



solve engineering
a Variosystems company

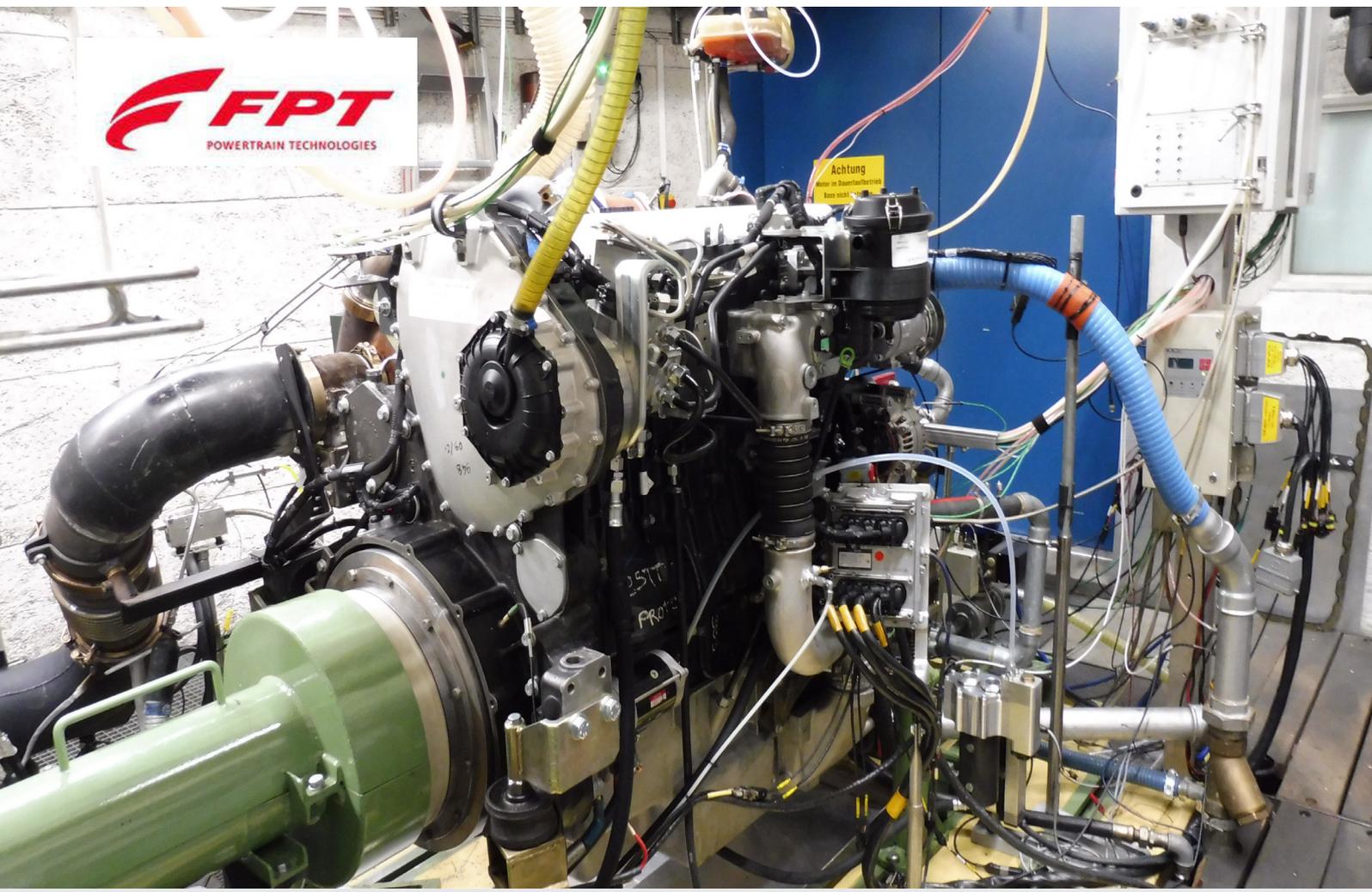
**Solutions with added value.
Competent in Software
Development.**

Trimming engines for efficiency

FPT Motorenforschung AG, based in Arbon, is one of the world's seven research and development centres for FPT Industrial brand engines.

Innovations and the development of new technologies for use in commercial vehicles and machines are the focus of all activities.

FPT Motorenforschung AG, Switzerland



Reduction of emissions

In close cooperation with FPT Motorenforschung, Solve developed a Config File Generator, a central configuration management system that makes data management of the internal simulation and diagnostic tools more efficient and cost-effective.

An innovative company with tradition

When it comes to developing new engine technologies, FPT takes a leading role among the research and development centres in the Powertrain segment. The company was founded in 1903 under the name „Adolph Saurer AG“ and today employs around 250 people. It develops FPT-branded industrial engines and powertrains for the international market.

Reduction of emissions

FPT's engine test benches serve as test and diagnostic systems for both classic combustion engines and electric motors. The data can be used to optimise engines in terms of performance and energy consumption. This is done with the goal to reduce environmental pollution through the reduction of harmful emissions.

Easier and more convenient usability

The existing Config File Generator in the form of an Excel workbook was very time-consuming to maintain, as every time the slightest change was required to a sensor or actuator, each workbook had to be opened and modified by hand. Therefore, the demand arose to develop a clear user interface in order to significantly reduce the configuration effort.

High tool expertise

Thanks to a large number of successful software projects, Solve has a great experience in the development of databases and user interfaces. Solve was actively involved in the design of a user-friendly interface. In addition, Solve's developers have in-depth knowledge of the .NET framework, software development with C# and the configuration and connection of SQL databases.

Conveniently create configurations

A Main Relay Unit (MRU) is installed on each of the engine test benches, which communicates with the ECU (Engine Control Unit). This unit simulates the driving behaviour of a vehicle, such as speed, clutch and brake pedal. The idea is to simulate the vehicle with different road conditions in a practical way. The engine under test contains a variety of sensors and actuators that are connected to the MRU. These signals are required to operate, test and optimise the engines in a practical way.

The Config File Generator developed by Solve generates a vehicle model (configured from many sub-models)

which is retrieved and played back by the MRU. With these specifications, it simulates the vehicle (speedometer, accelerator, brake, clutch, ABS and transmission control unit, etc.). Solve used WPF (Windows Presentation Foundation) for programming the user interface. The



Florian Krafcyk, EC Tools & Test Engineering - Software Development

„Together with Solve, it was possible to develop the product in an agile way and to adapt optimally to the given circumstances. The close cooperation with Solve and the direct feedback are always target-oriented.“

MRU sends the generated signals, e.g. from the accelerator pedal to the ECU, so that the engine runs a torque curve. In addition, the MRU can generate missing sensor signals as well as process sensor data and make it available to other ECUs. These and other specifications can be easily parameterised with the configuration management system. The configurations can be saved as „recipes“ in an SQL database and can thus also be reused or adapted for other motor types.

Customer benefit: agile project management

With the Config File Generator, FPT received an easy-to-use and convenient configuration management tool. It allows the test sequences to be configured efficiently for the different engine types, which in turn saves time and costs. Agile development was used for this project, where Solve and FPT defined new requirements at short, regular intervals. In this way, possible modifications could be implemented within a very short time.