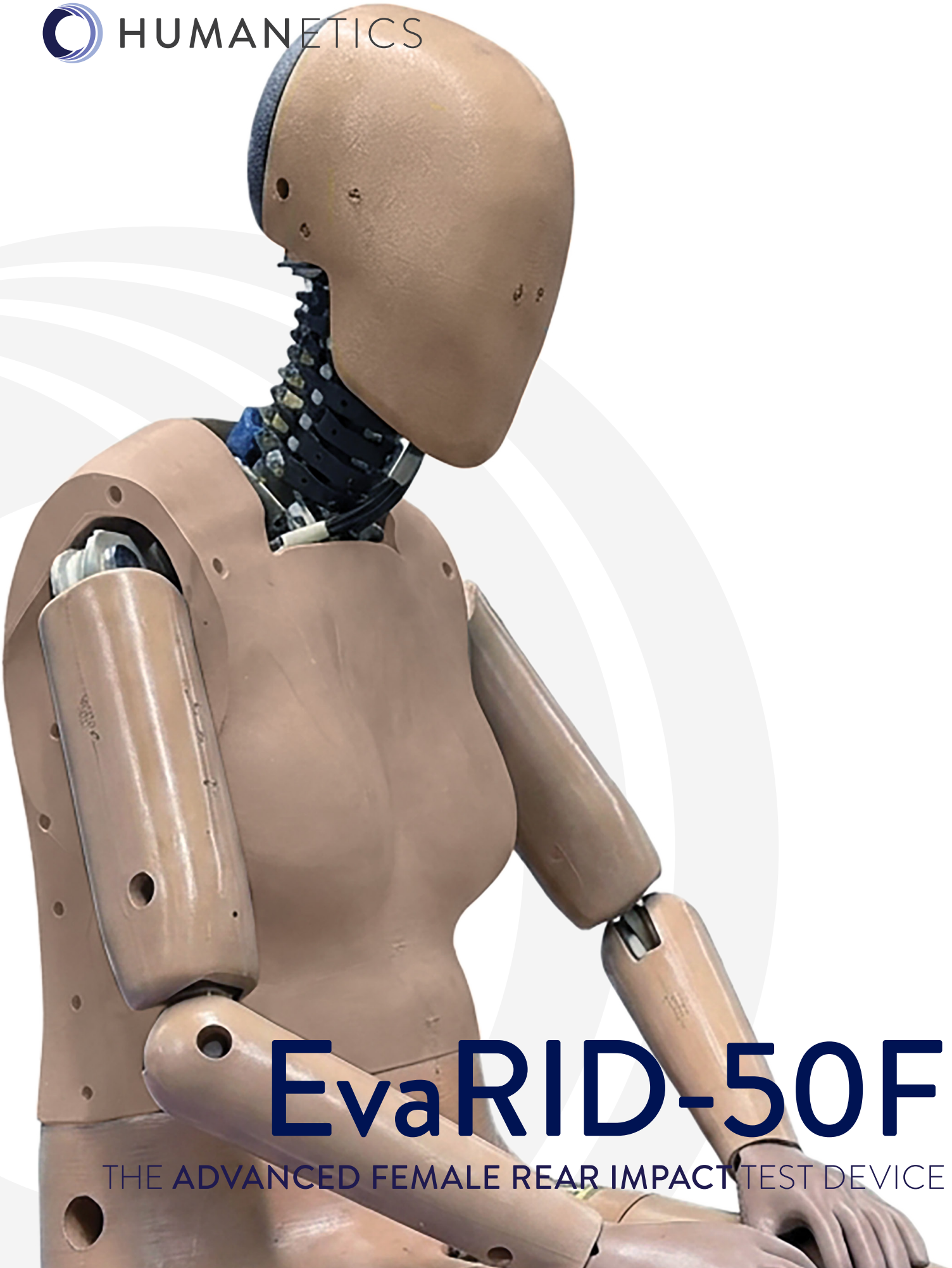
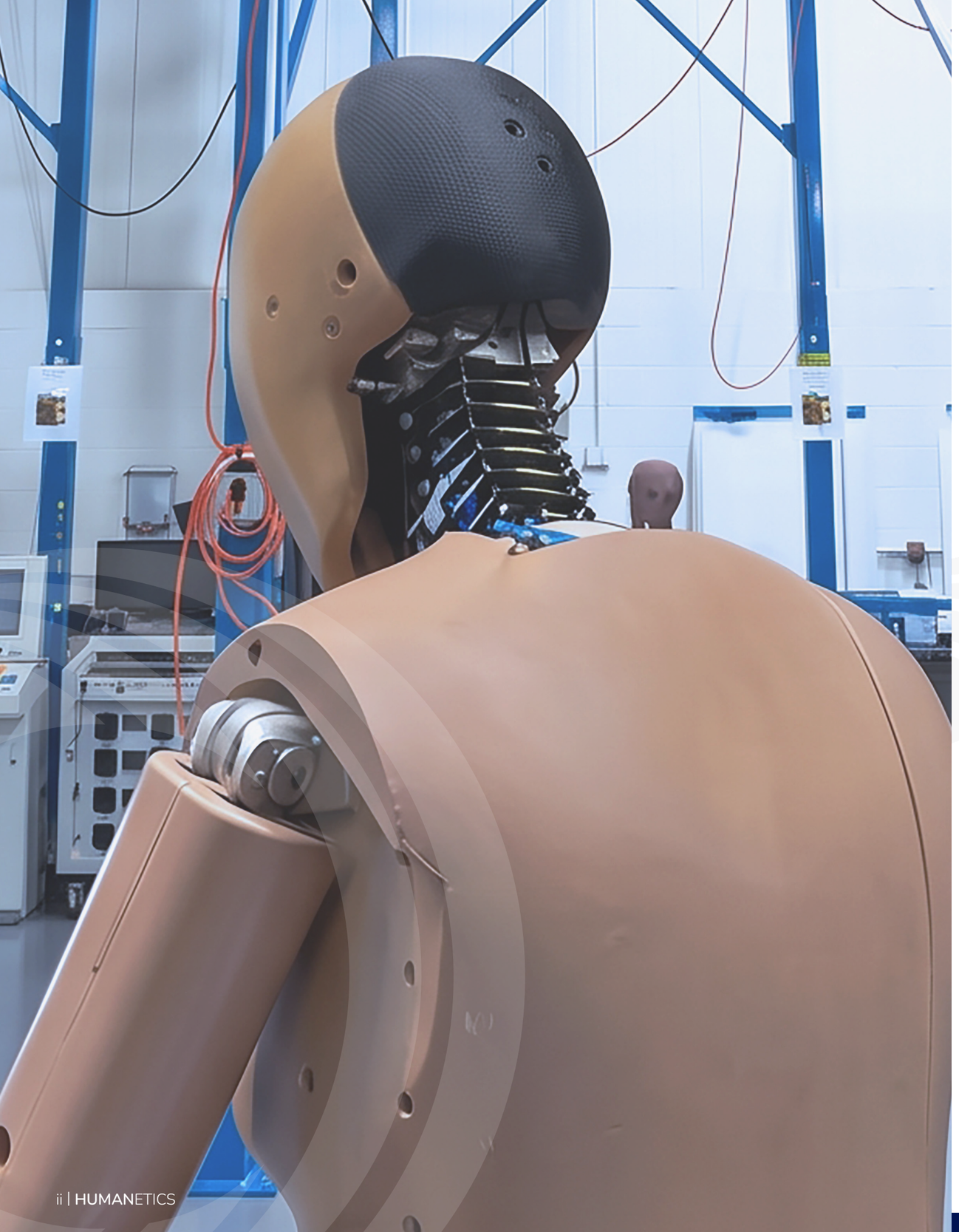
HUMANETICS



EvaRID-50F

THE **ADVANCED FEMALE REAR IMPACT** TEST DEVICE



HUMANETICS

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THE NEXT GENERATION

Anthropomorphic Test Device (ATD) technology has evolved to develop a next generation of ATDs that can better replicate a person's physiology.

These ATDs have more sensors in the abdomen and pelvis to measure seat belt loads during impact, more facial sensors and more ways to measure chest compression to reduce the risk of rib fractures. Data provided by advanced ATDs could help tune car design for safer and more effective seat belts, headrests, air bags, pedals and cabin structures.

OUR LINEUP OF NEXT GENERATION ATDs:

THOR-50M	THOR-5F
THOR-AV-50M	THOR-AV-5F
WorldSID-50M	WorldSID-5F
OBESE MALE	ELDERLY
BioRID-II	EvaRID-50F
	Q-SERIES CHILDREN



THE SAFETY GAP IN **REAR IMPACT TESTING**

Vehicle safety has advanced. Representation must advance with it.

Automotive engineers have made remarkable progress in reducing injuries through better seats, head restraints, vehicle structures, restraint systems, simulation tools, and test methods. Yet one significant gap remains.

Rear impact safety development has historically relied on the BioRID-II, an Anthropomorphic Test Device (ATD) representing a 50th percentile adult male. While BioRID-II has helped the industry improve rear impact protection, it does not represent the size, mass distribution, spinal geometry, posture, or dynamic response of an average adult female.

That limitation matters because female occupants do not experience rear impacts in the same way as male occupants.

Research shows that females experience whiplash injuries between 1.5 and 3 times more frequently than males[1]. Existing whiplash protection systems have also been reported to be approximately 12 percent less effective for females[2]. Mid-sized occupants experience the highest frequency of whiplash injury for both sexes, making the absence of a representative average female rear impact ATD especially important.

These statistics reveal a central challenge for vehicle safety engineers: **How can a seat or head restraint be optimized for female occupants when female rear impact response cannot be directly measured with representative physical hardware?**

EvaRID-50F was developed to help answer that question.

1. *Carstensen, T. B., Frostholm, L., Oernboel, E., Kongsted, A., Kasch, H., Jensen, T. S., et al. (2011). Are there gender differences in coping with neck pain following acute whiplash trauma? A 12-month follow-up study. Eur. J. Pain 16, 49–60. doi: 10.1016/j.ejpain.2011.06.002*
2. *Kullgren A, Krafft M. Gender Analysis on Whiplash Seat Effectiveness: Results From Real-World Crashes. Proc. IRCOBI Conf.; 2010; Hanover (Germany)*

THE NEXT GENERATION OF SAFETY MUST BE DESIGNED AROUND THE OCCUPANT

Modern vehicles are becoming more intelligent.

Sensors recognize the environment around the vehicle. Interior monitoring systems identify occupant position. Advanced restraint systems can adjust their response based on the severity of a crash. Digital development allows engineers to evaluate more conditions earlier in the design process.

The future of occupant safety is increasingly adaptive, personalized, and data driven.

However, an adaptive safety system is only as effective as the human data used to develop it.

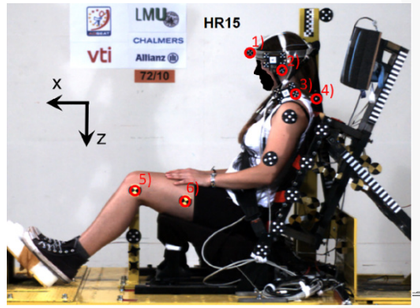
This is particularly relevant in rear impacts, where relatively small differences in occupant geometry, seating posture, head restraint distance, spinal alignment, and seat interaction can influence head and torso motion.

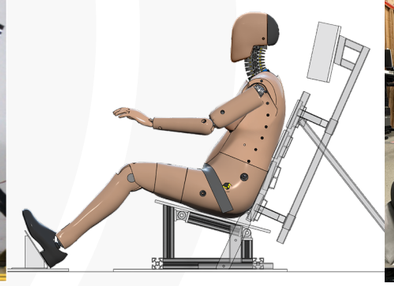
THE HUMAN DATA BEHIND INCLUSIVE SAFETY

Rear impact protection begins with understanding how the occupant moves.

During a rear impact, the seat accelerates the torso forward while the head initially remains behind because of inertia. The timing and interaction between the seat, torso, neck, head, and head restraint influence the occupant response.

Accurate evaluation requires a test device capable of representing those movements with meaningful biofidelity.





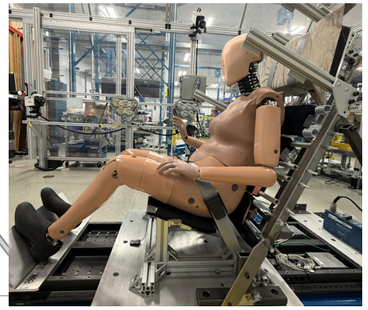


Image courtesy of Carlsson et al. 2021 Frontiers

EvaRID-50F provides engineers with a physical measurement platform developed around the anthropometry and rear impact response of an average adult female.

It allows vehicle designers to move beyond assumptions based solely on male test devices and begin evaluating how seat and head restraint designs perform for a more representative occupant population.

PARTNERSHIP AT THE CENTER OF PROGRESS

The development of EvaRID-50F builds on years of academic research, collaborative engineering, computational modeling, volunteer testing, and physical hardware development.

The original ADSEAT project brought together 12 partners under the European Community Seventh Framework Programme to study adaptive seat concepts intended to reduce neck injuries for female and male occupants.

Researchers at Chalmers University of Technology and engineers from Humanetics continued the work through development of the EvaRID V1.0 computational model and research into female occupant response.

In 2025, at CATARC's request, Humanetics began developing a physical EvaRID ATD for the planned C-NCAP 2027 rear impact test protocol.

This progress demonstrates what the industry can accomplish when manufacturers, researchers, regulators, test laboratories, and technology providers work toward a shared goal.

Safer vehicles for every body.

FUTURE OF REAR IMPACT **CRASH TECHNOLOGY**

Our EvaRID-50F rear impact Anthropomorphic Test Device (ATD) is the future of female rear impact safety testing, available today. EvaRID-50F incorporates major advancements in female biofidelity, sensing, instrumentation, and user handling. Developed to represent a 50th percentile adult female, it gives engineers a dedicated physical tool for assessing occupant motion, seat interaction, and potential injury response in rear impact environments.

With a stature of approximately 161.3 cm (63.5 inches) and a mass of approximately 62.3 kg (137 pounds), EvaRID-50F was developed specifically to represent the average adult female in rear impact testing. Its anthropometric foundation is based on the EvaRID V1.0 computational model, with the head, neck, thorax, pelvis, arms, and legs individually developed using published female anthropometric research data rather than applying a single scaling factor to an existing male ATD. This approach delivers a more representative combination of body segment dimensions, mass distribution, geometry, posture, and dynamic response.

THE **MOST ADVANCED** ATD EVER CONCEIVED FOR WIDESPREAD ADOPTION

Find out more
humaneticsgroup.com

EvaRID-50F is not simply a smaller male rear impact ATD. It incorporates significant engineering advancements across the head, spine, jacket, pelvis, instrumentation architecture, and overall serviceability. These innovations improve biofidelity while also making the ATD easier to maintain, adjust, instrument, and prepare for testing, helping laboratories increase efficiency without compromising measurement quality.

As the automotive industry moves toward broader occupant representation, OEMs, suppliers, researchers, and regulatory organizations need tools that support more than future compliance. They need reliable data that enables better engineering decisions today. EvaRID-50F helps engineers identify female-specific occupant response earlier in the development process, optimize seat and head restraint performance, strengthen correlation between physical testing and simulation, and reduce the risk of costly late-stage design changes.

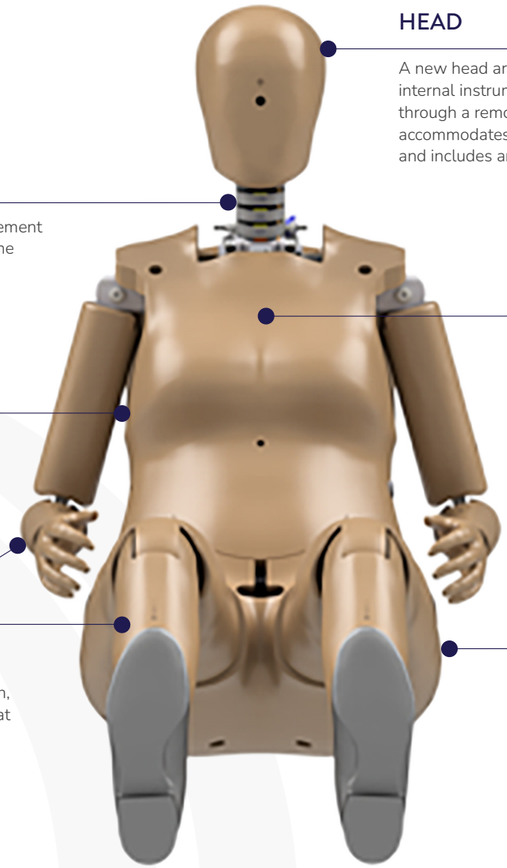
By combining representative female biomechanics with advanced sensing and practical laboratory usability, EvaRID-50F provides a future-ready platform for developing the next generation of rear impact protection and demonstrates a commitment to designing vehicles that better protect every occupant.



PRODUCT **SPECIFICATIONS**

KEY **FEATURES**

EvaRID-50F incorporates individually developed or adapted body regions to represent average female anthropometry and rear impact response.



HEAD

A new head architecture provides easy access to internal instrumentation and spring adjustments through a removable 3D printed skull. The design accommodates multiple accelerometer configurations and includes an improved skull cap contact switch.

NECK

A new upper neck load cell supports measurement of forces and moments transmitted through the upper cervical region.

THORAX

The thoracic structure works with the redesigned jacket to support representative torso interaction with the seatback during rear impact loading.

SPINE

The articulated spine includes engineering updates intended to improve assembly, durability, alignment, component replacement, adjustment, and instrumentation.

EXTREMITIES

The arms and legs follow the anthropometric basis of the EvaRID computational model, helping establish representative body position, mass distribution, and interaction with the seat environment.

PELVIS

The pelvis profile and flesh were developed to improve seated geometry, stiffness, material durability, and mass adjustment.

OCCUPANT REPRESENTATION	50th Percentile Adult Female
HEIGHT	161.3 cm (63.5 in)
MASS	62.3 kg (137 lbs)
PRIMARY APPLICATION	Rear Impact Testing
INSTRUMENTATION CAPACITY	Up to 48 Channels
MEASUREMENT ARCHITECTURE	44 data channels + 5 Tilt measurement locations
DAS INTEGRATION	DTI and DTS Slice6

REDESIGNED HEAD FOR BETTER DATA & OPERATION

EvaRID-50F features a redesigned head with improved instrumentation access, expanded sensing options, and enhanced measurement capability to simplify testing and deliver more meaningful data.

FASTER LABORATORY PREPARATION

Quick access to instrumentation reduces setup, maintenance, and adjustment time between tests.

GREATER TESTING FLEXIBILITY

Multiple accelerometer configurations support a wide range of research and data acquisition requirements.

MORE CONFIDENT ENGINEERING DECISIONS

Enhanced sensing provides more complete occupant kinematics for evaluating seat and restraint performance.



IMPROVED HEAD RESTRAINT ANALYSIS

An upgraded contact switch accurately identifies head restraint engagement, helping optimize whiplash protection. The contact switch doesn't use conductive paint, so it improves longevity with decreased maintenance.

SIMPLIFIED TRANSITION

Compatibility with existing BioRID skull cap load cells protects current investments and eases adoption of EvaRID-50F.

IMPROVED SPINE ARCHITECTURE

EvaRID-50F features a redesigned spine with enhanced durability, simplified assembly, expanded instrumentation, and adjustable components to improve biofidelity and laboratory usability.

INCREASE LABORATORY EFFICIENCY

Simplified assembly and improved component access reduce maintenance time and streamline test preparation through quick-remove bumpers.

IMPROVE LONG-TERM DURABILITY

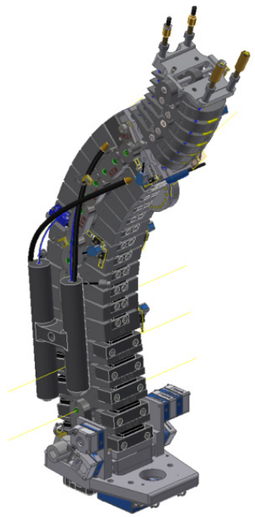
Plastic-lined bushings and updated locking mechanisms reduce wear, helping maintain consistent performance through repeated testing.

ENHANCE TEST REPEATABILITY

Bumper alignment features and new linkage locking mechanism provides more consistent component positioning for repeatable test setups.

CAPTURE MORE COMPLETE OCCUPANT RESPONSE

Additional load cells and measurement locations throughout the spine provide greater insight into torso motion and spinal loading during rear impact events.



ADVANCED JACKET DESIGN

EvaRID-50F features a jacket designwith the latest external surface geometry and improved materials from BioRID-II design to better replicate female occupant response while increasing durability.

EXTEND PRODUCT LIFE

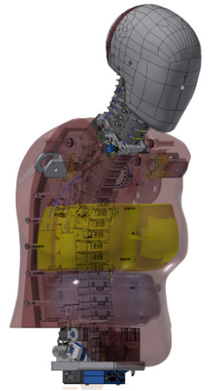
A new silicone formulation improves tear resistance and withstands repeated laboratory use, reducing maintenance and replacement costs.

IMPROVE BIOFIDELITY

Optimized material properties and mass distribution provide a more representative interaction between the torso, seatback, and restraint system.

INCREASE ENGINEERING CONFIDENCE

Controlled stiffness and hysteresis help deliver more consistent and repeatable occupant response across test programs.



SUPPORT BETTER SEAT EVALUATIONS

A more realistic torso response helps engineers better understand seat and head restraint performance during rear impacts.

OPTIMIZED PELVIS

EvaRID-50F features an optimized pelvis design with improved materials, adjustable mass, and refined stiffness to better represent female seating posture and occupant interaction.

REPRESENT FEMALE OCCUPANTS MORE ACCURATELY

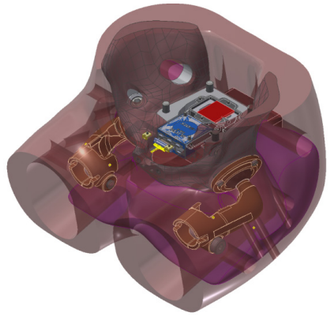
An optimized pelvis profile and seated height provide a more realistic occupant posture during rear impact testing.

DELIVER CONSISTENT PERFORMANCE

Improved stiffness characteristics help produce repeatable interaction between the pelvis and seat throughout a test program.

REDUCE MAINTENANCE REQUIREMENTS

Urethane flesh offers improved aging performance and minimizes shrinkage compared with traditional vinyl materials.



SUPPORT PRECISE DEVELOPMENT

Adjustable mass allows engineers to fine-tune the ATD while maintaining build consistency across multiple test devices.

BIOFIDELITY
ENGINEERS CAN TRUST

Anthropomorphic Test Devices (ATDs) are used to make critical engineering decisions about seat structures, head restraints, restraint systems, and occupant protection. To be effective, an ATD must respond like the person it represents.

Biofidelity measures how closely an ATD reproduces human motion during a crash. The closer its response is to human behavior, the greater the confidence engineers can have that test results will translate into real-world occupant protection.

EvaRID-50F was validated using female volunteer rear impact sled test data collected by Chalmers University of Technology. The evaluation compared the ATD's motion with volunteer response under low-speed rear impact conditions at two head restraint distances of 10 cm and 15 cm.

Validation included comparisons of key head and upper torso kinematics, including:

- Head and T1 displacement
- Relative head-to-torso motion
- Head and torso rotation
- Head and T1 acceleration

Using NHTSA's BioRank method, EvaRID-50F consistently achieved Good to Excellent biofidelity across multiple production ATDs and test conditions, demonstrating close agreement with female volunteer response.

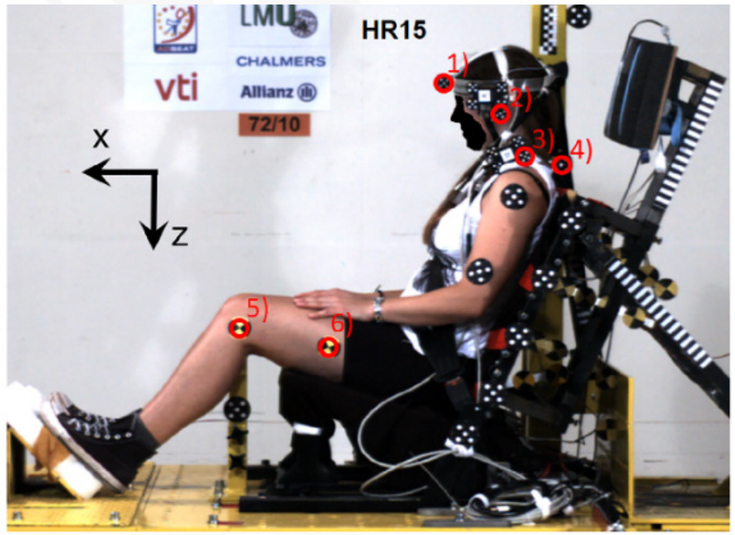


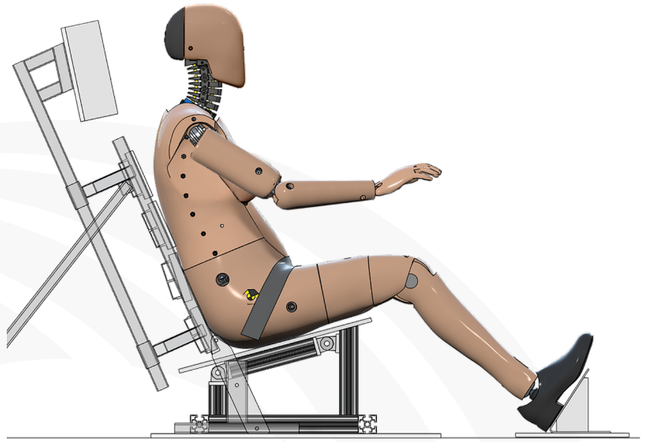
Image courtesy of Carlsson et al. 2021 Frontiers

PROVEN BIOFIDELITY PERFORMANCE

EvaRID-50F was evaluated using NHTSA's BioRank method, an objective assessment that compares anATD's response to established human volunteer response corridors.

The overall BioRank score of the ATD is 1.11, corresponding to Good Biofidelity. These results demonstrate a high level of agreement between EvaRID-50F and average female volunteer response, providing confidence that the ATD accurately reproduces the occupant kinematics required for rear impact evaluation.

The accompanying infographic summarizes the BioRank results for each ATD and test condition, illustrating the consistent performance achieved throughout the validation program.



1.11
GOOD

BRS Range	BRS ≤ 1.0	1.0< BRS ≤ 2.0	2.0 < BRS ≤ 3.0	BRS ≥ .0
Biofidelity	Excellent	Good	Marginal	Poor

The lower the BioRank score, the more biofidelic the ATD response is. A BioRank score less than 2 is desirable.

WHAT THIS MEANS FOR ENGINEERS

When engineers trust the test device, they can trust the design decisions that follow.

EvaRID-50F provides greater confidence when:

- Optimizing seat and head restraint designs by evaluating female-specific occupant motion.
- Comparing new seat concepts with repeatable, representative test data.
- Correlating physical and virtual testing to improve CAE model accuracy.
- Supporting future injury criteria and regulatory development with validated female biomechanics.
- Reducing engineering uncertainty by using a test device that accurately represents the target occupant.

ADVANCED
INSTRUMENTATION

EvaRID-50F is designed to deliver more than data. Its integrated sensing architecture helps engineers understand the sequence of occupant motion throughout a rear impact event, providing the information needed to evaluate restraint performance with greater confidence.

EvaRID-50F features a comprehensive instrumentation architecture designed to capture the complex biomechanics of a rear impact event. The standard configuration includes **42 measurement channels and five integrated tilt sensor locations**, **with development configurations supporting up to 48 channels**. Sensors throughout the head, neck, spine, and pelvis measure acceleration, angular velocity, forces, moments, and occupant motion, providing engineers with a complete understanding of how the occupant interacts with the seat and head restraint throughout a crash.

CAPTURE THE COMPLETE OCCUPANT RESPONSE

Instrumentation throughout the head, neck, spine, and pelvis provides a comprehensive view of occupant kinematics rather than relying on a single measurement or high-speed video.

UNDERSTAND SEAT AND HEAD RESTRAINT PERFORMANCE

Detailed measurements reveal when and how the occupant interacts with the seatback and head restraint, helping engineers optimize restraint system designs and improve occupant protection.

STRENGTHEN PHYSICAL AND VIRTUAL CORRELATION

Comprehensive motion and load data improve correlation between physical crash tests and CAE models, increasing confidence in simulation results and reducing development uncertainty.

SUPPORT BETTER ENGINEERING DECISIONS

Measurements of head and torso motion, spinal loading, neck forces, pelvis movement, and contact timing provide objective, repeatable data for evaluating design changes and comparing seat concepts.

INCREASE TEST CONSISTENCY

Integrated tilt sensors and standardized instrumentation locations help laboratories achieve accurate ATD positioning and improve repeatability across multiple test programs.

Head

6 CHANNELS

Ax, Ay, Az, Wx, Wy, Wz

Upper Neck Load Cel

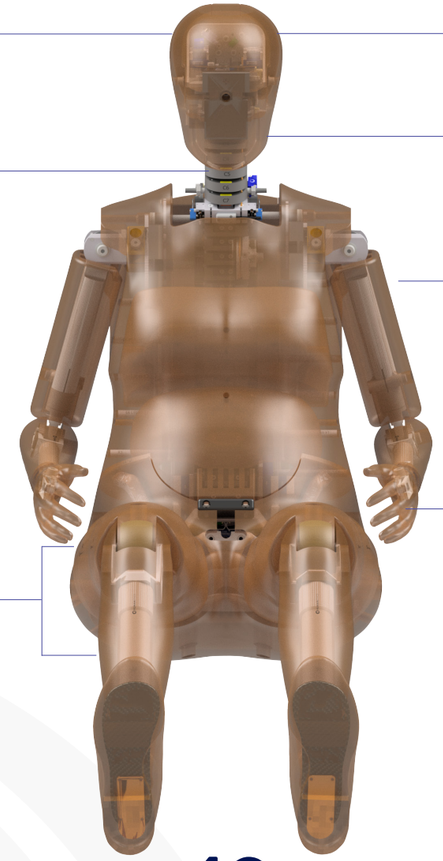
6 CHANNELS

Fx, Fy, Fz, Mx, My, Mz

Pelvis

6 CHANNELS

Ax, Ay, Az, Wx, Wy, Wz



Head Contact

1 CHANNEL

Skull Cap

3 CHANNELS

Fx, Fy, Fz

Spine

20 CHANNELS

Neck Spring Tube LC (left and right) - Fz
Lower Neck Load Cell (T1) - Fx, Fz, My
T1 Accel (left and right) - Ax, Az
T1 ARS (left) - Wy
T8 Accel (left) - Ax, Az
T8 ARS (left) - Wy
L1 Accel (left) - Ax, Az
L1 ARS (left) - Wy
Lumbar Load Cell - Fx, Fy, Fz, Mx, My, Mz

Tilt Sensors

Head, T1, T8, L1, Pelvis

42

STANDARD DATA CHANNELS

UP TO 48 CHANNELS FOR DEVELOPMENT APPLICATIONS

WHAT THIS MATTERS FOR ENGINEERS

Rear impact performance depends on understanding how an occupant moves, not simply whether an injury criterion is exceeded. EvaRID-50F's advanced instrumentation transforms complex sensor data into meaningful engineering insight, giving teams a clearer understanding of occupant motion, seat interaction, and restraint performance throughout the crash event.

With more representative female occupant data, engineers can design safer seats and head restraints, validate simulation models with greater confidence, identify performance differences earlier in development, and prepare for evolving consumer and regulatory requirements.

Better instrumentation does more than collect data. It gives engineers the insight needed to make better design decisions and build safer vehicles for a broader range of occupants.

CONNECTING VIRTUAL AND PHYSICAL TESTING

Physical testing validates real-world occupant response, while simulation allows engineers to evaluate more design concepts before building prototypes. Together, they create a faster, more efficient development process.

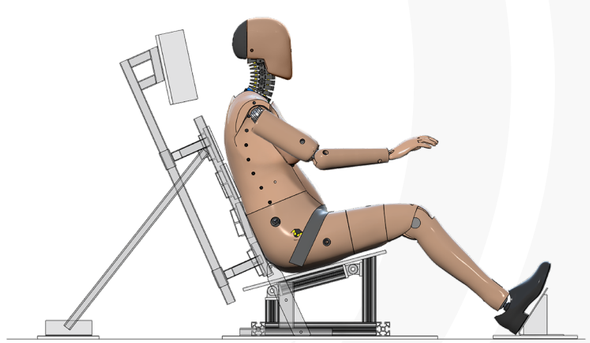
EvaRID-50F builds on this connected approach. Originally developed as a computational model through research led by Chalmers University of Technology, the physical EvaRID-50F was engineered from that foundation into a durable, instrumented ATD. This shared development history provides Humanetics with a unique opportunity to strengthen the relationship between physical testing and simulation.

IMPROVE PHYSICAL AND VIRTUAL CORRELATION

A shared development foundation helps align laboratory testing with simulation for greater confidence in engineering results.

EVALUATE MORE CONCEPTS EARLIER

Introduce representative female occupant data into seat and head restraint development before physical prototypes are built.



REDUCE DEVELOPMENT TIME

Use simulation to refine designs early, then validate the best-performing concepts through physical testing.

PREPARE FOR FUTURE SAFETY REQUIREMENTS

Support research, consumer testing, and evolving regulatory programs with validated female occupant models.

WHY THIS MATTERS

Physical testing and simulation are most effective when they work together. By connecting EvaRID-50F with its computational counterpart, engineers can validate simulations using real-world data, identify female-specific occupant response earlier, and make better-informed design decisions throughout the development process.

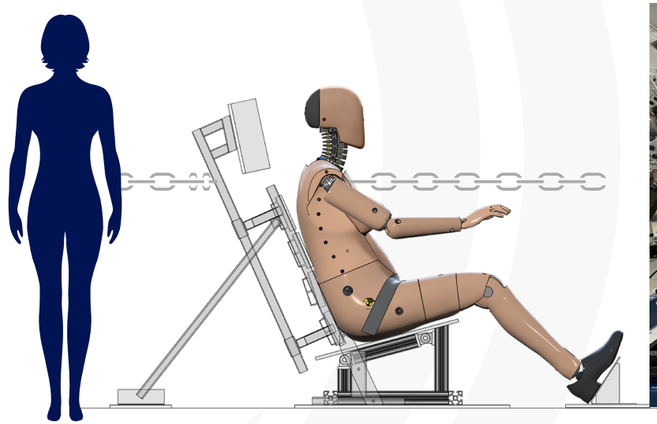
Every physical test strengthens the simulation. Every simulation makes the next physical test more valuable.

THE HUMANETICS **ECOSYSTEM**

Humanetics has earned its reputation as a global leader in the development and manufacturing of crash test products by providing a complete ecosystem that covers every aspect of safety testing. From virtual simulations to physical Anthropomorphic Test Devices (ATDs), Humanetics offers a seamless workflow that ensures the most accurate and reliable results throughout the testing process.

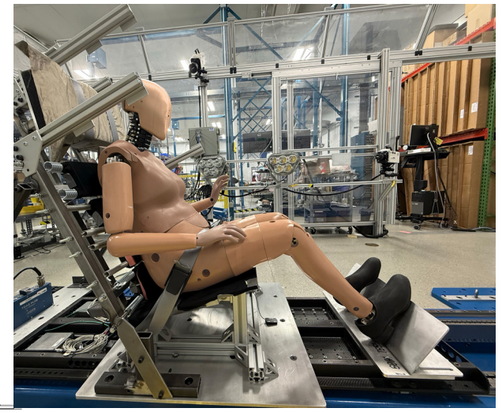
Humanetics' toolkit begins with state-of-the-art digital simulations. Leveraging advanced computer-aided engineering (CAE) technologies, Humanetics allows manufacturers to conduct thorough virtual crash tests before any physical prototypes are created. This not only accelerates the product development cycle but also minimizes costs associated with physical testing.

The virtual phase seamlessly transitions into virtual testing, where the accuracy of the simulations is rigorously validated. Humanetics' virtual testing solutions ensure that the digital model faithfully represents real-world scenarios, providing engineers with unparalleled insights into the performance of their designs.



Humanetics original legacy is in the development of physical crash test products. Our ATDs are engineered with precision and attention to detail, ensuring that they accurately replicate the biomechanics of the human body. From head-to-toe, Humanetics' ATDs are designed to provide the most realistic and reliable data possible.

Through our physical ATD designs and testing, we have direct access to complex geometry and material data to ensure the consistency of our digital twins so the physical and virtual worlds perform as identical as possible.



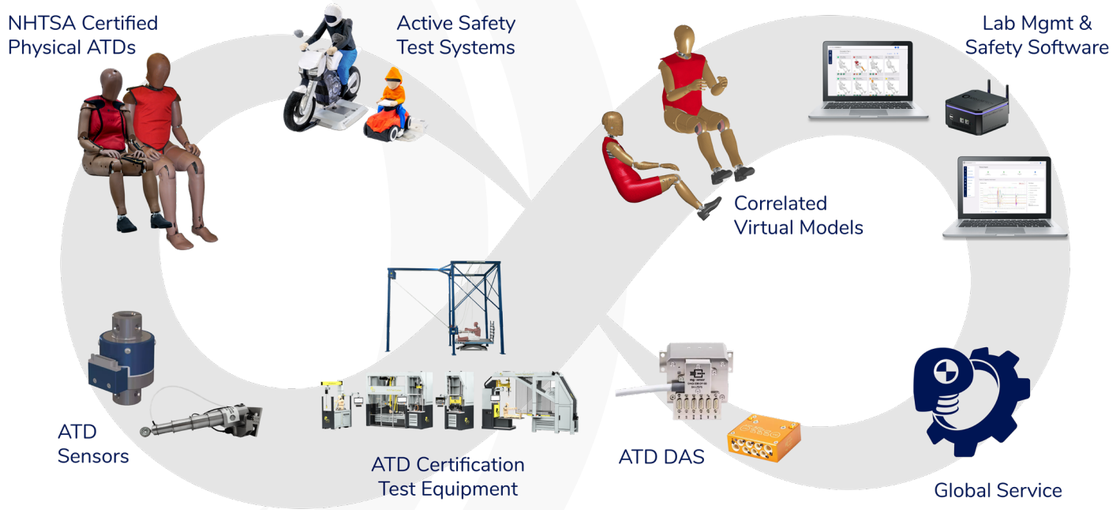
THE HUMANETICS **WORKFLOW ADVANTAGE**

Humanetics' closed-loop workflow ensures a seamless transition from digital simulations to physical testing with integrity with feedback control. This integration minimizes the risk of discrepancies between the virtual and real-world results, providing engineers and manufacturers with the confidence that the safety features they design in the digital realm will translate accurately to physical products.

With a complete workflow in place, Humanetics guarantees the integrity of the testing process. The closed-loop system eliminates potential gaps or inconsistencies in the workflow, providing a holistic and reliable approach to crash testing. Manufacturers can trust that the results obtained from Humanetics' products accurately reflect the performance of their vehicles in real-world collision scenarios.

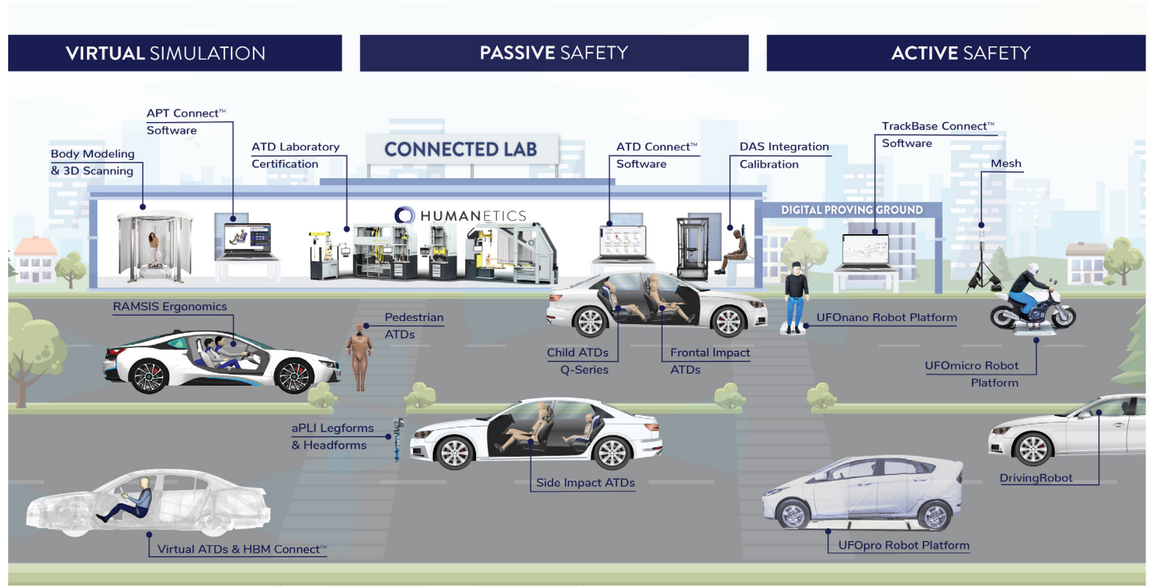
For example, Humanetics Digital creates data models and simulation software that accelerate design and test, improve safety & comfort, and reduce development cost and time to market.

Our comprehensive portfolio of Active Safety test equipment including Ultra Flat Overrunable (UFO) platform robots, soft target vehicles, and self-driving robots allow vehicle manufacturers to test the latest advanced crash avoidance systems in real-world scenarios.



By seamlessly integrating digital software and management tools into the test lab, we can offer the capabilities to connect not only ATDs and sensor solutions but also test systems with each other, analysis software and cloud solutions. Our products provide the ability for connected and integrated lab management, ensuring measurement accuracy and repeatability.

- Low variation
- Seamless integration
- High efficiency
- Data integrity
- Speed to market
- Lower long-term costs
- Management of increased development complexity across disciplines
- Increased visibility and transparency of development across disciplines



HUMANETICS SENSORS

Humanetics sensors transform EvaRID-50F from a physical ATD into a comprehensive engineering measurement platform. Accelerometers, angular rate sensors, load cells, tilt sensors, and contact switches work together to capture the forces, motion, and interactions that occur during a rear impact, providing engineers with the accurate, repeatable data needed to evaluate occupant protection.

CAPTURE INJURY-RELEVANT DATA

High-quality sensors measure the forces, moments, acceleration, and rotation that influence occupant motion and help engineers better understand injury mechanisms.

DIFFERENTIATE MEANINGFUL DESIGN CHANGES

Accurate, repeatable measurements allow engineers to distinguish real performance improvements from normal test variation when evaluating seats, head restraints, and restraint systems.

IMPROVE ENGINEERING CONFIDENCE

Reliable data supports objective comparisons across vehicle designs, impact conditions, laboratories, and simulation models, leading to more informed development decisions.

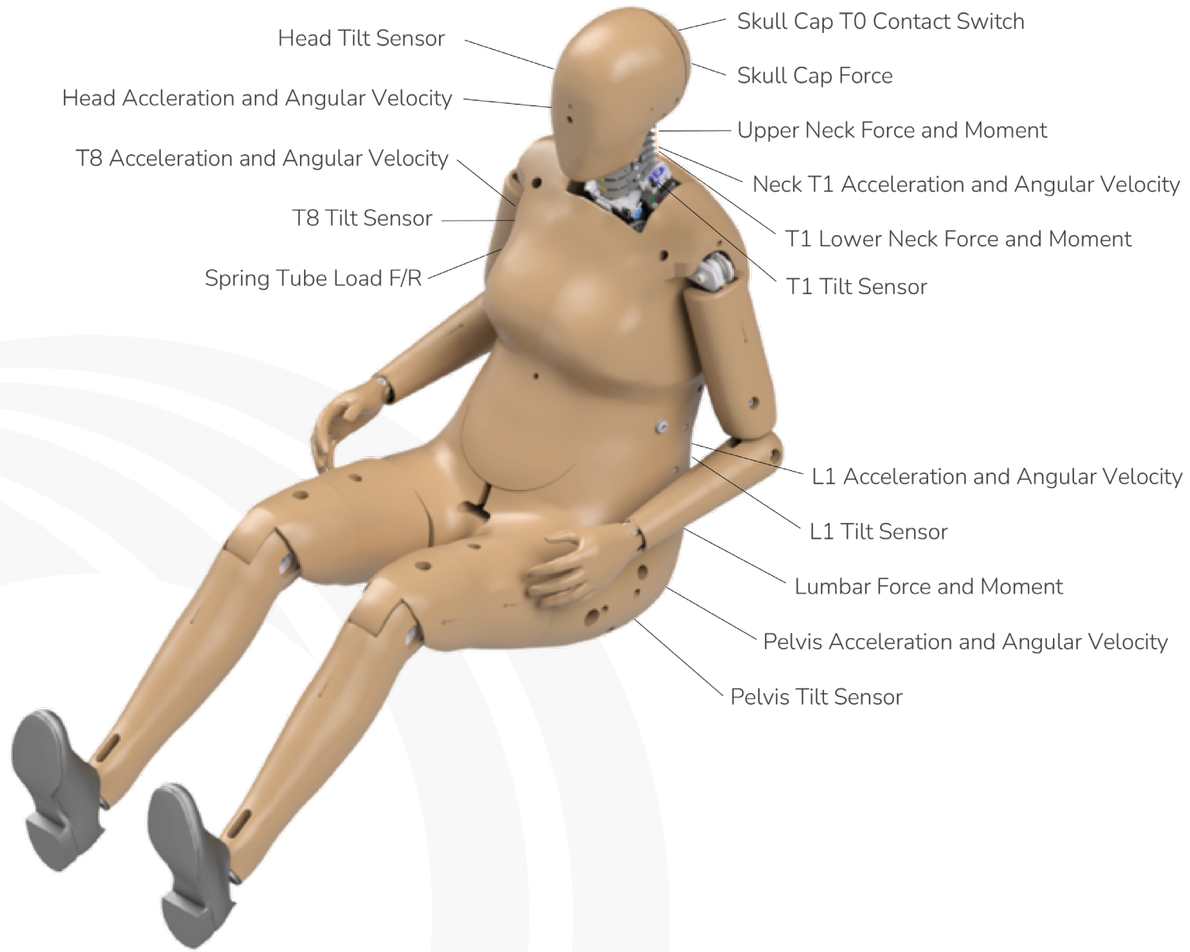
DESIGNED AS A COMPLETE SYSTEM

Because Humanetics engineers the ATD, sensors, instrumentation, and calibration services together, every component is designed to work as an integrated system without compromising the ATD's biofidelity or performance.

WHY THIS MATTERS

In rear impact testing, even small differences in occupant motion can influence injury outcomes. Accurate sensor data helps engineers understand not only what happened during a test, but why it happened. That insight leads to better seat designs, stronger correlation between physical and virtual testing, and greater confidence that engineering improvements will translate into better occupant protection.

When every measurement can influence a design decision, sensor quality becomes essential to building safer vehicles.



FLEXIBLE CHANNEL **CONFIGURATIONS**

Every rear impact development program has different objectives. Whether evaluating new seat concepts, conducting biomechanics research, correlating CAE models, or preparing for future regulatory testing, EvaRID-50F can be configured with the instrumentation needed to support your specific application. Humanetics works with customers to select the measurement channels that provide the most meaningful data for each stage of development.

TAILOR INSTRUMENTATION TO YOUR OBJECTIVES

Select the measurement channels that best support your research, development, validation, or regulatory requirements without collecting unnecessary data.

SUPPORT A WIDE RANGE OF APPLICATIONS

Configure EvaRID-50F for seat development, head restraint evaluation, CAE correlation, protocol development, or biomechanics research using the same physical platform.

INTEGRATE WITH EXISTING LABORATORY SYSTEMS

Instrumentation packages can be selected to complement your current data acquisition systems, laboratory workflows, and testing procedures.

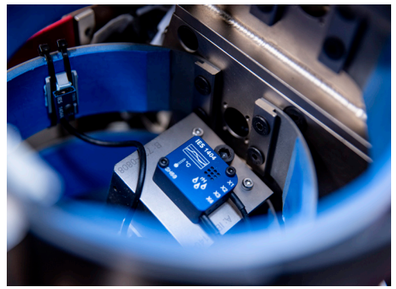
SCALE WITH YOUR DEVELOPMENT PROGRAM

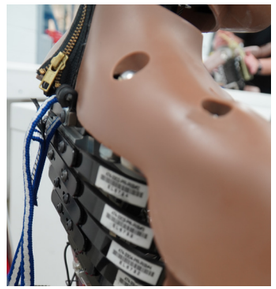
As testing needs evolve, instrumentation configurations can be expanded to support new research questions, additional measurements, and future evaluation requirements.

WHY THIS MATTERS

The questions engineers ask change throughout the vehicle development process. Early research programs may require comprehensive occupant measurements, while validation testing may focus on a defined set of critical response channels. A flexible instrumentation architecture allows laboratories to collect the right data at the right time, improving efficiency while ensuring every test delivers meaningful engineering insight.

Configuring the right measurements for each application helps maximize the value of every test and supports more informed engineering decisions.



Channel Configurations

MODEL NUMBER	DESCRIPTION	AXIS	CHANNELS
7264H, IT-600	Head	Ax Ay Az Wx Wy Wz	6
6350J	Skull Cap	Fx Fy Fz	3
305-1140	Head Contact	Voltage	1
IH-13570J	Upper Neck Load Cell	Fz, Fy, Fz, Mx, My, Mz	6
10386J	Spring Tube Load Cell (Left and Right)	Fz	1
IH-13580J	Lower Neck Load Cell (T1)	Fx Fz My	3
72634H	T1 Accelerometer (Left and Right)	Ax Az	2
IT-600	T1 ARS (Left)	Wy	1
7264H	T8 Accelerometer (Left)	Ax Az	2
IT-600	T8 ARS (Left)	Wy	1
7264H	L1 Accelerometer (Left)	Ax Az	2
IT-600	L1 ARS (Left)	Wy	1
7264H, IT-600	Pelvis	Ax Ay Az Wx Wy Wz	6
IES-1402	Head Tilt Sensor	X, Y	-
IES-1402	T1 Tilt Sensor	X, Y	-
IES-1402	T8 Tilt Sensor	X, Y	-
IES-1402	L1 Tilt Sensor	X, Y	-
IES-1402	Pelvis Tilt Sensor	X, Y	-
IES-1404-1404A	Temp & Humidity Logger w/ AUX		-

EvaRID-50F
PACKAGE OPTIONS

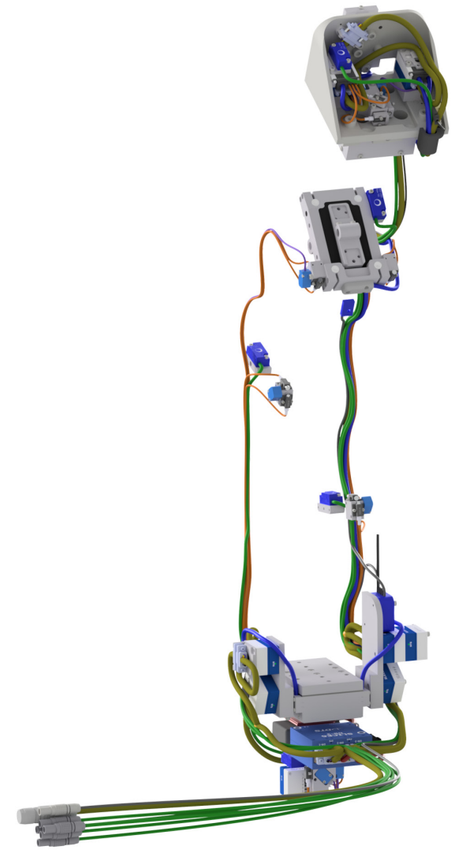
SIMPLIFIED
INSTRUMENTATION

Packaged for **convenience**, **usability**, and **simplification**.

A tier of standardized option menus have been created for the Next Generation ATD family as part of the ATD complexity reduction initiative in an effort to simplify the purchasing process for integrated ATDs.

These package options offer sets of predetermined channel counts of load cells, accelerometers, and angular rate sensors conveniently bundled together for optimal usability. Moreover, the standard delivery time will be greatly reduced as a result of streamlining the ATD production and assembly processes.

Historically, most integrated ATDs are coupled with a choice of on-board data acquisition systems with customer specific instrumentation, and they have typically been engineer-to-order items that require unique build designs for each ATD. To minimize the sometimes unnecessary customization, customers now have the option to purchase the standardized packages with preset instrumentation. This allows a simplified ordering and build process that will not only meet the customer's data collection needs, but also come with a much quicker delivery time and savings in cost.



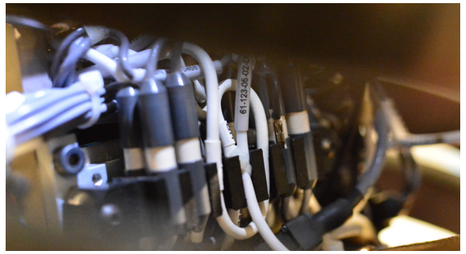
ONBOARD DAS
INTEGRATION

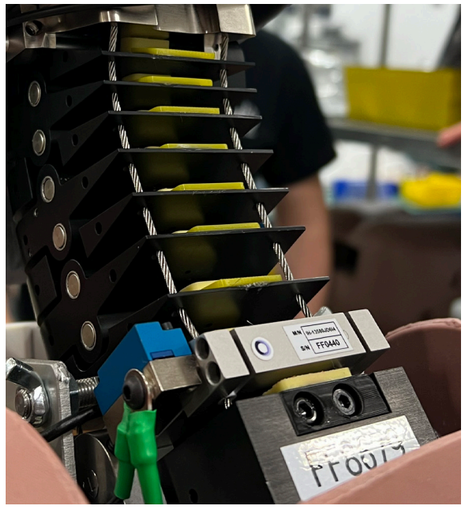
ONBOARD DAS
INTEGRATION OVERVIEW

The Humanetics legacy of integrating ATDs with onboard Data Acquisition Systems (DAS) spans over twenty years, starting in the mid 1990s with the Intelligent Dummy Data Acquisition System (IDDAS). This first system found itself assimilated into the spine of the Hybrid III 50th ATD with a limited number of channels.

Today, as the world leader in integrations, Humanetics' role in the development of the integrated ATD is well known in the industry and continues to push the boundaries of this technology. A Humanetics iDummy can now exceed 200 channels of available data collection.

The secret to Humanetics' iDummy success has been the ability to integrate all types of ATDs using any type of DAS for both automotive and military applications. Being a DAS neutral integrator allows Humanetics to utilize the customer's choice of systems from suppliers like Humanetics, DTS, Kistler, Messring, and Kyowa. And since the manufacture of ATDs and load cells are part of the Humanetics core business, the level of expertise of these integrations provides customers with the assurance that any integrated ATD will seamlessly function and be equal to the non-integrated counterpart in mass, CG, and physical measurements.





DTI
RECORDER OPTIONS

Hubs are connecting sensors throughout the ATD, by collecting sensor data of specific ATD areas. The collected sensor signals are transferred into a single cable. This way hubs are helping to reduce the number of cables routed through the ATD, which ultimately reduces umbilical mass and weight.

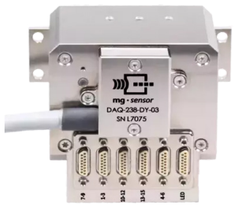
Data recorders are used to collect measurement data in a central erasable memory. For the DTI integrated EvaRID-50F version, Humanetics offers a data recorder called DAQ-238-DY. The recorder features 17 DTI ports and a system LED port, as well as a 64 GB Flash Memory for data storage.

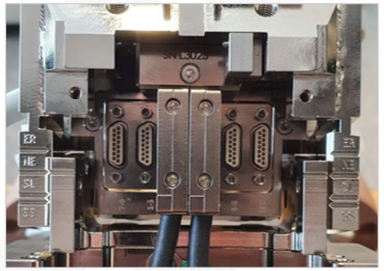
To ensure an optimal distribution of the sensor data, hubs by Humanetics are always customized to the certain needs in the area they are used in the ATD. These needs are for example the amount of input connector slots or the number of data channels that need to be connected to the hub.

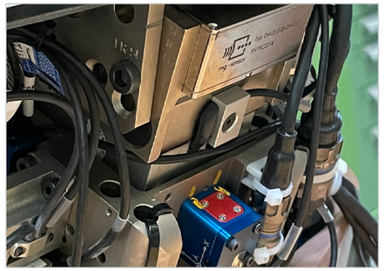
Due to the user-friendly design and installation, the recorder can easily be accessed from the front as well as the back of the spine. The recorder is working with all DTI compatible DIMODs and ADMs and has been tested with various software packages with DTI support, to ensure frictionless operation and making it a valuable component of the integrated ATD. Additionally, the integrated power supply supports user efficiency by avoiding unnecessary downtime.

This new recorder can cover a maximum amount of 204 channels and is featuring 10/100/1000 Mbit Ethernet for extremely fast data download, simplifying and speeding up the daily work with the ATD. With an embedded web interface, it can be operated within the web browser.

The DAQ-238-DY is fully compliant with SAE J211 and ISO6487 and accepted by Euro NCAP.







LOCATIONS

EvaRID-50F can have modules and hubs built into different parts of the ATD to service those areas where data channels are concentrated.

An overview can be seen below.

Head and DTI Connector Hubs
(left and right)

DTI Lower Neck (T1) Accelerometer Modules
(left and right)

DTI T8 Accelerometer Module

DTI L1 Accelerometer Module

Temperature and Humidity Sensor

Thorax Connector Hubs
(left and right)

Pelvis Accelerometer Module



PRODUCT & CUSTOMER SUPPORT

There is no company of engineers more experienced in designing, installing, and maintaining sophisticated passive and active safety testing equipment than Humanetics.

Our experts in each of our global facilities spend much of their time on-site with customers training them to use the latest technologies. Humanetics offers an extensive global service model. We train automaker and test facility engineers in a range of capabilities: calibration of sensors, set-up of complete test facilities, and management of CAE and FE modeling.

We also provide fully outsourced on-site ATD management through our own test engineers.

Let us know how you would like us to support you - we are here to help you succeed.

SPARE PART **AVAILABILITY**

Having a variety of EvaRID-50F spare parts on hand for quick replacement during an ATD certification or a crash test series is an affordable and efficient way to help manage unexpected needs and regular maintenance requirements.

To help with your inventory planning, we've put together lists of the most common and consumable components to have readily available for regular and emergency use. Visit our website to download the latest recommended spare parts for the EvaRID-50F.

- Neck Rubbers
- Abdomen
- Lumbar Rubbers
- Misc. Hardware and Washers



RECOMMENDED SPARE PARTS & CONSUMABLES

EvaRID-50F

Having a variety of EvaRID-50F spare parts on hand for quick replacement during an ATD certification or a crash test series is an affordable and efficient way to help manage unexpected needs and regular maintenance requirements.

IMPORTANCE OF ATD SPARE PART INVENTORY

Accidents happen. And within vehicle safety test facilities, they happen on purpose! So there's nothing more frustrating than lacking a critical replacement part for a test dummy that's scheduled for a required re-certification or needed immediately for a crucial test series.

Some of the components that bare the brunt of physical impact and abuse are critical items to have on-hand for quick replacement when damaged or worn-out. Many test dummy spares have delivery lead times that could delay your testing if you don't have them available in your local inventory.

To help with your inventory planning, we've put together a list of the most common and consumable components to have readily available for regular and emergency use.

RECOMMENDED EvaRID-50F SPARE PARTS

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	305-2020-PR	NECK SPRING CABLE ASSEMBLY	1
2	205-2025-PR	NECK DAMPER CABLE ASSEMBLY	1
3	305-8001-PR	EvaRID BUMPER KIT	1
4	305-3700-PR	JACKET ASSEMBLY	1
5	5000025-FT	M4 X 0.7 X 16 LG. SHCS	11
6	305-3401-PR	SPINE TORSION PIN, EvaRID	17
7	305-3705-PR	VELCRO HOOK AND LOOP, JACKET	1
8	305-3280-PR	CABLE BUSHING, SPLIT, POSTERIOR	4
9	305-3279-PR	CABLE BUSHING, SPLIT, ANTERIOR	4
10	305-3750-PR	SHIRT, EvaRID	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
11	305-3760-PR	PANTS, EvaRID	1
12	305-1140-PR	SKULL CAP ASSEMBLY	1
13	305-1125-PR	CONDUCTIVE CLOTH, HEADREST	1

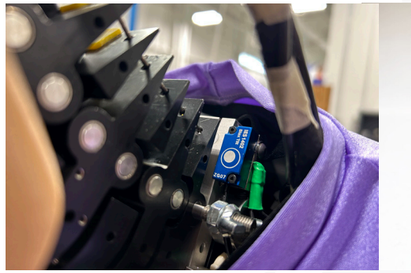
FIND OUT MORE ABOUT ATD SERVICES

Scan the QR code or visit:

https://hubs.li/Q0414-vb0

humaneticsgroup.com

HUMANETICS







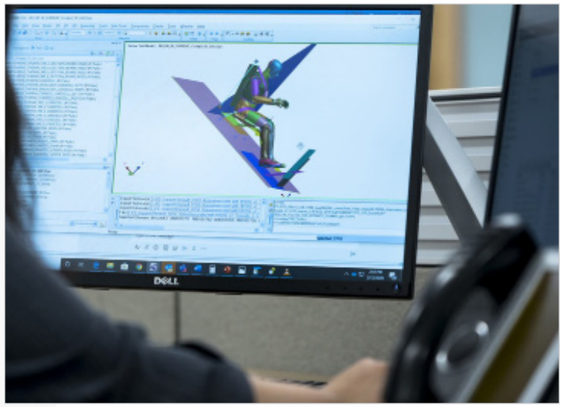
CERTIFICATION & **CALIBRATION**

Humanetics offers an extensive global service model. We train automaker and test facility engineers in a range of capabilities: calibration of sensors, set-up of complete test facilities, and management of CAE and FE modeling. We also provide fully outsourced on-site ATD management through our own test engineers.

Humanetics offers calibration and certification services for the entire range of EvaRID-50F ATD components and sensors. ATD certification includes initial overall inspection of the ATD and dynamic testing certified to the latest approved industry standards. Our worldwide laboratories makes sure regional support is always available for your ATD.

Humanetics labs also stock the most commonly replaced certified parts for all ATD types. This allows Humanetics to offer the fastest possible turn-around times to meet your testing schedules.

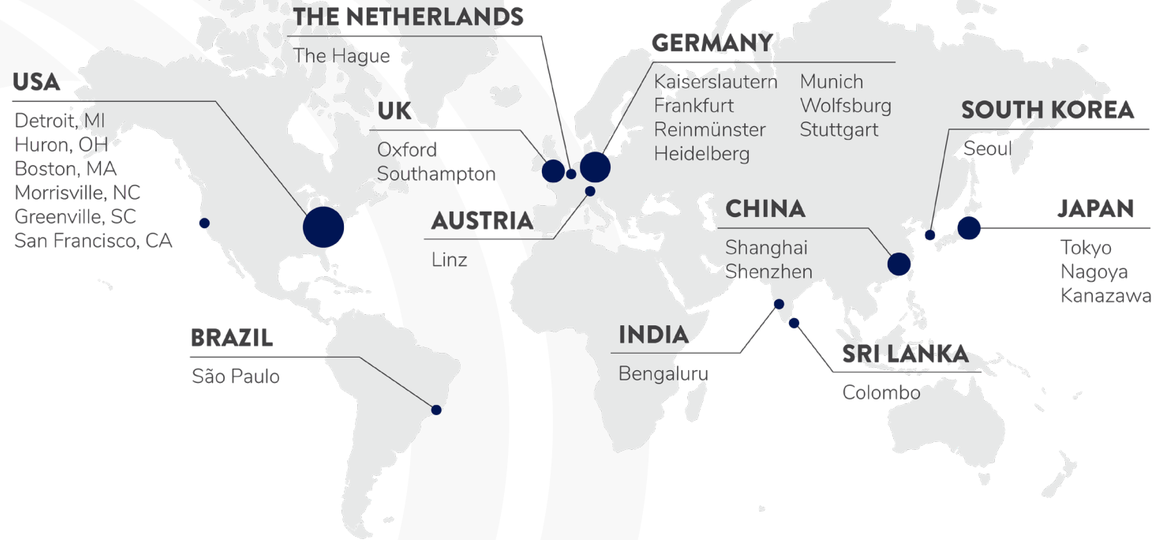




HUMANETICS GLOBAL NETWORK

Humanetics has a strategic presence in major automotive and industrial markets to fully support our advanced ATDs with 24 locations worldwide including 12 sales and customer, design, and service centers.

Our management team are some of the world's leading experts on vehicle safety and biomechanical engineering. They have a passion to lead their teams to develop the best devices, service the needs of our incredible customers worldwide and ensure that people are safe every time they get into a car.



SALES, MAINTENANCE, **& TRAINING**

Humanetics provides a full range of services to install, maintain, calibrate, and certify our ATD's. Our aim is to keep your test operations running to the highest certified standards by providing you with our expertise, products, and partnership when you need it.

- A complete plug and play management service to give some of our clients a turnkey solution building and resourcing new facilities around the world, and others, a scalable set of resources during peak testing.
- Leased ATDs, and engineers to install them, for specific tests or longer periods of time and we can provide regular maintenance and training for in-house teams, or schedule times to deliver one-off programs tailored to your needs.
- A full training program to develop the next generation of engineers in your labs, or a fully outsourced solution with our engineers embedded in your teams on a short term or long-term basis.

KEEP YOUR TESTING PROGRAM ON TRACK

Scan QR code to view the full range of services for our next generation ATDs.

CONTACT US

Having offices across Europe, the U.S. and Asia, we have a number of experts in each region who can help you with inquiries. Feel free to reach out to our team in case you have questions or are interested in more detailed information at any time.

Detailed contact information for each region as well as the latest product information including user manuals and technical service bulletins is located on our homepage.

WEBINARS & **TECHNICAL SUPPORT**

Stay Safe, Stay Informed. Please enjoy our on-demand webinar series on exciting topics that we and our community are passionate about.

Our online seminars are presented to enable our experts to engage in discussions with the safety community and share the latest industry knowledge on the tools we use daily and ones soon available in the near future. When in-person meetings are not practical because of distance, schedules, or even health reasons, our webinars are a great source of information delivered effortlessly right to your computer.

JOIN OUR LIVE WEBINARS TO STAY UP-TO-DATE

Scan the QR code to view upcoming live and our full library of on-demand webinars.

TECHNICAL SUPPORT

Technical support by email is always available for our complete line of crash test ATDs and test equipment, certification testing, product specifications and more at atdtechsupport@humaneticsatd.com

And don't forget, registered website users can access all the latest user manuals, product catalogs and technical service bulletins 24/7 on individual product pages. Just select the RESOURCES tab on the page.

HUMANETICS

PROTECTING HUMANS IN MOTION

CONTACT US

Scan QR code to contact your
local Humanetics Representative