



AUTOMOTIVE NEWSLETTER

NEWS & FACTS FROM THE KAYSER-THREDE WORLD

WELCOME TO THE Spring Edition of Our Newsletter

What an exciting year for Kayser-Threde! We are celebrating our 40th anniversary as a company and our 30th anniversary as a crash test data acquisition system manufacturer. In 1977 we delivered our first on-board crash test data acquisition to the Bundesanstalt für Straßenwesen BAST in Germany. Since then, we have delivered more than 50,000 ruggedized data channels to customers in 20 different countries. For us, this is a reason to be thankful. Without the great support and the loyalty of our customers, such a success would have never been possible.



But it is also a great responsibility for us because our large customer base continuously expects from us new and innovative products, extended service capabilities, competitive pricing, and the protection of the investments they have made in our products without sacrificing Kayser-Threde's legendary quality and reliability. This expectation can be summarized by our mission statement:

Quality. Innovation. Integrity.

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CRASH TEST DATA ACQUISITION PRODUCTS

The Champions for Serious Crash Testing

With the MINIDAU®, Kayser-Threde has set the standard for on-board crash test data acquisition in the world. The MINIDAU® design has been constantly updated with the latest technologies available on the market. This continual process has ultimately lead to new products and product lines.

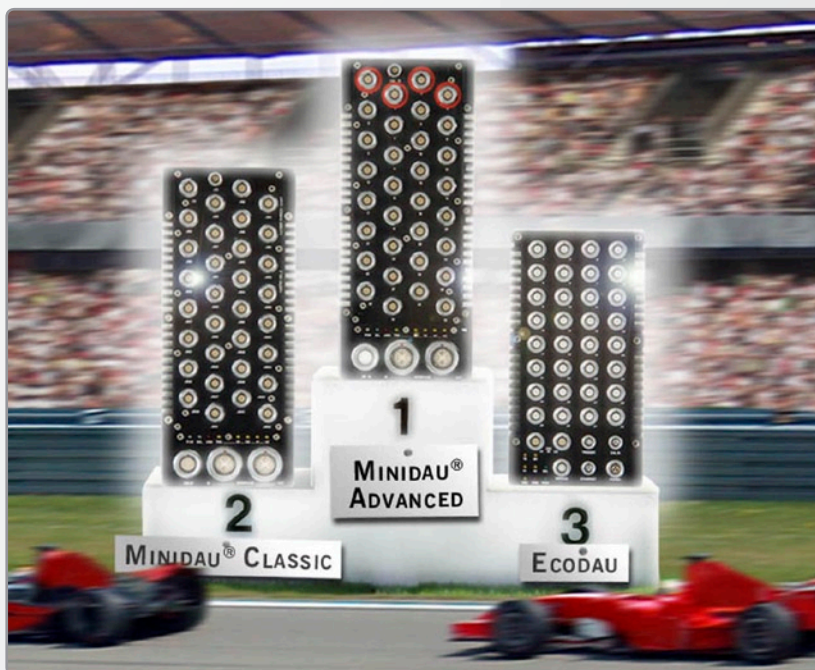
Crashlink® Product line. The MINIDAU® ADVANCED, now in production, offers increased functionality, e.g., 100 kHz sampling rates at 42.5 kHz signal bandwidth and overload detection.

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automotive
testing expo 2007
europe

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SPRING EDITION

I am proud that the various articles in this newsletter show that we are fully committed to this mission statement. Here are some examples:

The MINIDAU® ADVANCED is a very innovative product because it has features that no other manufacturer can offer at the moment. At the same time, we fulfill the requirement to protect the investments of our customers since every MINIDAU® we have sold so far can be converted into a MINIDAU® ADVANCED.

Nxt has become very successful over the last 12 months. Four out of five manufacturers of in-dummy DAS systems have realized that the distributed approach is the solution of the future, and Nxt customers know that they have made the right decision.

We have an agreement with the owner of MSC Automotive GmbH (Schwieberdingen, Germany) to take over 100% of his shares effective July 1st. We are extremely happy about this development since the facility in Schwieberdingen will enable us to provide our customers extended service in the areas of dummy integration and transducer calibration.

Furthermore, we will now be able to provide our customers the complete measurement chain from the sensor to the software, including all necessary cabling and electronics.

In the past, customers with limited system requirements (e.g., small sled systems) or limited budgets had to buy products that have not been designed originally for on-board crash testing because of price. Now Kayser-Threde offers the EcoDAU – a new economical system which gives these types of customers the chance to buy a high quality on-board system at a reasonable price.

Since founding the Crash Facility Alliance last year, we have developed innovative solutions such as the Smart-Track and have been able to get a cooperation agreement with Siemens in the area of AC and DC motors.

I hope you are as excited as we are with all the new developments and innovations that we came up with over the last 12 months. I am sure you can agree with me when I say: *"Kayser-Threde will be strong and reliable for the crash test community for many more years!"*

Gerhard Haas

Director Automotive, Kayser-Threde GmbH ■

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THE CHAMPIONS

The standard MINIDAU® which we renamed the MINIDAU® CLASSIC, can be upgraded partially or fully to MINIDAU® ADVANCED technology.



New product line: EcoLINE

The EcoDAU is the first product from the new EcoLINE. The EcoLINE was designed for low budget crash test applications. The EcoDAU has a simplified design concept, but nevertheless fulfills all requirements for crash testing. Despite this simplified design, the customers get the same reliable Kayser-Threde MINIDAU® quality.

Please contact the Kayser-Threde sales team for additional information about the MINIDAU® Classic, MINIDAU® ADVANCED and EcoDAU. ■





NXT – A TRUE SUCCESS Over 3000 MICRODAU® Channels Sold

Kayser-Threde is proud to report that our **nxt** and MICRODAU® technology is now used in over 20 automotive-based companies (car manufacturers, safety system suppliers, and EURO-NCAP labs) throughout the world.

Our initial sales for the **nxt** in-dummy data acquisition system were for specialized applications such as motorbike tests, ejection seat tests, and side impact dummies for R&D.

Now the main **nxt** business has focused on upgrading existing dummy fleets, mainly the H-III family. For customers who are faced with an increasing amount of tests, the investment in a **nxt** system is based on reducing the test setup times. According to feedback from our customers who are running multiple tests a day using the **nxt** system, the time savings per test is 30 to 45 minutes!

Kayser-Threde is focused on advancing the success of the **nxt** system by continuing our design efforts to integrate **nxt** solutions into new dummies like ES-2, SID-IIs, BioRID, and WorldSID.

Kayser-Threde is pleased to announce the order of two WorldSID **nxt** dummies by PSA Peugeot Citroën. In addition, PSA Peugeot Citroën will upgrade four H-III 50th dummies with **nxt**. The total number of **nxt** MICRODAU® channels purchased by PSA is almost 400.

With PSA Peugeot Citroën, Kayser-Threde gains another user of **nxt** who is convinced that the design of the **nxt** in-dummy system as well as the compatibility to the existing MINIDAU® system and CrashDesigner software makes for a powerful system. ■

INTERVIEW with Mr. Jean Friry

(crash facility engineer at PSA Peugeot Citroën):

“Why did you select **nxt for the WorldSID and for the H3?”**

“Currently, two data acquisition systems are in use at our crash test sites:

- the MINIDAU® for application in crash vehicles, and
- the MICRODAU® for dynamometric tests (Kistler crash wall).

Our decision to choose the **nxt** system was focused on ensuring optimum compatibility of the dummy instrumentation with our current data acquisition system while preserving system homogeneity. Furthermore, we have had quite a positive experience in using the Kayser-Threde crash data acquisition system due to its high reliability.

We also plan to upgrade some of our Hybrid-III dummies to the **nxt** version because it appears to us that data acquisition channels mounted internally in the dummy will significantly enhance our efficiency (e.g., saving time while connecting the dummies for the tests).” ■



WorldSID *nxt*



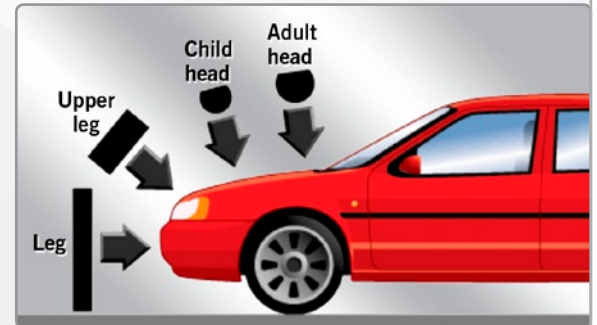
**NXT
Pedestrian Test Solutions**

After offering the wireless FMH solution two years ago, our customers have requested a similar solution for the pedestrian tests as required by EuroNCAP and JNCAP. Our customer's main requirements are to reduce the influence of the sensor cable and to keep the high reproducibility experienced with the existing wireless FMH from Kayser-Threde.

For more than one year, Kayser-Threde engineers have worked with users and sup-

pliers of pedestrian test systems to create a reliable design. We are now pleased to announce the availability of a wireless system for all head forms (child, adult, ACEA, etc.) and the leg impactor.

The system consists of a complete and independent 3-channel data acquisition system based on the MICRODAU® technology from Kayser-Threde and a self-contained power supply for up to 19 seconds of recording. The electronics and power supply are integrated into the head and leg forms, while the USB connection is provided via cable or mating surface.

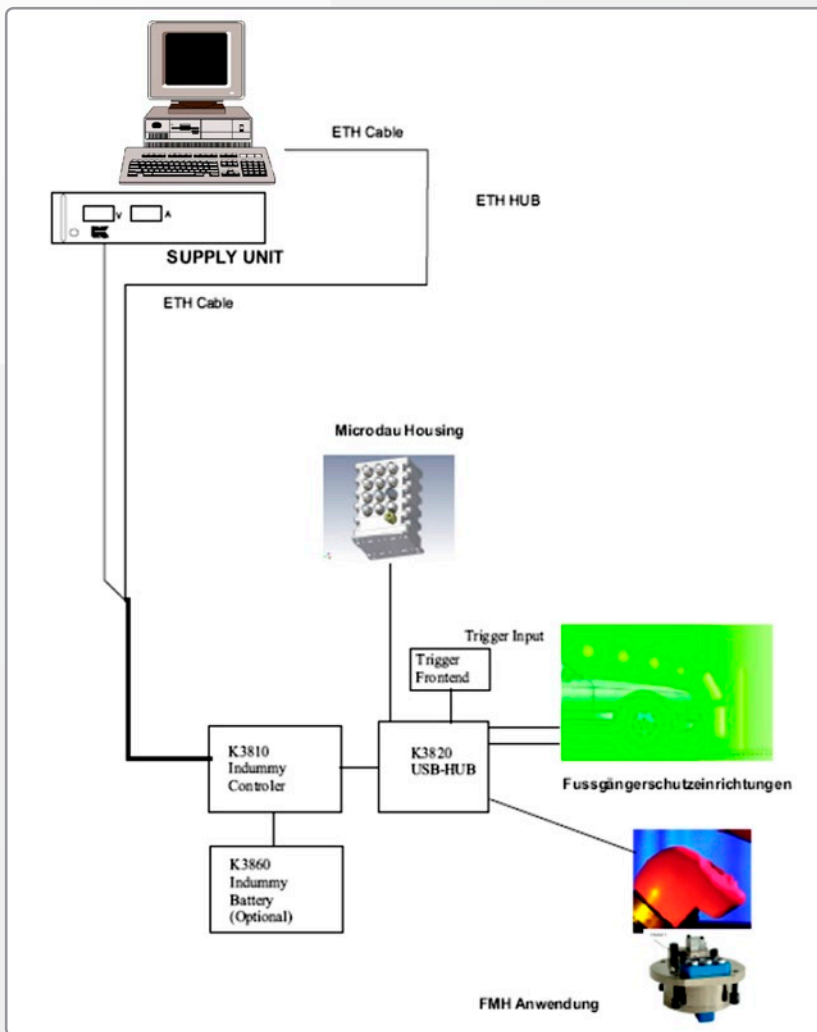


nxt – Pedestrian Test Solutions

During the preparation phase, the MICRODAU® is connected via USB. If a trigger for synchronization of additional systems such as high speed cameras is required, an additional MICRODAU® can be installed to measure the trigger. Either by this trigger or when the USB connection is disconnected, the MICRODAU® starts recording data for up to 19 seconds at a 20kHz sampling rate. After the test, the system will be reconnected to the USB bus and all data can be downloaded from the non-volatile memory.

The system is controlled by a small size **nxt** controller with USB and Ethernet interfaces. This controller can be positioned close to the impactor or in a stationary system such as the K3700S stationary MINIDAU®.

If the application is based on one MICRODAU®, all necessary parameters can be programmed with very easy-to-use control software. If more than one MICRODAU® is being used in the system, then our CrashDesigner software provides the capacity to execute a reliable test. ■



System concept wireless solutions



SELF DESCRIBING SENSORS
ATI – Advanced Transducer Information

Finding efficient ways to handle sensor calibration and setup data is a necessity for today's crash facilities. With the increased amount of crash testing required, short setup times for crash test dummies and sensors is crucial. In addition, the sensor information must be able to be transferable in an easy and reliable way so that dummies and sensors can be shared between laboratories. Incorporating the sensor information directly with the sensor is a good method to achieve these goals.

For those customers using the Kayser-Threde **Nxt** in-dummy data acquisition system, the capability to store sensor information at the sensor is already available through the 30MB of available memory onboard the **MICRODAU®**.

Our **MINIDAU®** users can also take advantage of storing their sensor information with their sensors. Since its inception, the Kayser-Threde **MINIDAU®** provided the possibility of reading the unique sensor ID from the original Dallas ID chips.

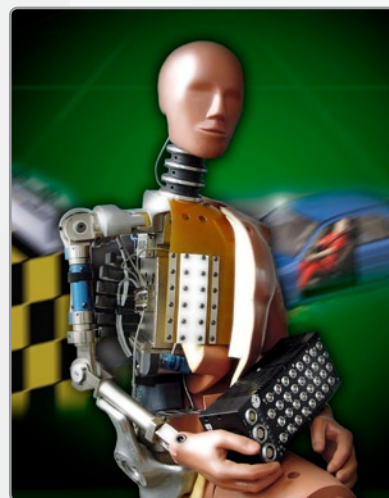
The latest versions of the Dallas ID chips provide 4 to 16kb of memory for storing sensor information based on TEDS or customer-specific data. To utilize this increased capability, we offer a new feature called Advanced Transducer Information (ATI). With ATI, all of the existing **MINIDAU®**s can be upgraded to read this additional amount of information.

Our CrashDesigner software supports ATI by handling the sensor information through either

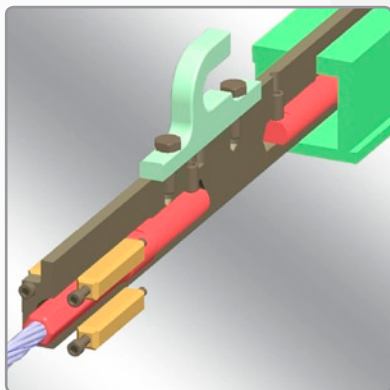
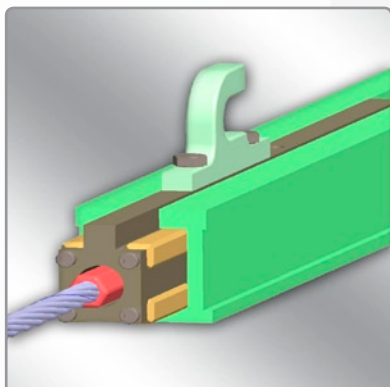
1. Transferring the sensor information in the test preparation database (sensor database), or
2. By using CrashDesigner+ (test execution) to directly transfer the sensor information independent of the sensor database. CrashDesigner+ can also be used to add or edit test specific information.

As another option, Kayser-Threde offers a USB device to transfer sensor information from the sensor database or write directly to the Dallas ID chip.

These new features will help our customers reduce their test setup time. ■



ATI – Advanced Transducer Information



Smart-Track

**CFA
Smart-Track**

For a solution for unobstructed filming in film pits, the Crash Facility Alliance (CFA) of Kayser-Threde, offers the Smart-Track rail system.

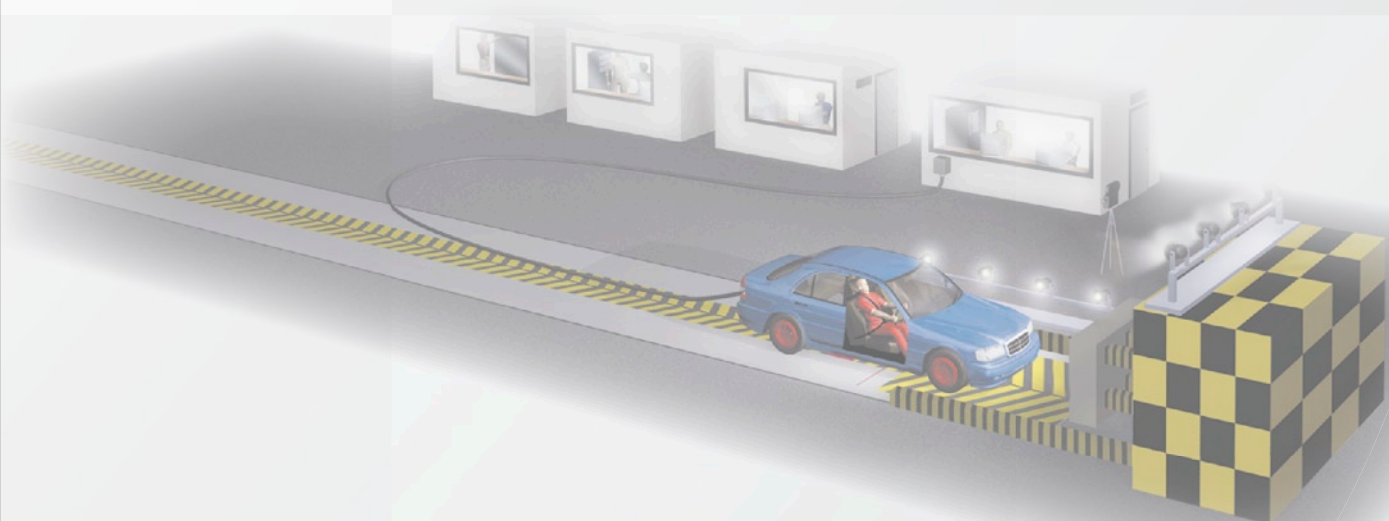
To minimize the restriction on vision, a special profile track with a width of approximately 80mm provides precise guidance of the vehicle via a specially designed sliding trolley. ■

**CFA
Partnership with
Siemens AG**

Kayser-Threde is proud to announce a partnership with Siemens AG, the world market leader of electrical drives.

Since the foundation of the Crash Facility Alliance, Kayser-Threde has offered AC and DC propulsion systems from Siemens AG in Frankfurt.

With Siemens AG, Kayser-Threde has an experienced and well-known partner in the field of electrical propulsion systems for crash facilities. Its worldwide service network will be a big advantage for our future CFA customers! ■





SE-SYSTEMS

User Meeting in Seoul, Korea

SE-Systems Hosts a Successful Kayser-Threde User Meeting in Seoul, Korea.

Saeyang Engineering Systems, the Kayser-Threde representative in Korea, organized a user meeting for our Korean customers at the Marriott Hotel in Seoul.

Customers from Delphi-Sungwoo, GM-Daewoo, Katri, KIDI, KIA, Renault-Samsung, and SIT Daewoo participated in the meeting. In addition, representatives from Kistler, IST, and AICON took the chance to present their products. ■



KT OFFICE CHINA

Kayser-Threde Trading (Shanghai) Co., Ltd.

After opening a Representative Office in China in 2004, Kayser-Threde has now received an official business licence from the Chinese authorities for a wholly foreign-owned enterprise (WFOE).

This new subsidiary company, Kayser-Threde China, will be allowed to operate independently in the Chinese market. Kayser-Threde China can now offer extended maintenance and calibration services with faster response times. Another benefit to our customers is that they can directly pay in Chinese currency.

Leading the new office is Mr. Liu Minzhi, Deputy General Manager for Kayser-Threde China. Mr. Liu has several years of experience in selling crash test equipment. In a very short time, the Kayser-Threde China office has added the following Chinese customers to our growing list of worldwide satisfied clients:

- VW Shanghai
- NAC Xiangfan
- CATC Chongqing
- FAW Changchung
- Autoliv Shanghai
- Jinheng Automobile
- SMVIC Shanghai
- East Joylong Motor
- Yanfeng Key Automotive Safety
- CATARC.



Kayser-Threde China Trading License



Our team at the Kayser-Threde China Office

Please visit our Chinese website
www.kayser-threde.cn



**INTRODUCING
MSC Automotive**

History. Since 1996 the name MSC Automotive stands for premium quality products in crash measurement technology. MSC started with accelerometers and displacement sensors which were complemented later by force sensors. The production was from the beginning and is still located in Schwieberdingen near Stuttgart. Starting from July 1st, 2007 MSC will be a daughter company of Kayser-Threde to supplement their product offering.

Expansion MSC. Within 10 years the number of employees has grown from 2 to about 45 today. In the same time the product range has increased rapidly and incorporates hundreds of products for the instrumentation of dummies and vehicles for crash tests. The strength of MSC is to customize these products to customer wishes.

New expertises. To strengthen the trust of the customers into the MSC products, MSC established an independent calibration laboratory in 1998. In 2003, another laboratory for the calibration of physical dimensions was added in Sindelfingen onsite at a customer development site. The laboratory is accredited for the physical dimension force.

Innovative Products. MSC is known for high quality sensors and cables. Our broad product range is complemented by innovative developments in traditional measurement technology especially in the area of in-dummy cabling systems. Today still forward-looking is the in-dummy data acquisition system developed in 2000. This system has reliably operated in a motorbike dummy since 2001 and since 2002 in a number of dummies from the H3 family.

New development from MSC Automotive – micro mechanical resistive Sensor DIE for crash measurement applications. To strengthen its world-wide market position MSC Automotive has developed its own micro mechanical resistive sensor DIE in Germany over the last 2 years. Meanwhile this DIE is available in different design variants and it is the base of all accelerometer types from MSC Automotive for crash test applications. The first accelerometers that are introduced in this article are the well-known and now re-designed miniature accelerometers 126M/CM and 126C/CM. Model 126M is a passive full bridge, whereas Model 126C has additional electronic features like active temperature compensation and stabilization of the bridge voltage.

Technical specifications:

- Measurement range 700 g and 2000 g
- Low transverse sensitivity
- Miniature accelerometer with 1 g weight
- Mechanically compatible with SA-572-S4
- Very good thermal stability
- Wide frequency bandwidth 0..4000Hz (5%)
- High shock resistance of 5000 g
- Phase response to SAE requirements

The accelerometers 126M/CM and 126C/CM are designed for the all-purpose crash test application in the dummy and at light structures in the vehicle.

MSC Automotive has developed a family of angular rate sensors based on MEMS to widely cover the whole range of applications in crash test. For application in dummies the model 2830A/ARS or 2831/ARS are the right choice. They are available with different measurement ranges from 300 to 5000 0/sec. The model 2830/ARS has a bandwidth up to 400 Hz, with integrated identification module based on a Dallas-Chip.



The model 2831/ARS is filtered at 100 Hz and has an integrated identification module called MSC UPS module. For applications where heavy metallic shocks or vibrations are expected for example at vehicle structures MSC has developed the uni-axial high performance angular rate sensor 2816/ARS and the tri-axial 2836/ARS. These sensors are showing no influence of the linear acceleration onto the signal. Real crash tests have proven that the sensors measure perfectly the angular rate at car body locations where linear accelerations up to 200–300 g appear. The measurement range is 1500 0/sec and the 2836 can be equipped with an integrated tri-axial high performance accelerometer model 312 as option. As identification modules either Dallas chip type or the MSC UPS module type are available. ■