>> COMBINATION OF VIN|ING 2000 AND SOFTING SDE

Integrated Diagnosis for SOTA

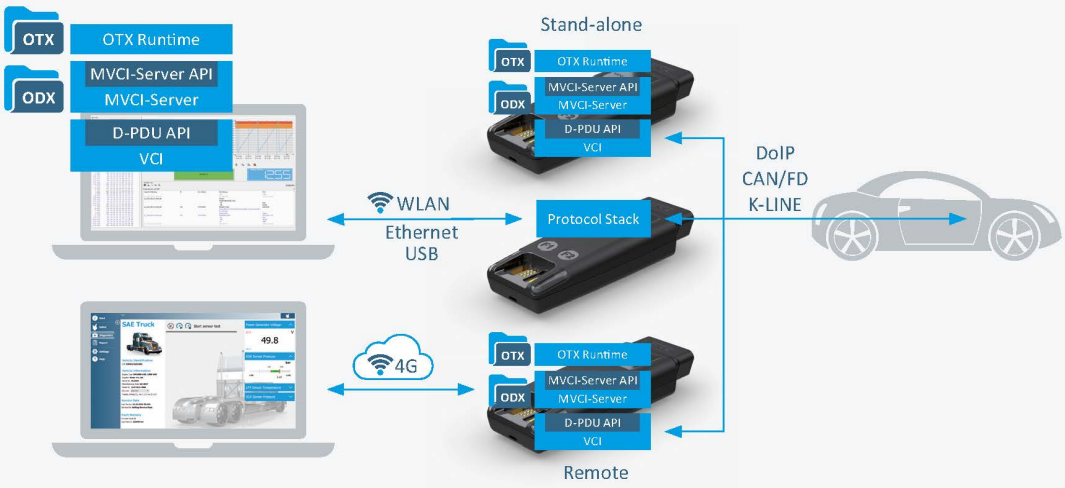
Vehicles of the future will require complex vehicle diagnostics. To satisfy these requirements, Softing now offers a new VCI generation as well as an easy-to-use software component which can be implemented universally for running diagnostic tasks. The combination of the two products covers new use cases and offers users particular benefits.

Modern vehicles offer ever more complex functionality and implement a growing number of ECUs, which are increasingly networked both with other ECUs as well as with their environment. Vehicle architecture is becoming a service-oriented architecture with holistic functions. Vehicle diagnostics is becoming more and more significant as it becomes increasingly difficult to keep track of everything. This is why it is not surprising that test environments have become extremely extensive and require high-performance vehicle interfaces. This development can, however, lead to cumbersome diagnostic systems which can prove difficult to adapt to new application scenarios. At the same time, new requirements are being made of diagnostics. Users are now also looking for small solutions which cover just local diagnostic processes and individual vehicles or even just individual ECUs. These have to be able to be adapted to a particular use case easily. Other requirements are the use of simple diagnostic functions for simultaneous access to several vehicles and the high-performance programming of ECUs in the various phases of the life cycle from the first steps in manufacturing through to a visit to the repair shop. Furthermore, there is an increasing number of diagnostic concepts being created in which remote access to ECUs plays a fundamental role. These extended requirements are a challenge for suppliers of diagnostic solutions. They require a new approach for the diagnostic system which combines a large function scope with a flexible hardware and software solution. Using functions specially tailored to the use cases, it is easy to configure diagnostic tasks and, once created, diagnostic configurations can be reused over the entire vehicle life cycle.

Solution from the Market Leader

As a leading supplier of solutions for vehicle diagnostics with around 100,000 installations all over the world, Softing Automotive has reacted to this challenge and extended and in some cases newly designed its diagnostic solutions. There is now an all-in-one system available which combines the hardware of a high-performance vehicle interface with the software for a functionally comprehensive diagnosis and which can be tailored individually to suit the particular requirements. The hardware platform of the Softing diagnostic solution is the new vehicle interface (Vehicle Communication Interface, VCI) VIN|ING 2000. It unites a compact design with high-performance communication functionality.

The Softing Smart Diagnostic Engine (SDE) is used on the software side of the diagnostic solution. This platform-independent diagnostic runtime system has low system requirements and facilitates the execution of diagnostic tasks with the execution of holistic functions. This makes comprehensive use cases possible, such as the creation of a vehicle status report and the combined flashing of ECUs. Softing SDE uses the diagnostic standards ODX and OTX, but also uses a simple access interface for application programming (Application Programming Interface, API). The diagnostic functions required, such as reading out the fault memory or programming the ECU, are thus invoked directly. No specialist diagnostic expertise is required for this purpose. This means there is now a service-oriented architecture approach to be found in diagnostic software.



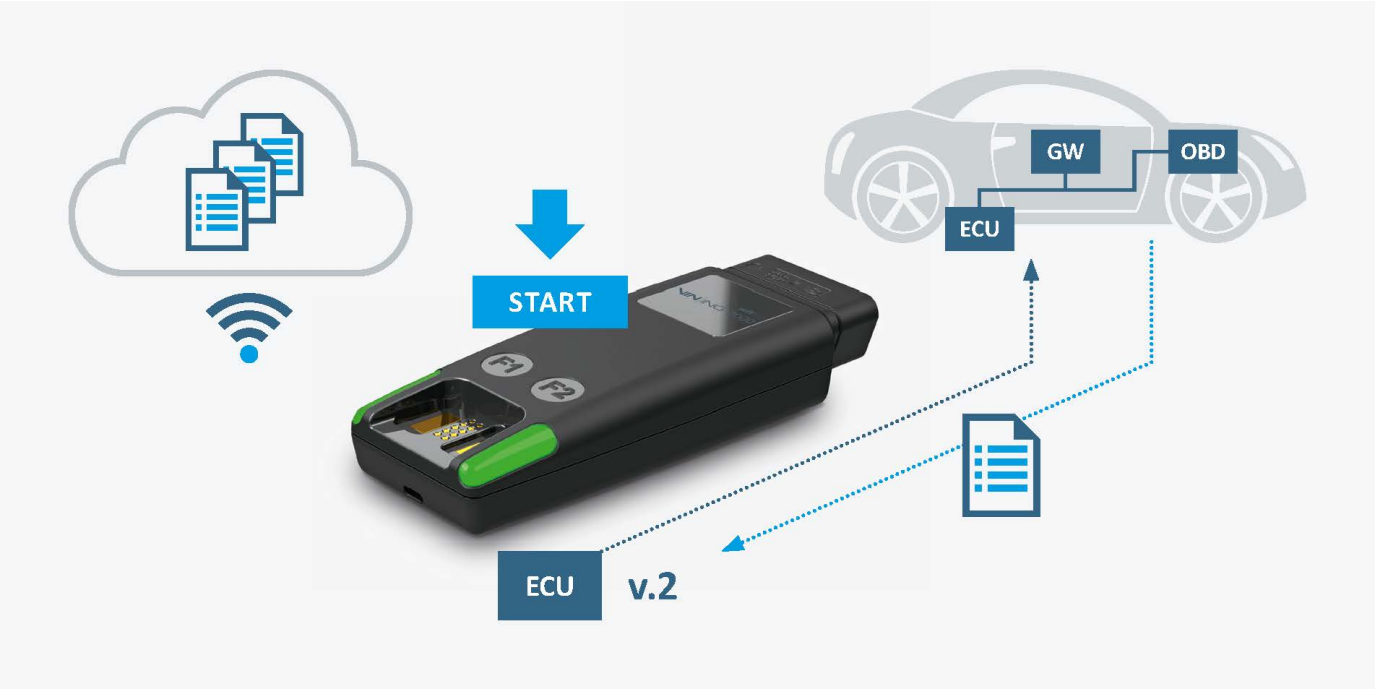
Use cases of VIN|ING 2000 and Softing SDE.

The core of the VIN|ING 2000 is based on the tried and tested architecture of its predecessor and was further developed for all-round use, focusing on use cases in the manufacturing and repair shop environment. The VCI consequently supports simultaneous data exchange with several ECUs and particularly demonstrates its high performance in update procedures. VIN|ING 2000 supports the diagnostic communication protocol Unified Diagnostic Services (UDS) which today is used instead of a manufacturer-specific protocol in virtually all new developments. The following versions are available for example: UDS on CAN and UDS on IP. The standardized OBD connector is used to the vehicle with two CAN/FD interfaces, K-line and Ethernet for the use of the diagnostic protocol (Diagnostics over Internet Protocol, DoIP). The diagnostic environment is connected either via USB, a local Ethernet network or WIFI.

The Softing SDE functionality can also be used in a wireless form from a distance. This fulfills an important prerequisite for running wireless software updates, as is required for Software Over the Air (SOTA) tasks.

Optimal Diagnostic Functionality

The high performance of the VIN|ING 2000 and the minimal system requirements of the Softing SDE make it possible to realize an integrated diagnostic system by running Softing SDE on the vehicle interface. The combination of both components offers special performance and flexibility which enable use over the entire vehicle life cycle. Light signals on the vehicle interface provide feedback on the status of the diagnostic procedure. The result of the diagnostic function is recorded in a report which can be used, for example, to approve software versions.



Stand-alone use case for the independent programming of ECUs in post-production or during vehicle shipping.

A particular advantage of the integrated diagnostic solution is the fact that a configuration, once created on the PC, can be reused on the vehicle interface throughout the entire vehicle life cycle. If changes to the configuration should become necessary at a later date, these are easy to execute without having to create a new configuration or adapt the generic diagnostic function. The combined diagnostic solution is suitable for a range of use cases. For example, diagnostic information and bus data can be recorded automatically directly at the OBD jack. Another use case, for example, is its deployment as an autonomous diagnostic device on the basis of OTX test sequences stored on the VCI. The combined diagnostic solution also enables the independent realization of high-performance flash solutions, e.g. for loading new software versions to vehicles. Flashing takes place using an OTX script which can run independently on the device. Using the OTX standard makes this solution very flexible and also adaptable at a later date. Furthermore, it also makes it possible for diagnostic procedures to be run for individual ECUs. The individual diagnostic tasks can be started in a number of different ways, for example by a defined condition at the wireless interface, by the push of a button on the VCI or by the start of the ignition.

Software Updates

The combination of VIN|ING 2000 and Softing SDE also supports the creation of reports on the software updates run on a vehicle's ECUs. It particularly shows whether the individual updates were successful or not.

The reports are stored on the ECU and enable seamless update tracing. These reports may be sent directly to a back end via the wireless interface of the VIN|ING 2000 and stored in a database so that all necessary data is available at a central point. The combined diagnostic solution also covers user requirements in terms of system security. Modern encryption mechanisms are used on the ECU for ODX authoring to protect intellectual property. The same can also be realized for OTX scripts.

Advantages for Diagnostic Applications

The decades of experience in the engineering and development of vehicle interfaces and diagnostic software represent definite advantages for users. As a result, by combining VIN|ING 2000 and the Softing SDE, Softing can offer a diagnostic solution today which already covers all the diagnostic use cases of tomorrow while comprehensively taking security aspects into consideration.

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Originally published in German in the section “Measurement - Test - Diagnosis” of the technical magazine HANSERautomotive 05/2019, published by Carl Hanser, Munich, Germany