

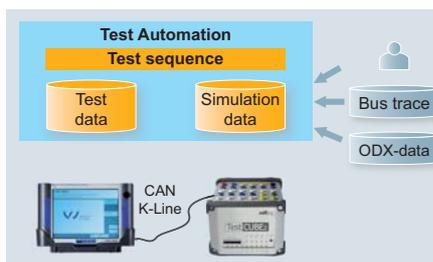
TestCUBE₂ - ECU simulation

Availability of ECUs

A suitable counterpart, with which the tester communicates, is required in order to execute automated regression "tester tests". The counterpart usually consists of one or more ECUs. These must be available in entirety and in all variants to be able to ensure sufficient test coverage. This means that those engineers working in test preparation, manufacturing or service have to manage a large number of ECUs.

Diagnostic simulation of several ECUs

SOFTING has the solution if ECUs are not available: TestCUBE₂ is a configurable communication partner for "tester tests". The configuration parameters of the transport protocol and the responses to diagnostic services sent by the tester as well as fault memory entries can be set and



simulated. Furthermore, "C"-scripts can be used to make the rigid assignment between request and response telegram dynamic. For example, a service request can be assigned to the corresponding service response depending on the diagnostic session or the security level.

High-performance hardware

Once completed, the configurations are loaded directly into the TestCUBE₂ via USB or Ethernet.

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TestCUBE₂ acts as an ECU or a network of several ECUs. The simulation can be stored permanently in the TestCUBE₂ and can thus be run without a PC being connected. All you need for operation is a power supply and a connected CAN bus.

Simple operation

The completely new designed and modular configuration interface enables fast and simple configuration setting without necessitating extensive familiarization. A descriptive file assigned to vehicle projects is created for each ECU to be simulated. In just a few working steps, it can be parameterized, loaded into the interface and launched. Depending on the selection, TestCUBE₂ can simulate one or more ECUs at the same time.

Events

Diagnose Systeme im Automobil (Stuttgart)	March 23 – 24, 2011
5. OBD Tagung IAV (Braunschweig)	April 14 – 15, 2011
Diagnose in mech. Fahrzeugsystemen (Dresden)	May 09 – 10, 2011
TestingExpo (Stuttgart)	May 17 – 19, 2011
Fortschritte in der Automobil-Elektronik (Ludwigsburg)	June 07 – 08, 2011
TestingExpo (China)	September 14 – 16, 2011
Elektronik im Kraftfahrzeug (Baden-Baden)	October 12 – 13, 2011
TestingExpo (USA)	October 25 – 27, 2011

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Ready for SOP thanks to UDS test bench

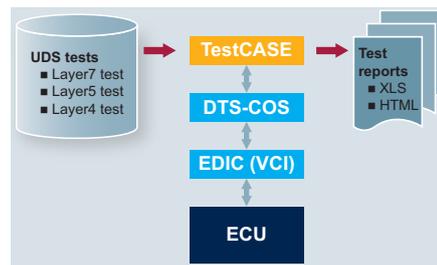
Virtually every newly developed ECU uses the UDS protocol for diagnostics. As the UDS protocol unites a number of functions from older diagnostic protocols, the effort involved in implementing the diagnostic functionality and the effort involved in ensuring software ready for series manufacturing increases accordingly. In addition to the pure UDS protocol level, a huge range of application-specific requirements has to be taken into consideration in terms of diagnostic implementation. The most important ones include:

- Session handling
- DTC handling, reset behavior
- Security access
- Functional addressing
- ECU reset

SOFTING's UDS test bench is a test system that implements the UDS test specification of the VOLKSWAGEN

Group. The UDS test bench consists of several components:

- TestCASE as the test automation tool for sequence control and reporting
- DTS-COS for diagnostics and residual bus simulation
- UDS test suite (test cases)
- Diagnostic interface EDIC



Once a test has been executed, various test protocols can be generated that show the test results as a fast overview as well as in varying degrees of detail.

Advantages

In comparison to manual test procedures, the automated test with a UDS test bench increases the efficiency and understanding of test execution and reduces the amount of time for testing considerably.

The test cases included in the UDS test bench can easily be adapted to the UDS test requirements of other vehicle manufacturers. Furthermore, the test automation tool used, TestCASE (now available in Version 4.4), can be implemented as a universal test automation tool for function and diagnostic tests in the HiL environment as well as in other test environments.

Creating ODX data for VW quickly and safely

The ODX specification provides an incredible amount of opportunities in the designing of an ODX database. To simplify integration processes, the OEMs are increasingly relying on authoring guidelines. These demand conventions and regulations for standardized ODX data creation.

Softing is currently developing a new version of DTS-Venice for creating ODX files in accordance with the current VW authoring guideline (special editing mode that can be activated as an option). The user has many benefits when using DTS-Venice:

- The early recognition of elementary breaches of the rules when creating ODX data can reduce the number of database tests with the released ODX checker from VOLKSWAGEN to a minimum.

- The user no longer has to edit shortnames and the creation of redundant measurement values, always subject to error, is prevented.
- The incorporation of XML reference files means text identifiers that have been applied for and assigned at VOLKSWAGEN can be detected at an early stage.
- In general, the effort involved in creating the database is considerably reduced.

From the very beginning, the quality of the data is thus at a very high level. Naturally, we are happy to support you during your first steps and whenever you have questions. SOFTING has a qualified support team to answer any detailed questions.

For more information take a look at www.softing.com/venice-en

Young talent gets a head start

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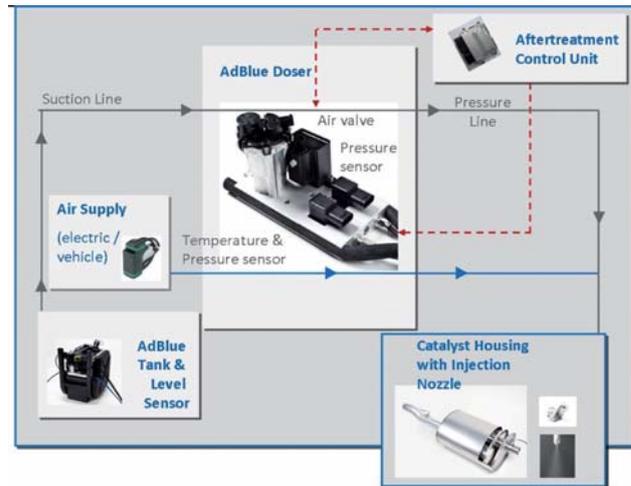
German technology for clean air

With DTS (Diagnostic Tool Set), Softing is helping Albonair GmbH attain legal requirements.

To reduce the air pollution caused by diesel engines, environmental protection agencies have ordered a decrease in the emission of particles (soot) and nitrogen oxides (NOx). Particle emission can be reduced by using diesel particle filters (DPF). Selective catalytic reduction (SCR) is regarded as the state-of-the-art technology for the effective reduction of nitrogen oxides.

Albonair GmbH, based in Dortmund, gave itself the task of reducing air pollution caused by diesel engines. It is a member of the Indian Hinduja Group, just like Ashok Leyland, one of the largest manufacturers of commercial vehicles in India.

Albonair specializes in the development and manufacture of exhaust aftertreatment systems. The SCR method involves injecting the AdBlue reducing agent into the exhaust tract to reduce nitrogen oxides. The SCR system by Albonair consists of an AdBlue® doser with Aftertreatment Control Unit (ACU), the AdBlue® tank and the SCR catalytic converter.



SAE J1939 is implemented for onboard communication between the SCR ECU and the engine ECU; for diagnostic communication OBD on CAN and UDS on CAN.

In order to be future-proof in terms of upcoming requirements of diesel engine manufacturers, manufacturers of commercial vehicles, but also legislators, Albonair decided to use standardized software including products from SOFTING.

The database in ODX format, generated with the authoring tool DTS-Venice, is used all along the process chain (Engineering, Testing, Release, Manufacturing, After-Sales

Service). Whereas Engineering involves extensive manual testing with DTS-Monaco, the software regression test is automated. TestCASE, a product by SOFTING and our partner Tracetronic, is used for test automation.

The reprogramming and test station at the end of line (EOL) uses ODX and the D-Server DTS-COS and the application is based on LabView.

For the service tester in the repair shop, both the ODX database and the D-Server DTS-COS as well as individual LabView-VIs can be reused.

Thanks to Softing's consistent tool chain, Mr. Adler from Albonair was able to realize his goal of relying on standard tools.

For more information take a look at www.softing.com/dts-automation-en

DTS news – a whole range of function extensions

Many DTS users present us with challenges that we are happy to solve! That is why our DTS product family regularly has extensive extensions to report.

At the beginning of the year, CBF support was extended considerably to ensure that proprietary data processes are also available in the DTS quality users have come to expect. The individual tools have also been extended:

DTS-COS

The standardized API of our ASAM D-Server has been given a number of

new functions to give you access to even more possibilities of the ODX standard. Furthermore, additional SOFTING specific API extensions were documented to provide your applications with full access convenience and functionalities that even surpass the standard.

DTS-Monaco

In addition to the well-known application-oriented interfaces, the interface can now display explanations, for example with graphics or textual test instructions. Complex ODX data (e.g. structures, fields,...)

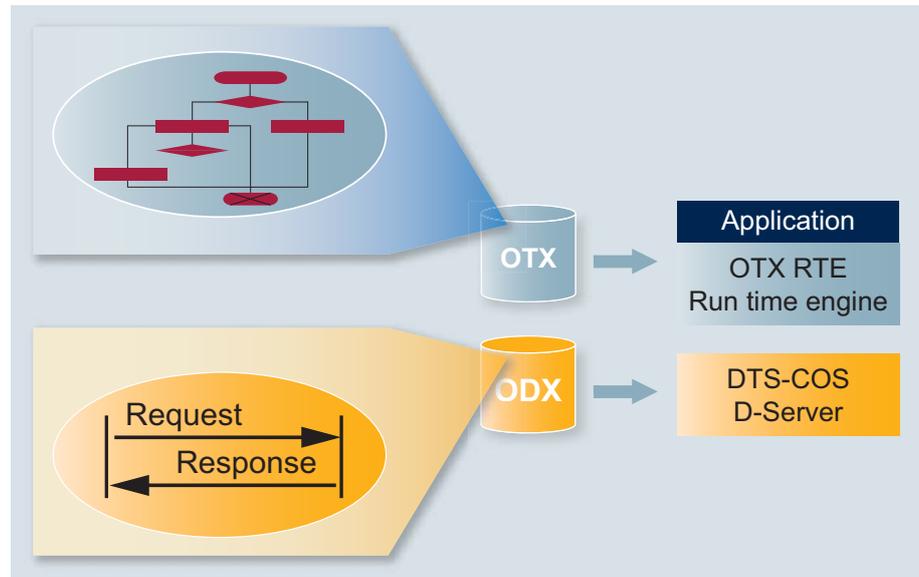
can now also be used in instruments – a considerable relief as this ensures you remain independent of the origin of the ODX data. And the OBD test interface has also been extended – to ensure even better coverage of the legislator's requirements. DTS – the entire range of diagnostics from ECU engineering through to testing on the vehicle in your daily work!

For more information take a look at www.softing.com/dts-en

OTX – standardized diagnostics under the ISO-flag

As an addition to the established ODX standard, the OTX standard (Open Test Sequence Exchange Format) is currently undergoing ISO standardization. It enables the description and transfer of entire test sequences. This means it is not only routines, as implemented in ECUs, that can now be specified in a standardized manner from the outset. The sequences can also be loaded into run-time systems: an executable specification!

SOFTING plays an active part in standardization committees and will be adjusting its well-established tools of the DTS family and TestCASE accordingly – hence your investments are safe with SOFTING!



Continued from page 1

Fast generation of simulation data

In addition to the manual creation of simulation data, it is also possible to create simulation data using a bus trace. In this process, the CAN trace is automatically searched for diagnostic messages which are then assigned to the individual ECUs of the vehicle. A separate simulation is generated for every ECU. Dynamic sequences, such as changing measured values, different seeds in the authentication sequence or response-pending answers, are simulated in exactly the same way as the response times of the real ECUs. The simulation can then be extended or modified manually. Furthermore, bus traces can be evaluated and the resulting diagnostic messages added to existing simulation data.

Simulation data from the ODX container

A component that can be used to create, under user guidance, simulation data from an ODX container will be available soon. The response telegrams are parameterized and temporarily buffered at symbolic level. The simulation data is

generated automatically from this data and can then be downloaded to the TestCUBE₂.

Residual bus simulation

To test an ECU that needs to communicate with other ECUs, it is possible to execute a residual bus simulation with TestCUBE₂. In this process, messages from ECUs that do not exist in the network are simulated. TestCUBE₂ can react to onboard messages or can send single or periodic onboard messages, to the CAN bus. This simulation takes place in real-time.

Regression tests – without changing ECUs

Your testers' regression tests become much simpler. Whereas previously the different ECUs had to be toggled in a time-consuming manual procedure or with complex electronics, now all you have to do is exchange the simulation files. You can do this manually using the intuitive user interface or in test automation with the DLL interface. This allows the simulation of different ECUs in an automated test.

Negative tests

Particular attention was paid to what are referred to as negative tests. These guarantee the robustness of the tester software using defined or in some cases non-defined simulated negative responses. This also enables the testing of correct timing in the transport layer and timeouts in responses to tester requests. This is not generally all that easy using a real ECU as it usually only has a fixed response behavior during testing. With TestCUBE₂, you can simulate any conceivable (and even unconceivable) error cases. These negative tests thus result in the final software being of greater quality.

For more information take a look at www.softing.com/testcube2-en

EDICmpc: mobile diagnostics at all times

EDICmpc is a representative of a new VCI generation of the SOFTING EDIC family. The EDICmpc is a platform for flash and diagnostic applications. Thanks to its extremely ruggedized design, it is particularly suitable for use on the road as well as for use in Manufacturing and in the repair shop.

On the one hand, the EDICmpc is a PC that is based on the energy-saving Intel® Atom™ platform and, on the other, a VCI with the vehicle



interfaces K-line, CAN and LAN. Due to its dimensions (approx. 184mm x 151mm x 57mm) and the HSDPA module available as an option, the EDICmpc is particularly suitable for use on the road.

In its basic design, the EDICmpc is delivered with the SOFTING D-PDU API (in accordance with ISO 22900-2). It is also available with the SOFTING D-Server DTS-COS (in accordance with ASAM MCD-3 Version 2.0.2) as a system platform. This means you can install your own applications on it and also use it with applications developed specially for a particular customer. On this basis SOFTING is providing several solutions for the EDICmpc. The standard applications DTS-Flash (for flash programming) and DTS-OBD (for OBD diagnostics) are available. This makes the EDICmpc the perfect system platform for flexible use in Engineering, Testing and Manufacturing.

Key features of the EDICmpc:

- Compact design
- Ruggedized housing
- Operating system: Windows XP
- Vehicle interfaces K-line, CAN and LAN

For more information contact info.automotive@softing.com

D-PDU API update

Since March 2010, there has been a new version of the SOFTING D-PDU API. This version is available as an update for SOFTING interfaces and contains the following new features / improvements:

- New protocol ISO 11898_RAW
- Revised manual
- Revised example program

This means the SOFTING D-PDU API now supports the following protocols:

- KWP 2000 on K-line (only with EDIC hardware)
- KWP 2000 on CAN
- UDS on CAN
- ISO 11898_RAW

- OBD on K-line (only with EDIC hardware)
- OBD on CAN

Various customized protocols are also available on request.

For more information take a look at www.softing.com/d-pdu-api-en

Discontinuation of EDICnet

We discontinued sales on July 1, 2010. Details at www.softing.com/edicnet

EDICfab and EDIClab

Two (un)equal siblings for the EDIC hardware family

With EDICfab and EDIClab, the product portfolio of the EDIC hardware family has been increased by two high-performance interfaces for use in Service/Manufacturing and Engineering/Laboratory.



EDICfab is perfect for use in Service and Manufacturing thanks to its ruggedized aluminum profile housing, the shock-absorbing protective caps and connectors in accordance with IP54. The implementation of a modern 32-bit CPU (PowerPC 384 MHz) has resulted in a high-performance platform for powerful diagnostic and flash applications.

The combination of VCI electronics and the ports of a breakout box in one device makes EDIClab an innovation for working in the lab – it is no longer necessary to have to work with an additional device and all kinds of cables. The ECU is connected to the interface quite simply using banana plugs. EDIClab has the same core characteristics as EDICfab and can be extended by a number of features. Thanks to the large supply voltage range of 7 to 36 V, the two devices can be used in both car and commercial vehicle sectors. The galvanic isolation between PC and vehicle interface makes both VCIs tough enough to cope with the typical cases of application.

Main features:

- D-PDU API (ISO 22900-2)
- UDS (ISO 14229-1:2006)
- KWP 2000 (ISO 14230, ISO 15765)
- 2x CAN High-speed / Fault-tolerant
- 2x K-Line to 250 kBaud
- Wake Up on CAN, KL 15
- Digital IOs, analog inputs
- USB 2.0
- WLAN 802.11 b/g

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Navigating in ODX data becomes simple and efficient

ODX data is already used extensively in Manufacturing at AUDI/VW today. For specifying test scope, test preparation requires the names of diagnostic services, parameters and results. Actual values must be assigned to the parameters and expected values to the results. The test steps are described using a comprehensive Excel spreadsheet. The immense quantity of ODX data is the first challenge. The original process involved data in PDF format: This turned out to be virtually unmanageable. Because to ensure the safe creation of test specifications without the danger of typing errors that meant PDF copy – Excel paste, PDF copy – Excel paste, ...

The task of improving this procedure thus entailed:

- Step-by-step, user-guided display of ODX content
- A direct link to the systems creating the test sequences

Together with the AUDI/VW Manufacturing Department, SOFTING created the ODX Browser. The ODX Browser is an independent application for visualizing ODX data that can be controlled remotely from the test sequences with intelligent integration. The user is presented with an intuitive top-down view of the data in the ODX Browser: This shows all ODX inheritance relations (runtime view).

Nominal values can be assigned to parameters in the ODX Browser to create test sequences. These can be returned to the system creating the test sequences together with the required ODX information at the click of a button. From the test sequence, you can also toggle directly to the selected position in the ODX data and make a change there. This is immediately accepted.

AUDI/VW benefit considerably in terms of speed and security with the SOFTING ODX Browser when preparing the test sequences in Manufacturing. The combination of machine-readable ODX data and suitable tool ensures an increase in quality – notably compared to the time before ODX as the specification can be used directly to create test sequences.

EDIC + wireless + robust = EDICwlan

Ruggedized VCI with connection via WLAN and USB

EDICwlan is based on the tried-and-tested and widely used EDIC architecture with multi-link software. Thanks to its ruggedized design, the device is particularly suitable for use in Manufacturing, Testing and After-Sales Service. Notably to Power Management and the buffering of the supply voltage via the integrated power pack in flash programming applications the change to another vehicle can be done almost without loosing any time.

The communication protocols UDS (ISO 14229-1:2006) and KWP 2000 (ISO 14230, ISO 15765) as well as all

VOLKSWAGEN-specific protocols are supported via the standardized D-PDU API. With a software layer based on the D-PDU API, the VCI can also be used as a pass-thru device in accordance with SAE J2534.

Communication to the application PC takes place via WLAN 802.11 b/g or via USB V2.0 Full Speed. The data security necessary for radio operation is attained via the encryption standards WEP and WPA2. Both the ad-hoc mode and the infrastructure mode for operation with an access point are supported.

All necessary settings are taken care of in just a few easy steps thanks to an extensive configuration program.

With an input voltage range from 8 to 32 Volt, EDICwlan can be used for both the car and the commercial vehicle sectors.

With the solid aluminum profile and industry-proof connectors, protection class IP54 is attained and operation in extremely rough environments guaranteed.



For more information contact info.automotive@softing.com