Polyester & Adhesive Polymers

**Model**

- PC400-7

**Engine Size**

- Φ114

**Filter Type**

- Combination

**Filter Media**

- 1) Blending of Polyester & Adhesive Polymers
- 2) Bypass filter

**Oil Change Interval has been extended from conventional every 250 hours to every 500 hours, thanks to the adoption of high quality Komatsu genuine oil and oil filter, and improvement in engine.**

**Interval for conventional machines**

- **250H**

**The oil change interval is not necessarily applied to all machine models uniformly. Carry out oil change according to the Operation and Maintenance Manual.