Large Engine Development

COMPREHENSIVE SOLUTIONS TO FUTURE CHALLENGES
FEV offers a full range of large bore engineering services and resources that allow our customers to achieve best-in-class solutions such as:

> Design and FE analysis
> Mechanical engineering
> Combustion system development - Diesel - Dual fuel - Gaseous fuel
> Efficient methods
> Single cylinder engine (SCE) - High speed engines - Medium speed engines
> Engine and exhaust aftertreatment system calibration
> Engine controls and OBD
> Emission certification

FEV supports its customers and meets project requirements by developing new systems and components and by optimizing existing systems. We create roadmaps that offer a view into the future; they leverage available technologies and consider all of the engineering disciplines. FEV offers rich large bore engine experience and has completed many engine design and development programs for the world’s large bore engine industry.

For more than 30 years, we have provided comprehensive experience in large engine design and development to our customers and we continue to support them, today and in the future.
Latest technologies are considered to achieve future targets

AT FEV, LARGE ENGINE DEVELOPMENT PROJECTS ARE TARGETED WITH ACHIEVING:

> Excellent durability and reliability
> Optimized product cost/value
> Low cost of ownership
> Good maintainability
> Best fuel efficiency
> Compliance with future emissions standards
> High performance
> Optimized NVH

**Roadmap: Solutions to meet Future Requirements**

Comprehensive Design for Reliable Large Engines
Source: 24th CIMAC World Congress, Paper No. 027

Realized Large Engine
## Relevant FEV Large Engine Experience

<table>
<thead>
<tr>
<th>Reference</th>
<th>Project Scope</th>
<th>Demonstrated Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANGLO BELGIAN CORPORATION</td>
<td>Concept and series engine design</td>
<td>Prototype Development, Design, CAE, Procurement</td>
</tr>
<tr>
<td>CAT</td>
<td>Advanced CAE simulation</td>
<td></td>
</tr>
<tr>
<td>MAK</td>
<td>Genset and locomotive frame design and CAE</td>
<td>First Single Cylinder Engine, Combustion Testing</td>
</tr>
<tr>
<td>CSSC</td>
<td>Single cylinder engine design, procurement, installation and commissioning</td>
<td></td>
</tr>
<tr>
<td>MAN Diesel &amp; Turbo</td>
<td>Single cylinder engine testing</td>
<td></td>
</tr>
<tr>
<td>mtu</td>
<td>Engine conversion Diesel - Gas and Gas – Diesel</td>
<td>Multi Cylinder Engine, Combustion, Function and Durability Testing</td>
</tr>
<tr>
<td></td>
<td>CAE based gas engine combustion prediction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combustion system development (Diesel, HFO, Gas, DF)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emissions and exhaust aftertreatment system development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete engine family development</td>
<td>Field Testing</td>
</tr>
<tr>
<td></td>
<td>Durability testing</td>
<td></td>
</tr>
</tbody>
</table>

### Contact

**FEV GmbH**
Neuenhofstraße 181
52078 Aachen - Germany
phone +49 241 5689-0
fax +49 241 5689-119
e-mail marketing@fev.com

**FEV North America Inc.**
4554 Glennmade Lane
Auburn Hills, MI 48326-1766 - USA
phone +1 248 373-6000
fax +1 248 373-8084
e-mail marketing@fev-et.com

**FEV China Co., Ltd.**
No. 35 Xinda Street Qixianling HighTechZone - 116023 Dalian - China
phone +86 411 8482-1688
fax +86 411 8482-1600
e-mail fev-china@fev.com

**FEV India Pvt. Ltd.**
Technical Center India
A-21, Talegaon MIDC
Tal Maval District - Pune-410507 - India
phone +91 2114 666-000
e-mail fev-india@fev.com

---

**Large Engines**