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FlexECU – Ideas in Motion

Open platform for on-target system development

A major obstacle to innovation in the passenger and commercial vehicle industry is the limited availability of open, cost-effective, and production-ready electronic control units (ECUs) that facilitate the efficient development, implementation, and testing of new control concepts on the shortest possible timeline. Enter the FlexECU, a novel solution offered by ETAS in cooperation with Bosch Engineering.

ETAS and Bosch announce FlexECU

The FlexECU is an open, cost-effective, and production-ready ECU development platform designed for the efficient development of new control concepts. It is based on a production-intent version of the current Bosch diesel and spark ignition engine ECU hardware with Infineon TriCore microcontroller. With the easy-to-use EHOOKS integration environment (shipped complete with the compiler), the integration of prototype software from ASCET, Simulink®, other model-based development tools plus hand coded C code, is decidedly simplified and accelerated. What's more, the package also contains the basic software with an open API, as well as simple and complex I/O drivers and an OSEK-compliant real-time operating system.

The FlexECU may also feature an optional high-speed ECU interface (ETK) for measuring, calibration, and ECU programming. This makes the FlexECU predestined for deployment in conjunction with INCA, the industry leading calibration tool from ETAS. As an alternative, in order to ensure compatibility with other third-party

tools in current use, the CAN interfaces may also be used.

High-quality and rapid-response engineering services, plus the support by ETAS and Bosch Engineering facilitate worldwide customized solutions for the FlexECU.

Areas of application

The FlexECU is suitable for the direct control of diesel or gasoline engines with up to eight cylinders. In addition, the FlexECU features I/Os capable of controlling a large number of applications, including HEV primary control, transmission control, and additional vehicle subsystem controls. The type of application notwithstanding, the FlexECU is deployed in development and fleet testing. FlexECU migration towards low-volume production can be facilitated by ETAS and Bosch Engineering.

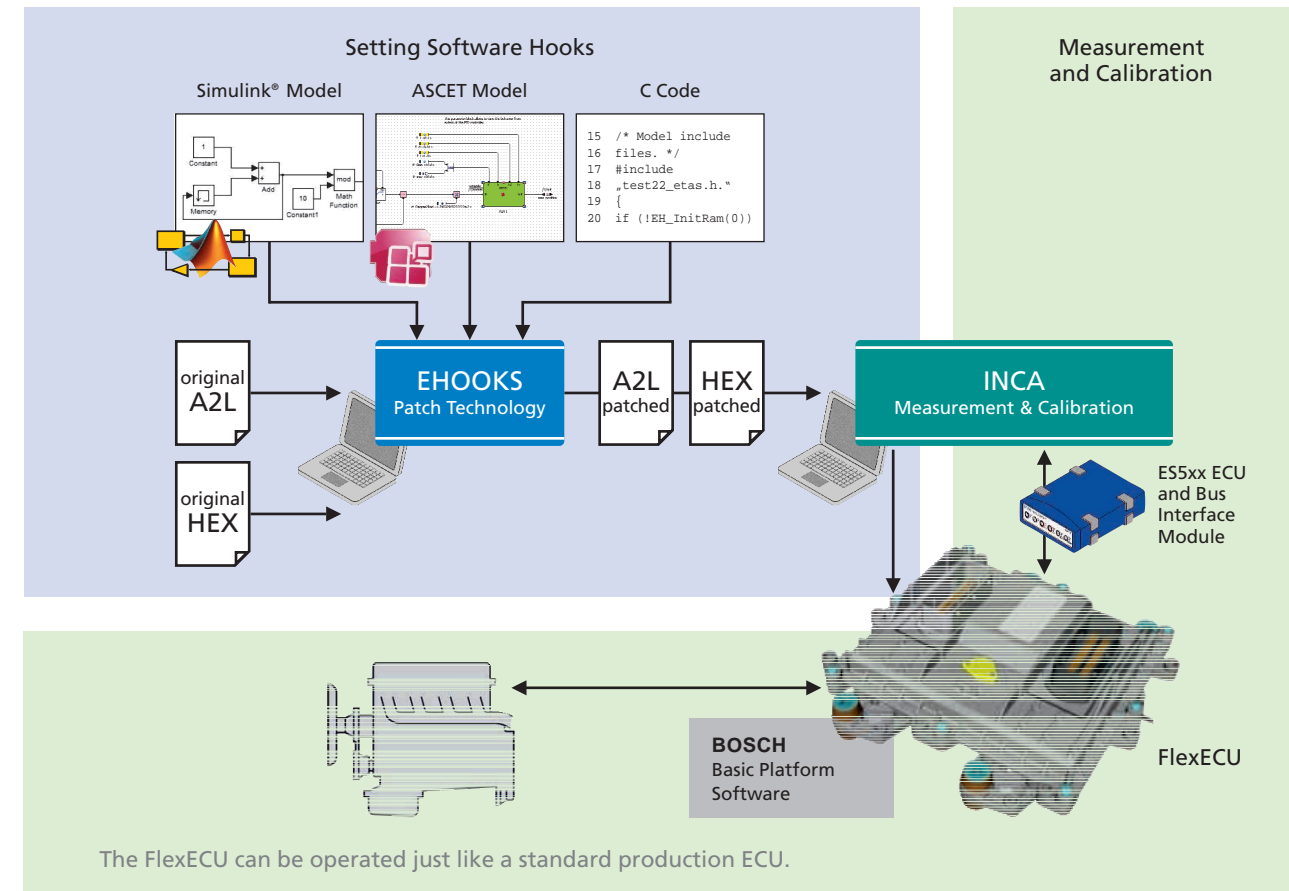
FlexECU features

One FlexECU variant, based on the TriCore TC1797 microcontroller (180 MHz), is designed for diesel engine control. Communications are handled by three CAN buses and an optional ETK interface. In addition, the FlexECU features a large number of inputs,

such as camshaft and crankshaft (inductive or Hall signals), 15 differential and 13 single-ended analog inputs, plus 18 digital PWM and frequency inputs. A large complement of outputs is also available of course, e.g., 14 digital status signals, 17 PWM outputs, two half-bridges, four analog outputs for sensors, as well as the said injector drivers for up to eight injectors, with up to six injections per cylinder. With other production ECUs, the FlexECU shares a ruggedized aluminum housing. The device is designed to withstand an extensive temperature range of -40°C to +105°C and strong vibrations.

FlexECU advantages

- Increased confidence through early implementation of prototype control systems directly on a production-ready ECU platform.
- Savings in terms of time and effort when migrating the prototype control system to series production.
- Bosch know-how covering real-time applications and fuel injection technology.
- Cost-efficient alternative to conventional rapid prototyping tools.



- Scalable solution, involving between one system and several hundred devices.

Setting ideas in motion

Whether it's the development of a hybrid control system, a complete engine management system, or simply a new control function for an existing system – with the FlexECU, a cost-effective, field proven development platform for numerous fields of application has become available.

ETAS Technical Sales will be pleased to demonstrate how the FlexECU can fit into your development environment. Simply contact us at sales.de@etas.com.

THE CHALLENGE

Availability of efficient development of new control functions based on open, low-cost and production-ready ECUs.

THE SOLUTION

The new FlexECU from ETAS and Bosch provides a cost-efficient and field proven development platform for control systems.

THE BENEFIT

Proven hardware and production-ready basic software are available to support development.