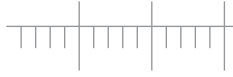




The Analysis System for Passive Vehicle Safety

XCrash

Reliable Standard Software for Innovative Vehicle Development



Crash tests and other passive safety tests play a key role in the development of future vehicles and their components. They provide proof that the required safety standards and protection criteria have been met or even exceeded. They also help to optimize safety systems for defined target corridors and development strategies. The test requirements and test regulations are constantly becoming more complex and require powerful tools for data evaluation. X-Crash is the software that enables you to solve your tasks easily and reliably.

Legally Compliant Test Evaluation

X-Crash provides comprehensive support for vehicle manufacturers, suppliers and crash laboratories by analyzing and reporting a large variety of safety tests according to current laws and regulations. The program has been under constant development since the mid-1990s and is now the world's leading standard system for automated test evaluation.

The Euro NCAP (European New Car Assessment programme) organization and other new car evaluation programs such as ANCAP (Australasian New Car Assessment Program) heavily rely on X-Crash. For all crash laboratories accredited by Euro NCAP, the software is mandatory as their evaluation system. The X-Crash ATD program, which was developed specifically for dummy calibration and certification tasks, is also highly regarded worldwide. X-Crash ATD is the standard used by the Insurance Institute for Highway Safety (IIHS).

Components in Focus

X-Crash not only allows you to evaluate tests of complete vehicles, but also tests of safety-relevant components such as restraint systems directly according to European and international standards.



With X-Crash, your test data analysis will be reliable, standards-compliant and suitable for comparisons.

Crash Tests
Pedestrian Protection
Sledge Tests
Component Tests

Turnkey but Still Flexible

X-Crash was designed to meet your requirements, from the initial inspection of the data to creating the final report. Both individual tests and complete test series can be quickly evaluated and even compared in a reproducible way. The turnkey package contains a large number of internationally applicable crash regulations and evaluation methods. At the same time, X-Crash offers powerful customizing options: User interface, dialogs, analysis algorithms and report layouts can be easily adapted to



individual limit conditions and specifications either via parameterization or by scripting.

Open for Data Exchange

The common ISO MME data format facilitates collaboration and ensures the quality of the results. The convenient search and filter functions of X-Crash allow you to quickly find data records with minimal effort. In addition to the ISO MME format, data exchange is also possible using ISO (EGV) and DIAdem DAT. Access to other formats and databases such as ASAM ODS (VSIM) is also supported.

Always up to Date

X-Crash combines decades of expertise and experience in the areas of measurement data analysis and vehicle safety. Our crash specialists work closely with standardsetting institutions and consumer protection organizations, such as Euro NCAP. Based on these relationships, the software is continuously adapted to current and future test requirements in close cooperation with our users. With X-Crash you are fully prepared to meet current and future analysis needs.

Pedestrian Protection Tests

Passive pedestrian protection is one of the main criteria in assessing vehicle safety. X-Crash supports both legal and consumer protection requirements in the safety assessment of the front structure of a vehicle. The regulations for head impact tests and tests with the FlexPLI leg test piece are also integrated.

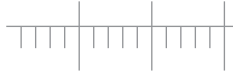
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"We decided on X-Crash because all crash-relevant evaluation criteria were taken into account and the software is kept continuously up to date."

Richard Schram, Technical Manager Euro NCAP

A Comprehensive Solution from Data Viewing to Reporting Results



Raw data is usually checked for measurement errors and plausibility before it is released for the analysis process. The modules QuickView, QuickEdit and QuickCalc in X-Crash offer powerful functions for interactive data viewing and editing as well as for manual calculation of channels and result values. Numerous functions make it easier for you to view and evaluate your signals. Since many different data formats are supported, edited data can be saved or exported individually.

Standard Evaluation at the Push of a Button

The standard X-Crash package contains an extensive formula library with predefined analysis and reporting functions that meet international regulations, laws and evaluation methods.

Add Your Own Analysis and Reporting Methods

In addition to the evaluation algorithms supplied with the software, you can create your own, project- and customer-specific macros using scripting or DIAdem

functions and add them to the macro library.

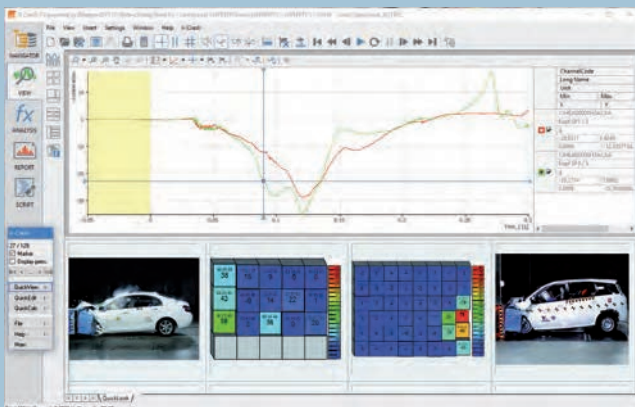
Better Overview, More Efficient Processes

X-Crash provides a clearly structured macro library. Standard libraries with peer-reviewed evaluation macros are supplied and maintained by measX. Users can additionally organize company, project or user-specific libraries themselves. These libraries can consist of user defined macros as well as standard macros according to the needs of the user. It is even possible to assign specific default evaluation macros.

Data Viewing

QuickView

x Synchronous viewing of measurement channels and videos



- x Representation of load cell walls as video feeds
- x Marking of already viewed channels
- x Easy comparison of multiple tests (channels and videos)
- x Creating screenshots and videos of the overall view
- x Creation of report pages with video images

Data Processing

QuickEdit

- x Automatic checking of the measured signals (e.g. polarity testing, amplitude testing, spike search)
- x Simple editing of channels (e.g. trigger and offset correction, inverting, removal of spikes)

QuickCalc

- x Calculation of sum forces for the load cell wall
- x Calculation of channels (e.g. resultant, AVS, formula, HoF, AHoF)
- x Calculation of injury criteria (e.g. HIC and 3ms)



XCrash

Comprehensive plausibility checks of the raw data and a largely automated report generation process guarantee a high degree of security and comparability.

Automated Processes

The evaluation processes run largely automatically. Nevertheless, you can intervene and make adjustments at any time. If a fully automatic evaluation is required, the evaluation can also be triggered externally, for instance from a database.

Comparative Analysis

Thanks to an automatic channel search, you can very easily compare entire test series even with different impact sides or driver positions – and output them to a report.

Individual Reports

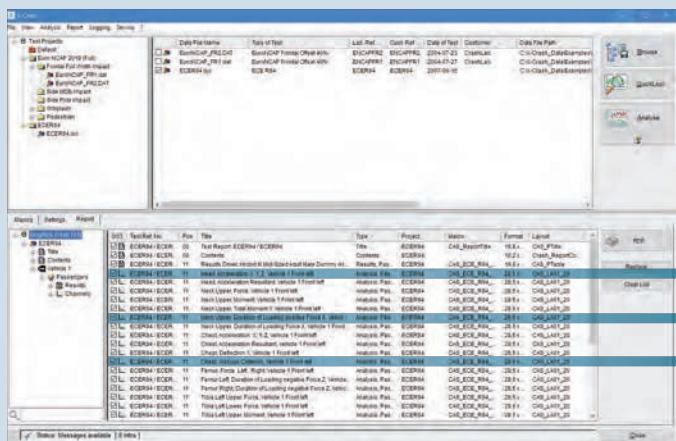
X-Crash provides a variety of analysis functions, including legislative regulations and consumer organization standards. The analysis results are presented in easy-to-read reports with a cover sheet, an automated table of contents, individual test results and summary page. You can use the proven standard layouts or implement special requirements in your own custom layouts. Finalized reports can be exported to a number of different formats, such as PDF, PowerPoint, PNG, JPG or EMF files.

Proven Standards

X-Crash is based on the DIAdem software by National Instruments in combination with our development platform X-Frame. These tools provide a platform of comprehensive basic functionality for interactive and automated data processing, enriched by convenient customizing options and special functions tailored to the automotive safety sector.

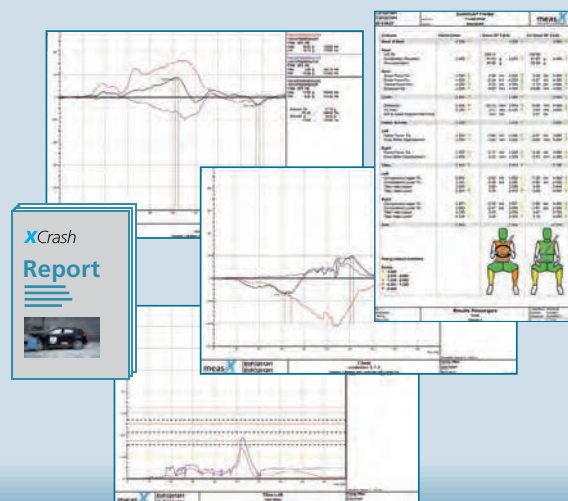
powered by
XFrame

Analysis



Test report contents are compiled via an easy-to-use menu.

Report



Many internationally laws, crash regulations and evaluation methods are included in the standard package and are updated continuously.

x ANCAP
x C-IASI
x C-NCAP
x Euro NCAP
x FMVSS
x Global NCAP

x IIHS
x JNCAP
x UN/ECE
x US NCAP
... and more international standards

Crash Test Dummies Certified

X-Crash is not only successfully used for the analysis of vehicle safety tests, with the ATD program it is also used to support vehicle manufacturers and certification laboratories in the evaluation and calibration of crash test dummies according to the latest legal requirements. All common dummy types and methods for testing their biomechanical properties are supported. X-Crash ATD can be seamlessly integrated into multiple automated test systems for dummy certification.

A Specialized Tool

X-Crash ATD offers a user interface tailored to the tasks in the dummy laboratory with a specially adapted evaluation library. The system also includes an easy-to-use test administration tool. X-Crash ATD supports the ISO MME, ISO (EGV) and DIAdem DAT data formats as well as the industry-specific "Equipment Exchange" (*.e2x) exchange format that was developed for equipment such as dummies and sensors. All tests belonging to a certification, including the corresponding sensor information, can be summarized in a report. Just like

X-Crash, it is possible to add your own extensions to the ATD software.

A Common Platform

X-Crash ATD is its own independent tool, but uses the same underlying technology as the X-Crash software. So the software is just as flexible as X-Crash and offers the same high quality of evaluation with detailed result reports according to specified standards or customer-specific requirements.



**X-Crash ATD
offers safety and flexibility
in dummy certification.**

- x** Regulation-compliant analysis
- x** Convenient customization features options
- x** Flexible data exchange (including via *.e2x)
- x** File-based data management
- x** Integration into automated test processes



A Reliable Partner for Your Success



We have a long-standing history of success and expertise in the field of vehicle safety testing, which can be witnessed by our enduring customer relationships, and the great trust placed in us by Euro NCAP. We are committed to your success.

Wide-Ranging Support

Our customer support team will help you from the initial installation of our tools to the final implementation and operation of your analysis system. The X-Crash service and maintenance contract includes professional support via our phone hotline (Central

European Time), a web-based ticket system and email. As part of the ongoing development, X-Crash is continuously optimized and extended. All customers with active service contracts automatically receive updates and upgrades.

Individual Development

We provide services to create custom evaluation macros, solve automation tasks or implement special functions, for example for the connection to an in-house data management system. We also support you with data import and export tasks.

Customer Training

We offer standard and customized training courses. We can provide custom onsite support for anything from solving your evaluation tasks to special application support.



X-Crash for Active Vehicle Safety

In addition to passive safety functions, the automotive safety concept also includes active safety functions. With X-Crash Zero, the X-Crash product family offers standard software for the evaluation of tests for

active vehicle safety. Automated analyses and reports according to current regulations accelerate test and validation processes for safetyrelevant assistance functions.

**Please call or email us
for more information
about X-Crash Zero.**

XCrash Zero



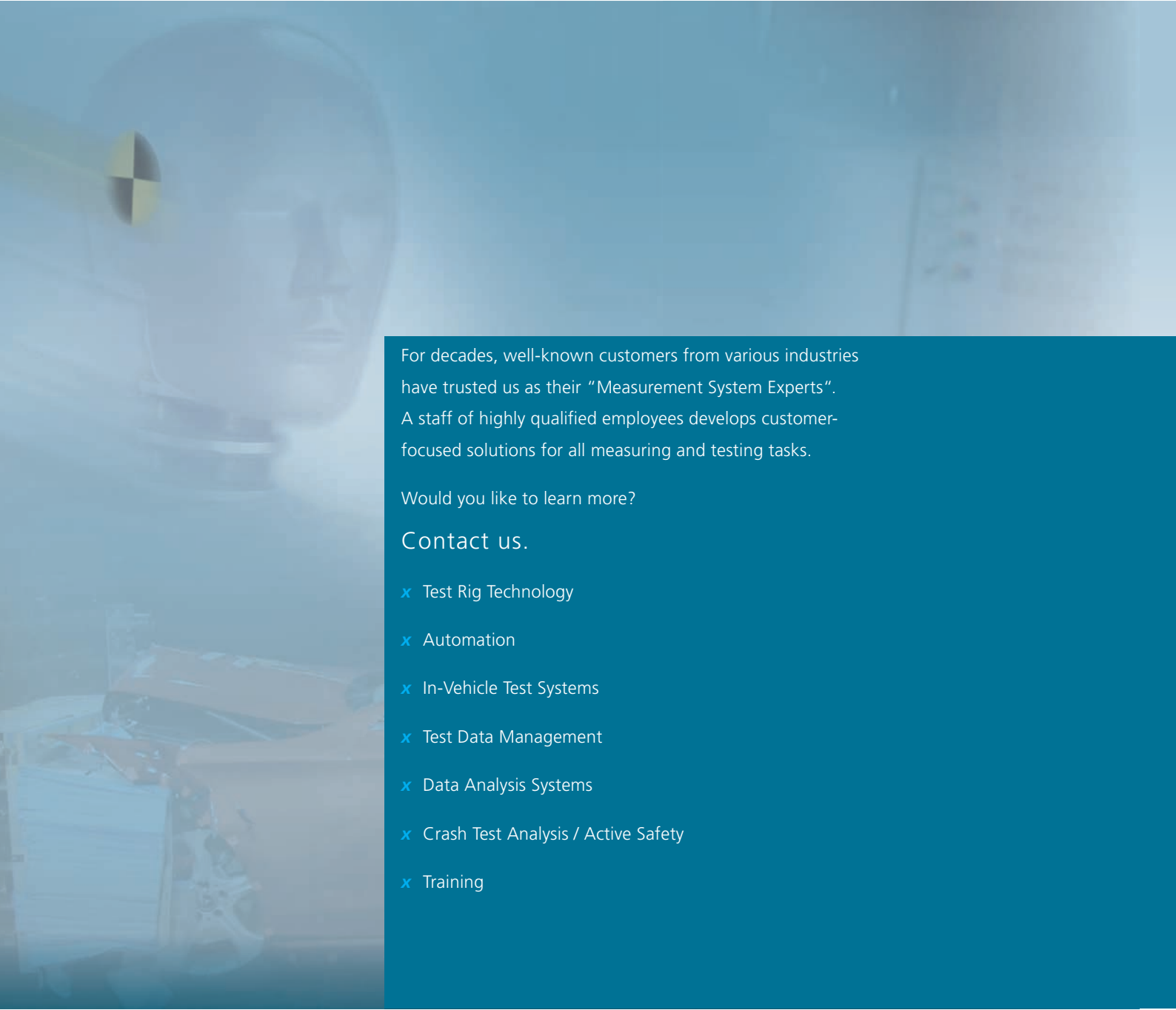
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**Benefit from the experience
of a team of professionals.**

We are here for you!

- x** Member of the Workgroup Vehicle Safety Data Processing and of ASAM e.V.
- x** Partner of National Instruments and Oracle
- x** Certified according to ISO 9001



For decades, well-known customers from various industries have trusted us as their "Measurement System Experts". A staff of highly qualified employees develops customer-focused solutions for all measuring and testing tasks.

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- x In-Vehicle Test Systems
- x Test Data Management
- x Data Analysis Systems
- x Crash Test Analysis / Active Safety
- x Training

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