Engines with gasoline direct injection generate the air-fuel mixture directly in the combustion chamber. Only fresh air flows through the open intake valve.

The fuel is injected directly into the combustion chamber using high-pressure injectors. This improves combustion chamber cooling and enables higher engine efficiency due to higher compression, resulting in increased fuel efficiency and torque.

The high-pressure circuit is fed via the high-pressure pump. The high-pressure injectors fitted to the fuel rail meter and atomize the fuel at high pressure and extremely rapidly to provide optimum mixture preparation directly in the combustion chamber.

**Task**

The fuel is supplied by the electric fuel pump. The high-pressure pump generates the fuel pressure of up to 20 MPa (200 bar) required for high-pressure injection.

The unique pump design features an all stainless steel concept, using a minimum of material input and applying ambitious manufacturing processes for maximum customer benefits.

**Customer benefits**
- Series experience: high number of customer applications worldwide, compliance to major global fuel specifications
- Best in class concerning number of possible design variants
- Local supply of our customers in our international production network
- Optimized fuel economy due to demand controlled operation
- Zero evaporation (ZEVAP) capable
- Low weight (780 g)
- Easy application to engine packaging

**HDP5 evo**
- Significant noise improvement
- Increased flow rate
**Function**
- Demand-controlled single piston plug-in pump
- High flow rate at high speeds
- Flexible integration concept, hydraulic/electric

### Technical features

<table>
<thead>
<tr>
<th></th>
<th>HDP5</th>
<th>HDP5 evo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. system pressure</td>
<td>20 MPa</td>
<td>20 MPa</td>
</tr>
<tr>
<td>Max. delivery quantity</td>
<td>1.12 cm³/cmCAM</td>
<td>1.2 cm³/cmCAM</td>
</tr>
<tr>
<td>Min. volumetric efficiency</td>
<td>85%</td>
<td>90%</td>
</tr>
<tr>
<td>Max. number of strokes (3-way cam)</td>
<td>10,500 min⁻¹</td>
<td>10,500 min⁻¹</td>
</tr>
<tr>
<td>Pressure relief valve</td>
<td>Integrated</td>
<td>Integrated</td>
</tr>
<tr>
<td>Weight</td>
<td>780 g</td>
<td>780 g</td>
</tr>
</tbody>
</table>

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