

## Press release

### Leading-edge biofidelic dummy now available worldwide

CTS and Kistler decide to collaborate on realistic substitutes for the human body

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**Thanks to the combination of a biofidelic dummy and high-precision measurement technology, customers now benefit from greater scope for crash tests, product development, operational training and modeling or reconstruction of dynamic processes. The solution from CTS is now available through the Kistler Group's global sales network, and it can be equipped with individual in-dummy measurement technology from Kistler and additional sensor instrumentation.**

As well as significantly enhancing vehicle safety, ongoing advances in the development of crash test dummies are opening up new application areas. The PRIMUS biofidelic dummy from CTS offers an ideal solution for these purposes because it has bones, ligaments and joints that are largely modeled on those of humans; weight distribution, skin and skeletal structure are also very close approximations of the biological original.

To take one example: PRIMUS can be used for highly accurate reconstructions of accidents – not only in the automotive sector but also in other application areas such as the aviation industry, safety engineering, product tests, and recovery exercises for rescue services. In the military sector, PRIMUS is suitable for use in applications such as tests of bulletproof vests. During operation, PRIMUS behaves like an unconscious human being; it can be used in both standing and sitting positions with no need for further modifications. On request, PRIMUS can also be equipped with in-dummy measurement technology from Kistler, the Swiss market leader: combined evaluation of precise measurements and real damage supplies highly accurate and dependable test results for purposes such as expert reports and insurance cases, or to obtain certifications.

#### **Integrated data acquisition – made to measure**

Jens Wolking, Business Driver Vehicle Safety at Kistler, comments: "Thanks to the collaboration between CTS and Kistler, customers across the globe now gain access to a holistic high-end system for crash tests – and that's not all. This solution is highly versatile,

and it meets the most demanding requirements." Digital sensor technology from Kistler is fully integrated into PRIMUS to allow autonomous data acquisition without influencing the dummy. Implementation is efficient, with just one cable for the data logger that is installed in the chest area.

PRIMUS was developed by CTS in cooperation with the Dresden University of Applied Sciences. The developers focused particular attention on the structural design and the materials used in order to reproduce the effects of shock and pressure loads on the human body as realistically as possible. CTS operates its own in-house production facility at Münster in the Westphalia region of Germany, so each dummy can be individually equipped and flexibly adapted to customers' requirements: for example, individually designed measurement technology can be supplied, sections of tissue and bone can be specially adapted, and other functions can also be customized.

### **Customized design to suit the purpose of use**

Dr. Mirko Dobberstein, Managing Director of CTS, sums up: "Our collaboration with Kistler gives us the opportunity to market our biofidelic dummy throughout the world – and it also opens the way for us to develop new applications. Flexibility in the production of the dummies and also in equipping them with high-end measurement technology means that we can offer custom solutions to meet the very highest standards – adding up to an enormous step forward in the field of crash testing and even beyond!"

### **Image material (please name Kistler/CTS as picture source)**



The team that spearheaded the development of the PRIMUS biofidelic dummy (left to right): Dr. Mirko Dobberstein (Managing Director, CTS), Peter Schimmelpfennig (Managing Partner, CTS), Prof. Lars Hannawald (Dresden University of Applied Sciences) and Jens Wolking (Business Driver Vehicle Safety, Kistler).



PRIMUS features degrees of freedom of movement modeled on human movability. Sitting, standing and twisted body postures can also be implemented.



Bone substitute material imitates the mechanical properties of human bones (e.g. breaking strength). Soft tissue replacement material is also similar to human tissue (e.g. hysteresis). Tendons and cruciate ligaments in knee and arm joints correspond to human strength levels.



Positions for the in-dummy sensors from Kistler include the head, chest area and hip. A LAN cable allows readout from the data logger positioned in the chest area.

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#### About the Kistler Group

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge. Unique sensor technology from this owner-managed Swiss corporation helps to shape future innovations not only in automotive development and industrial automation but also in many newly emerging sectors. Drawing on our extensive application expertise, and always with an absolute commitment to quality, Kistler plays a key part in the ongoing development of the latest megatrends. The focus is on issues such as electrified drive technology, autonomous driving, emission reduction and Industry 4.0. Some 2,200 employees at more than 60 facilities across the globe are dedicated to the development of new solutions, and they offer application-specific services at the local level. Ever since it was founded in 1959,

the Kistler Group has grown hand-in-hand with its customers and in 2019, it posted sales of CHF 466 million. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.

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#### **About CTS**

CTS is the international service provider of choice when it comes to crash tests for accident reconstruction and standardized crash tests for road restraint systems. As a competence center for crash tests, CTS realistically reconstructs road traffic accidents on its 30,000-m<sup>2</sup> crash test site and carries out road restraint system testing in compliance with standardized certification regulations. CTS has held DAkkS accreditation for these tests since 2013. For several years, CTS has focused intensively on the development and production of crash test dummies in response to growing demand for leading-edge dummies that can be utilized flexibly. CTS can draw on its in-depth technical expertise in this field, and its key strengths also include the ability to respond flexibly and swiftly to its customers' needs. Requirements for dummy production and test series can be met promptly, even when the level of complexity is high.