Fiat, Fabbrica Italiana Automobili Torino, was founded in 1899 by a group of investors and entrepreneurs, including Giovanni Agnelli. Over the years, Fiat has become an international group that performs industrial and service activities in the automotive sector in more than 160 countries, employing about 170 thousand people.

Fiat Spa is quoted on the Milan Stock Exchange and its shares are traded in Frankfurt, Paris, London and New York.
Fiat Group corporate structure

**CARS**
- 100%
- 85%

**AGRICULTURAL AND CONSTRUCTION MACHINERY**
- 90%

**COMMERCIAL VEHICLES**
- 100%

**COMPONENTS AND PRODUCTION SYSTEMS**
- 100%
- 85%

**PUBLISHING AND COMMUNICATION**
- 100%
FPT unifies all the innovation capabilities and expertise in the design, development, production and sales of engines and transmissions.
FPT objectives

- Development of non-captive market
- Enhancement of technological excellence and systematic transfer of results to the product range
- Integration of engineering capabilities throughout all the product life-cycle
- Synergies in all the processes
- Focus on R&D investments for environmental friendly and alternative powertrain systems
FPT values

CUSTOMERS

PEOPLE

PASSION FOR INNOVATION

- Product innovation and continuous improvement for customers' satisfaction

- Highly motivated and trained people constantly working for the quality of all the processes

- A true passion for research on environmental friendly and alternative powertrain
FPT business

FPT can satisfy almost any powertrain request thanks to an extremely wide range of **PRODUCTS**:

- **engines** (with a power from 20 up to 1020 hp and displacements from 1,000 to 20,100 cc)
- **transmissions** (covering from 145 to 950 Nm)

and **APPLICATIONS**

- **automotive** (cars, commercial vehicles, trucks, buses, special vehicles)
- **industrial** (construction equipment, agricultural machinery and stationary applications)
- **marine** (pleasure and professional applications)
- **power generation** (generating sets)

The activities of research and advanced engineering ensure the technological excellence of the Company. All these activities are included in the **Powertrain Research & Technology** function.
FPT 2008 main figures

- **Sales (Mn€)**: 7,000
- **R&D Expend (% on sales)**: 7.1%
- **Cap. Expend (% on sales)**: 11.3%
- **Employees**: 20,507
- **R&D employees**: 2,511

**Annual output of**

- **2.9 mn engines**
- **2.4 mn gear boxes & axels**
Total Sales 2008: 7,000 mn €

- External Sales: 1,509 € mn (21.6%)
- Transmissions: 1,361 € mn (19%)
- Captive Sales: 5,491 € mn (78.4%)
- Engines: 5,226 € mn (75%)
- R&D & Others: 413 € mn (6%)
FPT 2008 sales/applications

- Automotive: € mn 6,255 (89.4%)
- Industrial: € mn 575 (8.2%)
- Marine: € mn 20 (0.3%)
- Power Gen.: € mn 112 (1.6%)
- Others: € mn 38 (0.5%)
## FPT alliances

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Agreement Type</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUZUKI</td>
<td>License</td>
<td>1,3 l. SDE engines, 2,0 l. JTD Multijet engines</td>
</tr>
<tr>
<td>HAVECO</td>
<td>License</td>
<td>Transmissions (C510, C514)</td>
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<tr>
<td>PSA PEUGEOT CITROËN</td>
<td>Production</td>
<td>Transmissions</td>
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<tr>
<td></td>
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<td>Argentina (Cordoba)</td>
</tr>
<tr>
<td>SAIC</td>
<td>Joint Venture Agreement</td>
<td>Medium &amp; Heavy diesel engines (N series, C series)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cina (Chongqing)</td>
</tr>
<tr>
<td>TATA</td>
<td>Joint Venture Agreement</td>
<td>Small diesel, gasoline engines and transmissions (SDE 1,3 l., Fire 1,2l., Fire 1,4l.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>India (Ranjangaon)</td>
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<tr>
<td>sollers</td>
<td>Joint Venture Agreement</td>
<td>Light diesel engines (S23)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Russia (Zavolzhye)</td>
</tr>
<tr>
<td>DAIMLER</td>
<td>Strategic Cooperation Agreement</td>
<td>Light diesel engines (S30)</td>
</tr>
</tbody>
</table>
FPT plants and R&D in the world

- Garchizy Plant
- Bourbon Lancy Plant
- Arbon R&D center
- Bielsko Biala Plant
- Fecamp Plant/R&D center
- Barcelona Plant
- Sete Lagoas Plant
- Betim Plant/R&D center
- Ranjangaon Plant
- Cordoba Plant
- Chongqing Plant
- Zavolzhie Plant
- Jiading R&D center

**A global presence**
- 16 Plants
- 11 R&D centres
- a network of dealers in over 100 countries
FPT plants and R&D in Italy

Torino Plants / R&D centers
Verrone Plant
Arese R&D center

Orbassano
FPT corporate advanced Research center

Pomigliano R&D center
Pratola Serra Plant
Termoli Plant
Foggia Plant

Pregnana Mil.se Plant /R&D center
200 main distributors with over 330 dealers and 1300 service centres operate under the Iveco Motors trademark all over the world.
Powertrain Research & Technology activities:

- **Clean and Efficient Engines:** development and application of innovative technologies with the scope of reducing the engine emissions and improving the fuel consumption of the vehicle in order to anticipate the introduction of increasingly stringent emissions legislation.

- **Engine Development Methods and Testing Facilities:** providing the most advanced techniques and technologies for the development of the new generations of powertrains in order to guarantee leading edge competitiveness to our clients.
Technological excellence: engines

MULTIAIR

The Multiair technology is an innovative system for intake valves electronic control which, by regulating the intake air at every combustion cycle, allows both a substantial consumption reduction and a remarkable improvement in the engine readiness and fun-to-drive.

MULTIJET 2

An innovative solenoid injector, with hydraulically balanced servovalve, that allows to eliminate the dwell time between consecutive injections up to the injection rate shaping management. Advantages are represented by a remarkable reduction of nox and soot emissions together with combustion noise improvement.
Technological excellence: transmissions

INTEGRATED POWERTRAIN CONTROL

Engine

Transmission Actuator

Dual Dry Clutch Transmission
In Fiat Powertrain Technologies, dynamism and technology are represented by **FPT RACING**, a team of about 45 engineers working on design, test, development and production of

- Engines for racing cars
- Performance kits to upgrade gasoline and diesel powertrains
- Special engines for limited series
RACING SUCCESSES

FPT will be exclusive supplier of engines (420 F3) for the Italian Formula 3 Championship in the 2008-2010 seasons

Red FPT won the 2008 edition of the Torquay-Cowes-Torquay boat race with the N67 600 Evolution engine

With the N60 480 engine, Blue FPT won the Round Britain Powerboat Race 2008: the longest off-shore race in the world!
FPT Product Range – Light Diesel engines

Displacement [litres]

- **2.3**
  - L4 16V VGT
    - 170HP - 360Nm - Euro 5
- **2.0**
  - L4 16V TWO STAGE VGT
    - 190HP - 400Nm - Euro 5
  - L4 16V VGT
    - 150HP - 320Nm - Euro 4
  - L4 8V VGT
    - 120HP - 280Nm - Euro 4
- **1.9**
  - L4 16V VGT
    - 170HP - 360Nm - Euro 5
  - L4 16V TWO STAGE VGT
    - 190HP - 400Nm - Euro 5
- **1.6**
  - L4 16V VGT
    - 120HP - 305Nm - Euro 5
  - L4 16V FGT
    - 105HP - 290Nm - Euro 5
- **1.3**
  - L4 16V VGT
    - 105HP - 200Nm - Euro 4
  - L4 16V FGT
    - 95HP - 230Nm - Euro 5
  - L4 16V FGT
    - 75HP - 190Nm - Euro 5

**S23**
- 96 → 136HP - 240 → 320 Nm - Euro4

**JTD**
- 105HP - 290Nm - Euro 5
- 120HP - 305Nm - Euro 5
- 170HP - 360Nm - Euro 5
- 75HP - 190Nm - Euro 5

**SDE**
- All Euro 4/5 engines also available with DPF option

**All Diesel engines are B7 compliant**

**NEW**

Displacement [litres]
FPT Product Range – Light Diesel engines

Displacement [litres]

3.0

L4 16V
145→175HP - 350→400 Nm - Euro4

L4 8V
90→146HP - 209→320 Nm - Euro3

2.8

L5 20V VGT
210HP - 410Nm - Euro 4

L5 20V VGT
200HP - 410Nm - Euro 4

L5 20V VGT
185HP - 400Nm - Euro 4

2.4

JTD

All Euro 4/5 engines also available with DPF option

All Diesel engines are B7 compliant

Power and torque range for F1C family do not refer to Marine applications
FPT Product Range – Medium&Heavy Diesel engines

Power and torque range for F5C, NEF and CURSOR families does not refer to Marine and Power Generation applications

All Diesel engines are B7 compliant

**F SERIES**
- **L4 16V**
  - Displacement: 3.2 litres
  - Power range: 40 - 65 kW
  - Torque range: 200 - 340 Nm

**C SERIES**
- **L6 24V**
  - Displacement: 7.8 litres
  - Power range: 176 - 280 kW
  - Torque range: 1050 - 1500 Nm

**N SERIES**
- **L6 12/24V**
  - Displacement: 5.9 - 6.7 litres
  - Power range: 73 - 177 kW
  - Torque range: 440 - 1050 Nm

**V SERIES**
- **V8 32V**
  - Displacement: 20.1 litres
  - Power range: 560 - 750 kW
  - Torque range: 3200 - 4065 Nm

**L SERIES**
- **L6 24V**
  - Displacement: 3.4 litres
  - Power range: 234 - 423 kW
  - Torque range: 1700 - 2500 Nm

- **L6 24V**
  - Displacement: 3.9 - 4.5 litres
  - Power range: 53 - 164 kW
  - Torque range: 280 - 610 Nm

- **L6 24V**
  - Displacement: 3.2 litres
  - Power range: 40 - 65 kW
  - Torque range: 200 - 340 Nm

- **L4 8/16V**
  - Displacement: 10.3 litres
  - Power range: 235 - 353 kW
  - Torque range: 1450 - 2100 Nm

- **L3 6V**
  - Displacement: 8.7 litres
  - Power range: 210 - 306 kW
  - Torque range: 1232 - 1600 Nm

- **L6 24V**
  - Displacement: 8.7 litres
  - Power range: 234 - 306 kW
  - Torque range: 225 - 310 Nm

- **L6 24V**
  - Displacement: 12.9 litres
  - Power range: 235 - 353 kW
  - Torque range: 1450 - 2100 Nm

- **L6 24V**
  - Displacement: 20.1 litres
  - Power range: 560 - 750 kW
  - Torque range: 3200 - 4065 Nm
FPT Product Range – Gasoline engines

- **L4 16V**
  - 80HP - 113Nm - Euro 4
  - 95HP - 125Nm - Euro 5
  - 103HP - 145Nm - Euro 4
  - 130HP - 173Nm - Tier 1
  - 150HP - 210Nm - Euro 5
  - 200HP - 320Nm - Euro 5
  - 230HP - 340Nm - Euro 5

- **L4 16V DI-TURBO VVT**
  - 200HP - 320Nm - Euro 5
  - 230HP - 340Nm - Euro 5

- **L4 16V TURBO**
  - 103HP - 145Nm - Tier 1
  - 120HP - 190Nm - Euro 4
  - 150HP - 210Nm - Euro 5

- **L4 8V**
  - 60/65HP - 102/104Nm - Euro 5
  - 54HP - 90Nm - Euro 4

- **L4 16V VVT-PDA**
  - 95HP - 125Nm - Euro 5

- **L4 16V TURBO**
  - 120HP - 190Nm - Euro 4

- **L4 16V DI-TURBO VVT**
  - 150HP - 210Nm - Euro 5

All Gasoline engines are E10 compliant.
FPT Product Range – Alternative fuel engines

Displacement [litres]

1.6
L4 16V
103HP - 145Nm - Euro 4
92HP - 130Nm - Euro 4

1.4
L4 8V
77HP - 115Nm - Euro 5
69HP - 104Nm - Euro 5

1.2
L4 8V
60HP - 102Nm - Euro 4
51HP - 88Nm - Euro 4

Displacement [litres]

7.8
L6 24V
330HP - 1300Nm - EURO VI*

5.9
L6 12V
200HP - 650Nm - EEV

3.0
L4 16V
136HP - 350Nm - EEV

Displacement [litres]

1.8
L4 16V
132HP - 172Nm - Tier 2

1.4
L4 8V
85HP - 120Nm - Tier 1

1.2
L4 8V
71HP - 110Nm - Tier 1

1.0
L4 8V
66HP - 91Nm - Tier 1

* EURO VI Ready
<table>
<thead>
<tr>
<th>Engine Details</th>
<th>Car Model/Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>420F3 (1993 c.c.) engine</td>
<td>Formula 3</td>
</tr>
<tr>
<td>147 CUP (1969 c.c.) engine</td>
<td>Alfa Romeo 147 CUP</td>
</tr>
<tr>
<td>1604 – T (1597 c.c.) engine</td>
<td>Fiat Palio S1600</td>
</tr>
<tr>
<td>0416 S – 2002 (1597 c.c.) engine</td>
<td>Fiat Punto S1600</td>
</tr>
<tr>
<td>0204 – ST – 02 (1998) engine</td>
<td>Alfa Romeo 156 WTCC</td>
</tr>
<tr>
<td>140FJ (1368 c.c.) engine</td>
<td>Dallara</td>
</tr>
<tr>
<td>R3D (1919 c.c.) engine</td>
<td>Abarth Grande Punto jtd R3D</td>
</tr>
</tbody>
</table>
FPT Product Range – Transmissions

Max. input torque [Nm]

- 2895 MAN/AWD: 950 Nm (9 speed)
- 2870 MAN: 700 Nm (9 speed)
- 2865 MAN/AWD: 680 Nm (6 speed)
- 2855 MAN/AWD: 560 Nm (6 speed)
- 2840 MAN: 400 Nm (6 speed)
- C546 MAN/MTA: 400 Nm (6 speed)
- M32 MAN/MTA: 320 Nm (6 speed)
- C530 MAN/AWD: 305 Nm (5-6 speed)
- 2830 MAN: 300 Nm (5 speed)
- M20 MAN/MTA: 230 Nm (6 speed)
- C510 MAN/MTA: 206 Nm (5 speed)
- C514 MAN/MTA/AWD: 147 Nm (5-6 speed)
- C513 MAN: 143 Nm (5 speed)

Longitudinal

Transversal
<table>
<thead>
<tr>
<th>ENGINE FAMILIES</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Diesel: SDE, JTD</td>
<td>Cars and LCV (Fiat, Alfa Romeo, Lancia, Opel, Suzuki, Saab, Tata)</td>
</tr>
<tr>
<td>Light Diesel: S SERIES, 8140</td>
<td>LCV and SUV (Iveco, Fiat, PSA, Mitsubishi Fuso, Santana)</td>
</tr>
<tr>
<td>Medium &amp; Heavy Diesel: N SERIES, C SERIES</td>
<td>Trucks and Buses (Iveco, Tata-Daewoo, Irisbus Iveco, Sor, BPTC – Beijing Public Transportation Corporation)</td>
</tr>
<tr>
<td>Gasoline: T-JET, FIRE, NEW ARGENTINA, DI-TURBO</td>
<td>Cars (Fiat, Alfa Romeo, Lancia, Tata)</td>
</tr>
<tr>
<td>Flex, Tetrafuel, CNG: FIRE, NEW ARGENTINA, S, N and C SERIES</td>
<td>Cars and LCV (Fiat, Iveco), Trucks (Iveco) and Buses (BPTC)</td>
</tr>
</tbody>
</table>
## FPT products for non-automotive applications

<table>
<thead>
<tr>
<th>ENGINE FAMILIES</th>
<th>APPLICATION</th>
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</thead>
<tbody>
<tr>
<td>MEDIUM&amp;HEAVY DIESEL</td>
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<tr>
<td>S, F, N and C SERIES</td>
<td>Mobile and Stationery industrial, Material Handling</td>
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<tr>
<td>F, N and C SERIES</td>
<td>Agricultural</td>
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<tr>
<td>F, N and C SERIES</td>
<td>Construction Equipment</td>
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<tr>
<td>S, N and C SERIES</td>
<td>Marine</td>
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<tr>
<td>F, N, C and V SERIES</td>
<td>Power Generation</td>
</tr>
<tr>
<td>V SERIES</td>
<td>Railway</td>
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</table>
Fiat Powertrain Technologies

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