

AUTOMOTIVE-ENGINEERING-EXPO.COM

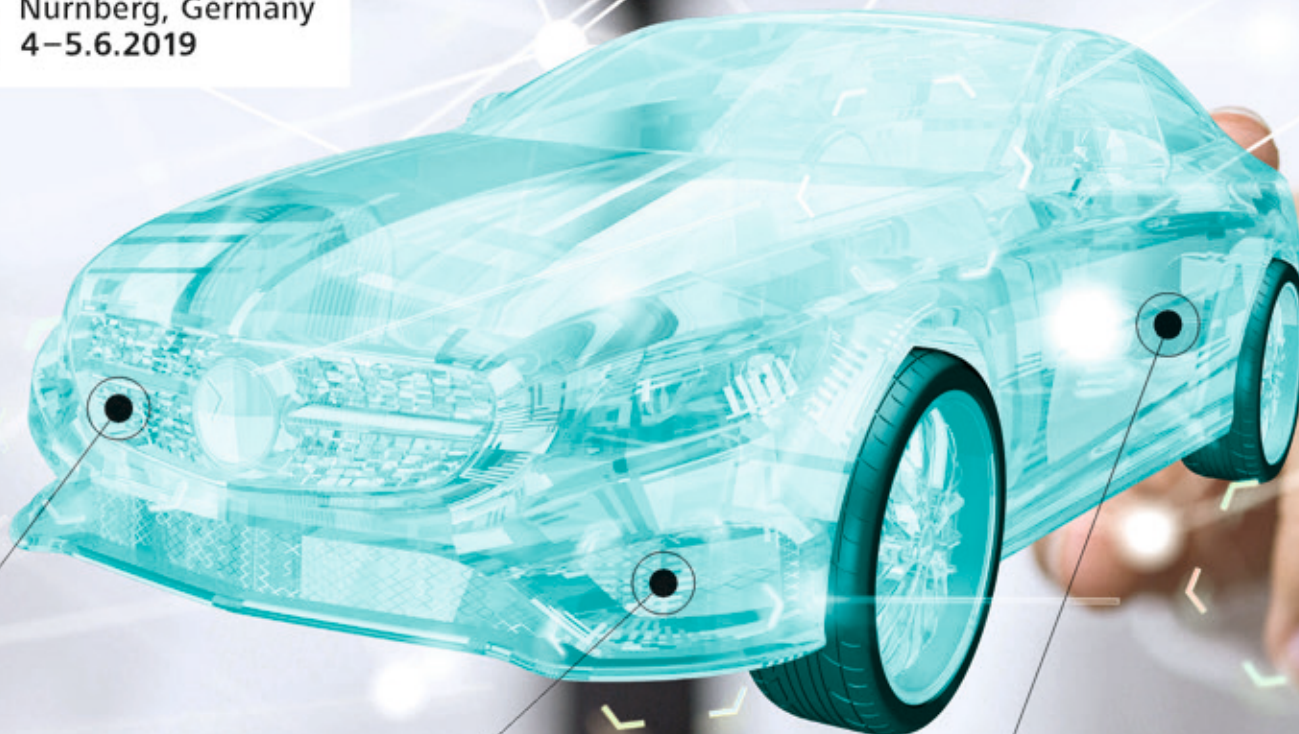


AUTOMOTIVE ENGINEERING EXPO 2019

CAR BODY
PROCESS CHAIN
FROM CONCEPT TO FINAL ASSEMBLY

Nürnberg, Germany
4-5.6.2019

GUIDE



**DIGITAL
DEVELOPMENT**
Engineering from the sofa

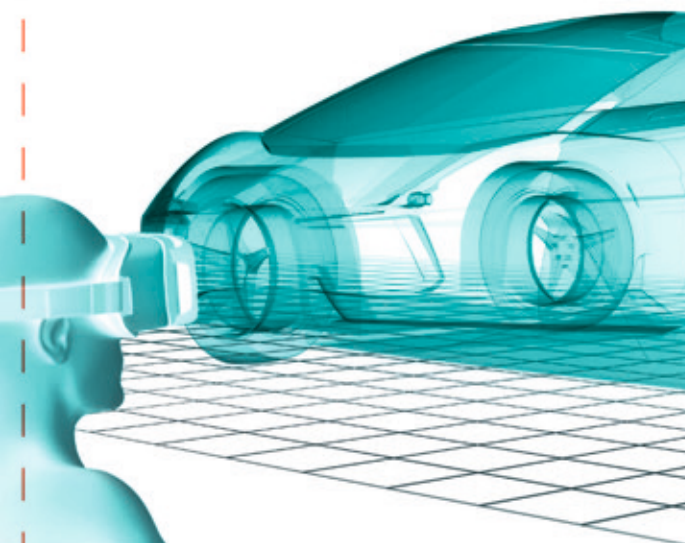


**FLEXIBLE
PRODUCTION**
One platform, many vehicles



**LIGHTWEIGHT
BODY STRUCTURES**
Lightweights made of new materials

A CONCLUSIVE CONCEPT



DIGITAL DEVELOPMENT

Creation of the Digital Twin
That's what Daimler says

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FLEXIBLE PRODUCTION

Falling Unit Numbers, more Derivatives
That's what Kirchhoff Automotive says

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LIGHTWEIGHT BODY STRUCTURES

Lighter, safer, more efficient?
That's what Jaguar Land Rover says

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Programme, exhibitors and products at a glance
AUTOMOTIVE-ENGINEERING-EXPO.COM



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5 TOP REASONS FOR YOUR VISIT

1. The AEE is the interactive forum worldwide all about body construction, painting and final assembly.
2. Around 80 exhibitors from all over the world present latest products and services on hot topics of the industry.
3. 7 side events peppered with use cases, deep dives, virtual learning rooms and guided tours round off the event.
4. More than 100 speakers provide valuable insights into practical applications and latest developments.
5. The AEE forges contacts between automotive manufacturers and suppliers.



CREATION OF THE DIGITAL TWIN

New drives and mobility concepts are expanding automotive diversity at a rapid pace. For the car body industry this means: New structures and variants are required, established processes must be re-designed – at manageable costs, of course. In order to avoid errors and make processes predictable, engineering is increasingly shifting to the virtual. The motto is: more software, less hardware. Computer Aided Engineering (CAE) helps to simulate components, car bodies or entire vehicles and to make reliable predictions, such as how a new longitudinal beam will absorb crash energy or how new alloys will behave. Process steps also become simulatable - right up to ergonomics in assembly to protect the health of employees.

CONSISTENT VIRTUAL

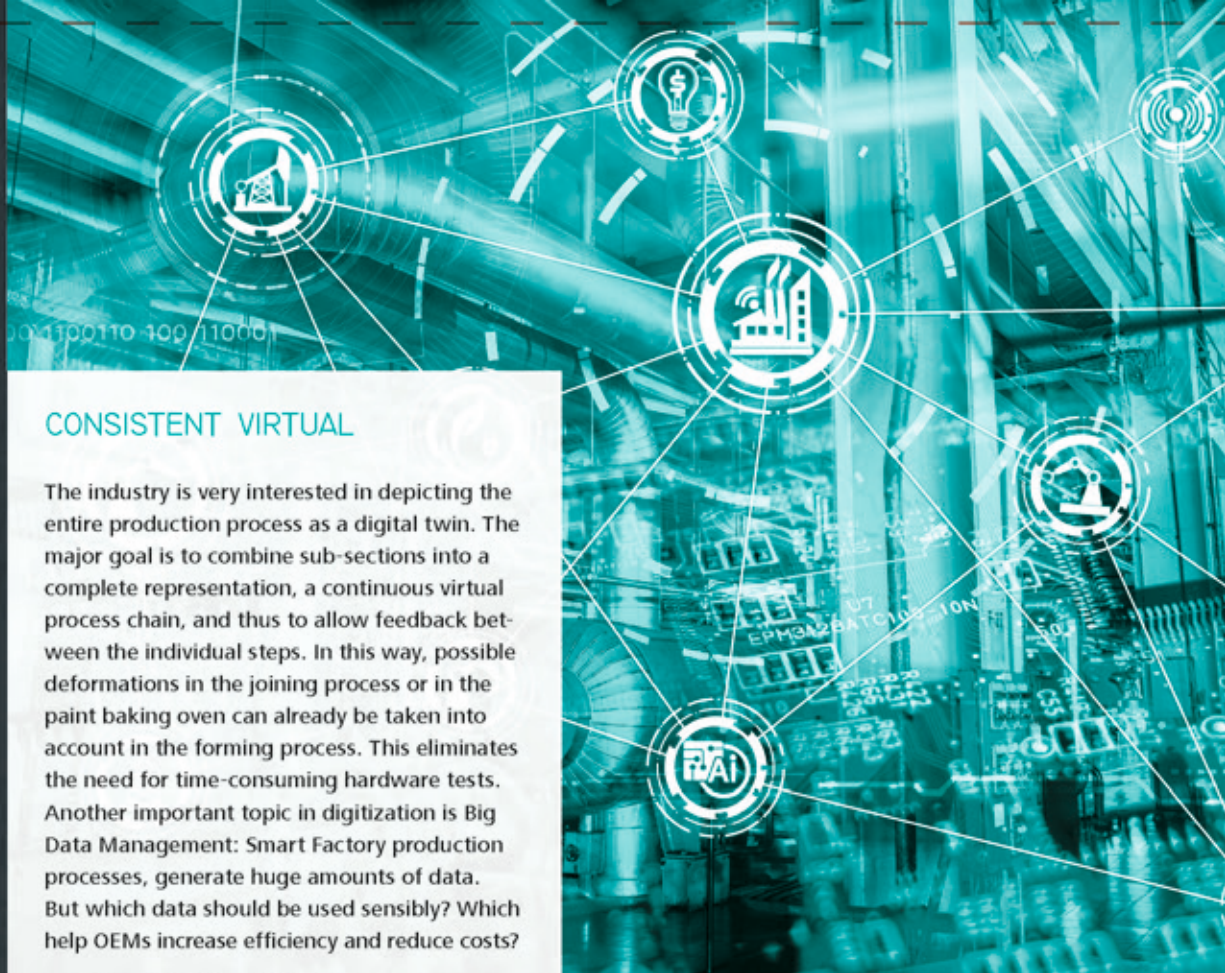
The industry is very interested in depicting the entire production process as a digital twin. The major goal is to combine sub-sections into a complete representation, a continuous virtual process chain, and thus to allow feedback between the individual steps. In this way, possible deformations in the joining process or in the paint baking oven can already be taken into account in the forming process. This eliminates the need for time-consuming hardware tests. Another important topic in digitization is Big Data Management: Smart Factory production processes, generate huge amounts of data. But which data should be used sensibly? Which help OEMs increase efficiency and reduce costs?



© Fraunhofer IIS

X-RAY THE CAR BODY

At the AEE, developers, manufacturers and institutes will be presenting the latest approaches to solutions. For example, researchers from Fraunhofer IIS will present the world's largest computer tomograph, which can be used to X-ray complete electric cars after a crash test without dismantling them. Structure and materials that were previously inaccessible can be analyzed in detail. The strong X-rays even make structures in densely packed batteries visible. (Booth 12-413)





© EDAG/Feyhsinn



That's what Daimler says:
"In car body construction, many processes can only be checked using hardware up to now – and that is time-consuming and causes high costs. Digital

processes accelerate these development processes: They digitally map product functions and manufacturing steps and show at an early stage whether a product meets the required properties. In the search for the best possible solution, various options can be played through without consuming real resources. The aim is to map the entire process chain digitally. In this way, test runs over several 1000 kilometers can be simulated and evaluated. Corresponding approaches are already available – and will be THE topic of discussion at the AEE in Nuremberg."

Dr. Thomas Rudlaff, body shop Mercedes Benz Cars / pre-development, Daimler AG



ENGINEERING FROM THE SOFA

At the AEE Congress, EDAG-PS will present its "Sofa Collaboration", which is also a contender for the AEE Innovation as well as the Sustainability Award. Engineers can literally participate in production engineering from the sofa – from planning to maintenance, no matter where they are in the world. The user applies VR/AR glasses to project a virtual cell around a real interference contour. With a real teach pendant, he has the possibility to program the digital twin of the robot. Further users can collaboratively "dial into" the scene using VR glasses. (Booth 12-216)

HIGHLIGHTS:

- **Congress:** Digital use cases presented by Renault and Ford
- **Masterclass:** Daimler and Altair demonstrate the three-stage process of virtual concept development
- **Product Briefings:** Key to Metals
- **Innovation Park:** Virtually developed car bodies and components
- **Expo:** Automation W+R shows welded seam detection with AI

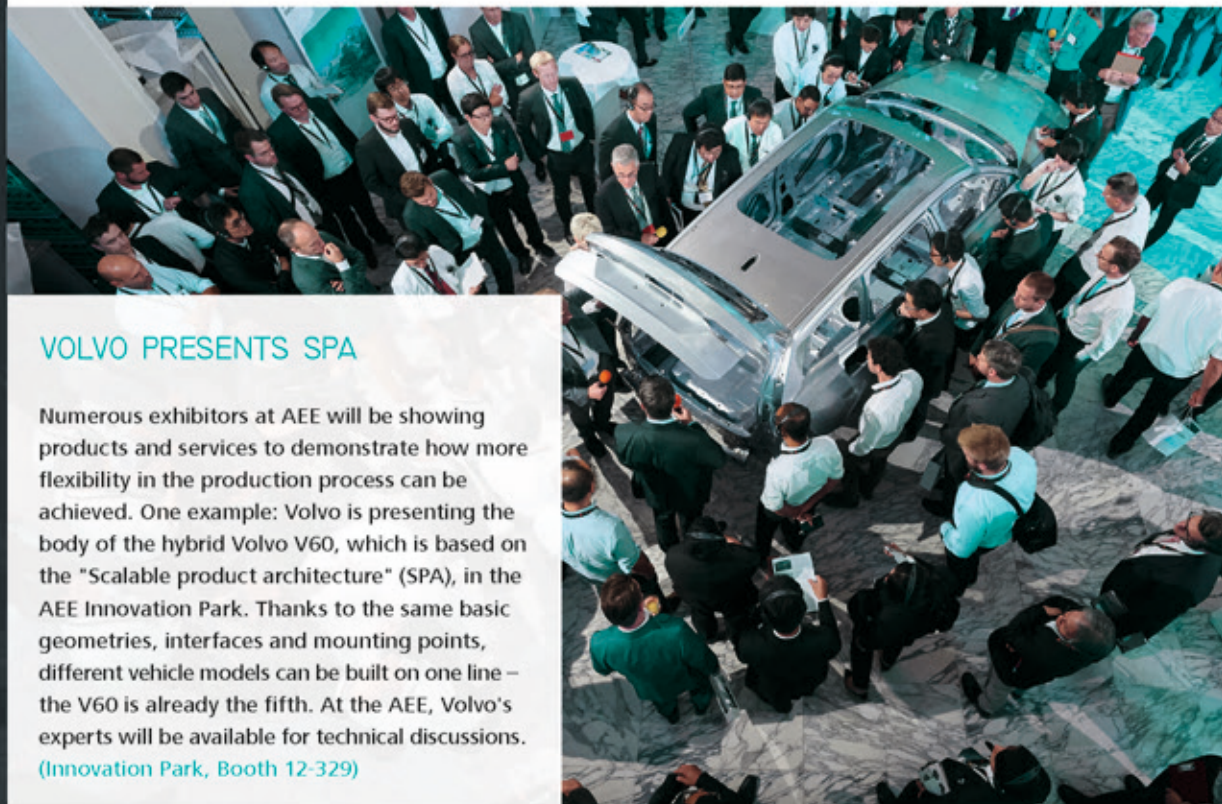
Programme and tickets at
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FALLING UNIT NUMBERS, MORE DERIVATIVES

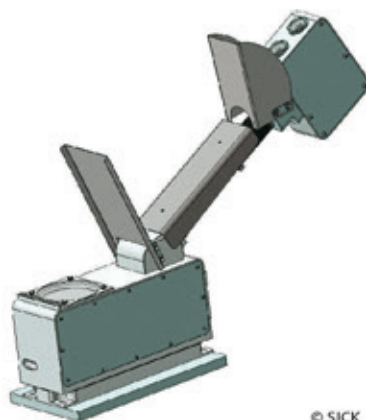
Flexible, independent and individual – these are the trademarks that have made the car a successful model. These attributes have long been valid for production as well: Model variability is constantly increasing, and, at the same time, so is the number of drive variants. Current production lines must be able to react more and more flexibly to these requirements. But how can this be cleverly implemented with little effort? How can individual process steps also be used for variants? Will there soon be a joining technology for ALL joining problems?

The **AUTOMOTIVE ENGINEERING EXPO 2019**, the only expert forum in the world that covers the entire automotive process chain, will showcase tried and tested, innovative solutions.



VOLVO PRESENTS SPA

Numerous exhibitors at AEE will be showing products and services to demonstrate how more flexibility in the production process can be achieved. One example: Volvo is presenting the body of the hybrid Volvo V60, which is based on the "Scalable product architecture" (SPA), in the AEE Innovation Park. Thanks to the same basic geometries, interfaces and mounting points, different vehicle models can be built on one line – the V60 is already the fifth. At the AEE, Volvo's experts will be available for technical discussions. (Innovation Park, Booth 12-329)



© SICK

ROBOT BECOMES COLLABORATOR

Sensors play a decisive role as humans and robots move ever closer together. They use optical and camera-based systems to enable the robot to perceive things more precisely, turn it into a seeing player and let it see where things are. At AEE 2019, sensor expert Sick launches a new version of his "Body Positioning System" ("BPS"), a non-contact localization system for vehicle bodies. (Booth 12-302)



© Fronius

THE PERFECT WELDING RESULT

Minimal downtimes, optimum accessibility and high productivity when joining aluminium – this is what the new "DeltaCon" guns for conventional spot welding and the "DeltaSpot" system with revolving process belt from Fronius stand for. This allows up to 7,000 spots to be welded without interruption and with consistent quality. And the new "WeldCube" documentation and data analysis system helps users to optimize processes and avoid errors. (Booth 12-323)

GET IN LOWER?

In the AEE Masterclass "Highly dynamic machine set-up in the age of Smart Factories", experts from the University of Siegen present the "Expert to go": The virtual colleague supports machine operators during set-up processes with an innovative navigation system. The view through mixed-reality glasses opens up the expert's point of view for beginners. In the subsequent tryout, the teach-in of a set-up instruction is carried out live. Curious? Then get in and embark on a journey into the automotive future at AEE 2019. Find the solutions in Nuremberg. (Booth 12-420)



That's what Kirchhoff Automotive says:

"Over the last few years, the technological demands placed on the body and chassis have increased massively. The

material mix of different steel grades, aluminum, magnesium and plastic alone has become much more complex. For this reason, simplifications on materials and processes are indispensable. The AEE offers the right platform for all these trends."

Professor Christoph Wagener, Head of Research and Product Development at Kirchhoff Automotive

HIGHLIGHTS:

- **Congress:** Flexible Production examples presented by Audi and Škoda
- **Masterclass:** Close the gap between engineering and tool tryout/
Gianfranco Ruggiero, AutoForm
- **Innovation Park:** Increasing derivatives in the Ford Focus/scalable platform at Volvo
- **Product Briefing:** Evosys, Fronius, Prima, Proquadro, Sika, Saab
- **Guided Tour:** Flexible Production

Programme and tickets at
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LIGHTER, SAFER, MORE EFFICIENT?

New bodies are optimized for typical crash situations right from the initial development stage. The aim is to protect the occupants from all forces acting on the vehicle in an accident. Of course, this also applies to lightweight construction.

Due to legal requirements, the focus for a long time was on reducing weight: the lighter the model, the lower the fuel consumption and CO2 emissions. But the emergence of alternative drive systems seems to take the pressure off the weight debate. The question now is: How can the body be designed more cost-effectively without compromising safety? Do materials such as new Advanced High Strength Steels (AHSS) contribute with their strength to structural components now becoming more cost-effective? And what are the advantages of the new aluminium bodies from Jaguar or Renault?



FRENCH LIGHTWEIGHT ATHLETE

The AEE answers these questions at the Innovation Park, where Renault, for example, is showing the lightweight body of its newly launched Alpine sports car. It consists of 96 percent aluminium and weighs just over one ton at a length of 4.18 metres.

Jaguar Land Rover also relies on the light metal: the electric SUV "I-Pace" features an almost pure aluminium body, offers rapid 400 hp and a range of more than 500 kilometres. BMW is showing a lightweight product made of CFRP, namely the roof of the 8 Series Coupé, which is manufactured using a new wet-pressing process and can thus be produced much more cheaply.

(Innovation Park, Booth 12-329)

COMBINING HOT AND COLD FORMING

The Spanish forming specialist Gestamp presents a hinge column produced using the "Ges-Multistep" manufacturing process. The process combines cold and hot forming of sheet metal parts made of zinc-coated boron steel. A high-speed process that provides better corrosion protection even for complex geometries. To be seen during the Guided Tours and at a presentation in the AEE Congress. (Booth 12-328)



© Adobe Stock

STEEL INNOVATIONS FOR TOMORROW'S CARS

To make vehicles lighter, safer and cleaner, steel specialist ArcelorMittal is presenting a whole range of highly innovative steel products in Nuremberg. The steel grades for hot stamping "Usibor 2000" and "Ductibor 1000" make the vehicle fleet lighter, while the new AHSS steels for cold-pressed automotive parts, "Fortiform", offer high strength and excellent formability. Further offers include the steel series for electric mobility "iCARE", which is already used by several OEMs. (Booth 12-423)



© ArcelorMittal



That's what Jaguar Land Rover says:

"It will continue to be important in the future to reduce the weight of vehicles and avoid emissions.

That's why we at Jaguar Land Rover continue to prioritise lightweight technologies. It is important that the right material is used in the right place, whether aluminium, UHSS, carbon fibres or other materials. With the Tucana research project we are leading, we are committed to developing cost-effective and scalable carbon fibre solutions that will improve vehicle performance over time."

Andrew Foster, Chief Engineer Body Complete, Jaguar Land Rover

HIGHLIGHTS:

- **Innovation Park:** Jaguar Land Rover I-Pace, Renault Alpine, BMW 8 Series Coupé
- **Deep Dive:** Hot forming of aluminium/ Prof. Dr. Jürgen Hirsch
- **Expo:** Tillmann Profile/Metal in top form
- **Congress:** Al die casting alloys for e-mobility/ Dr. Stuart Wiesner, Rheinfelden Alloys
- **Masterclass:** Virtual painting training/ Christoph Huber, EDAG/Feynsinn

Programme and tickets at
AUTOMOTIVE-ENGINEERING-EXPO.COM

EXPANDING YOUR KNOWLEDGE LEAD, USING NETWORKS

The **AUTOMOTIVE ENGINEERING EXPO** is THE global stage for innovations and an educational platform, showing the latest trends and products, which are discussed in detail and presented in practical use. With the Innovation Park, Masterclasses, Product Briefings and much more, the AEE offers a multitude of opportunities to exchange ideas with industry leaders, build up know-how and remain competitive in the long term.

INNOVATION PARK: CAR BODIES AND COMPONENTS, HANDS-ON

In the Innovation Park you can examine 15 different car bodies and components in detail – in some cases even before they are launched on the market. Be curious about innovative body concepts and components as well as insights that make benchmarking easy. Here, manufacturers present figures, data and facts on every car body and every component! In addition to lightweight car bodies made of aluminium, CFRP components and structural components made of the latest materials such as Advanced High Strength Steels (AHSS) can be seen here.

By the way: The Innovation Park is the start and end point of the Guided Tours, which start daily at 10 and 14 o'clock.

On-site bodies: AUDI A7, BMW 8 Series Coupé, Mercedes Benz A-Class, FIAT Stelvio, Ford Focus, Jaguar Land Rover I-Pace, Renault Alpine, Volvo V60, Škoda Scala

Components on site: BMW i8 – door system, BMW Series Coupé – roof system, Opel Corsa – A-pillar, Peugeot 508 – door system, Volvo XC60 – door system

Innovation Park, Booth 12-329

All bodies and components on
[AUTOMOTIVE-ENGINEERING-EXPO.COM](https://www.automotive-engineering-expo.com)





MASTERCLASSES: SHAPING THE DIGITAL FUTURE

Understanding and helping to shape digitisation – this is best achieved by immersing yourself directly in it with the digital pioneers and masterminds. In the Masterclasses, OEMs and exhibitors show current processes and applications and open up learning spaces for you to touch. The best thing about it: participants can try out the systems themselves and test them for their practical suitability. Are the systems also suitable for your business? **The Masterclasses take place several times a day and last 15 minutes.**

Some examples:

- The Masterclass "Virtual Painting" brings real painting into the digital world. Hand painters are trained without consuming expensive materials and polluting the environment. The paint spray gun becomes a controller, painting a game.
- Completely modelling the car body in an early phase – for developers, there is now the possibility of quickly examining, discarding and determining many variants.
- The Masterclass "Integration of Folding Simulation" into the process chain shows participants the way to cost reductions and how planning inefficiencies can be avoided in order to shorten the engineering process and lead times.

Masterclass, Booth 12-529

All Masterclasses on
AUTOMOTIVE-ENGINEERING-EXPO.COM

AEE INNOVATION STARS: WHERE STARS POINT THE WAY

Every stop is a highlight: Whether you are interested in joining or forming techniques or simulation processes – OEM experts will guide you specifically to the best products and services: Marked by stars at the stand, selected by the AEE Advisory Board, they show groundbreaking concepts with multidisciplinary approaches.

This gives you first-hand specialist knowledge and enables you to talk directly to exhibitors. The ideal offer for everyone who has little time, but still wants a comprehensive overview and exchange

with colleagues. During the guided tours, you and the advisory boards will vote on the best innovations of the expo. The winner will receive the **AEE Innovation Award 2019**, in the forum of Product Briefings on the second day of the fair at 3 p.m.

Booth 12-412

The Guided Tours start daily at 10 a.m. and 2 p.m. at the Innovation Park. Booth 12-329



**AUTOMOTIVE
ENGINEERING
EXPO 2019**

**SUSTAINABILITY
AWARD**

For the first time, the **AEE Sustainability Award** competition in 2019 honors sustainable products and services that put all process steps to the test in order to conserve energy and resources. You can look forward to substantial, five-minute pitches from the contestants who have made it onto the shortlist! The pitches will start on 4 June 2019 at 12 noon in the forum of the Product Briefings. The most sustainable development will be rewarded by the AEE Advisory Board in the afternoon at 3 p.m.

Product Briefings, Booth 12-412



PRODUCT BRIEFINGS

Time and knowledge are your most important resources? During the 15-minute product briefings, exhibiting suppliers provide information on current developments that visitors can inspect and try out at the trade fair stand. The exhibitors will then be available for technical discussions.

Product Briefings, Booth 12-412



DEEP DIVES: UNDERSTANDING THE DEPTH OF PROCESSES

Knowledge is best shared in person. The Deep Dives are half-day tutorials that provide newcomers and career changers with a solid foundation and valuable practical knowledge. All lecturers are experts in their field. The topics: the most important trades such as body materials, joining processes, forming techniques and painting processes. These include topics such as

- Hot forming of aluminium
- Current servo press technology
- Smart Factory approaches and technologies in the press shop

Each lecturer concludes his or her tutorial with a theme-specific tour of the fair – the ideal opportunity to expand your network with new contacts in your areas of specialization.

The half-day Deep Dives take place in the Congress Center CCN West.

Tickets 450,-€ net/tutorial

Programme and registration on
AUTOMOTIVE-ENGINEERING-EXPO.COM

IMPULSES FOR THE INDUSTRY

How is digital development changing the industry? Which new body structures will be established in the future? And how will OEM be able to make production even more flexible? For two days, the AEE Congress offers a large number of lectures and practical examples that highlight new trends and developments in the "painted body" process chain – presented by the world's leading specialist engineers in the industry.

Take advantage of this unique opportunity to gain an interdisciplinary insight into upstream and downstream processes! What changes is joining technology currently undergoing? What effects does this have, for example, on the subsequent coating process? The AEE Congress has exactly the knowledge you need to get ahead – and the most important contacts at the same time.

Due to the large number of trades involved, four lectures will be held in parallel. Choose your own focal points and create your individual congress programme – for 1 or 2 days!

We have marked the presentations on the focal topics of the AEE in the congress programme for you:



Digital Development



Flexible Production



New Lightweight Body Structures



OEM REPORTS

PROVIDE INSIGHTS INTO CURRENT KEY ISSUES

Use Cases Digital Development:

-  Müjdat Tiryaki,
Ford Otosan, TR
*Value added by industry 4.0
Production processes*
- Keith Perrin, MSC Software Corporation, UK;
N.N., Groupe Renault, FR
*Renault's experience with the digital simulation
of the e-coat process*

Use Cases Flexible Production:

- Marcel Komondi, Audi AG, DE
Dr. Ronald Naderer, FerRobotics Compliant
Robot Technology GmbH, AT
*Sensitive robotics in body-in-white production.
Best practice applications*
- Jan Čejka, Škoda auto as, CZ
André Hack, Sick AG, DE
*Greater flexibility with significant savings:
A new approach to robot control in car body
production*

Use Cases Lightweight Structures:

- Dominik Metzger, BMW Group, DE
*Characterization of the surface topography
of Class A carbon fiber components along
the entire process chain*
- Jiajie Chen, Pan Asia Technical Automotive
Center, CN; Dr. Yong Zhong, Baoshan Iron &
Steel Co., Ltd, CN
*Development and application of third
generation AHSS at SGM and Baosteel*

KEY NOTES

FOCUS ON TECHNOLOGIES,
CONCEPTS AND SOLUTIONS

Both congress days start with plenary lectures on focal topics of body construction, such as the "SVEN" project and requirements for urban mobility. Further impulses will be provided by Fraunhofer IIS's non-destructive testing of large and complex vehicle parts, supplemented by practical experience from the BMW pilot plant, and by the discussion on the challenges of e-mobility for the digital design process. Also in focus: how Smart Factory production processes contribute to added value.



©SVEN/share2drive

Above all, car sharing vehicles must be suitable for the city: manoeuvrable, small and fitting into any parking space. Vehicle developer FEV has achieved this with the "SVEN" concept car.



All-inclusive tickets and programme at
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AT A GLANCE



250 COLLEAGUES
from all over the world

82

INTERNATIONAL
EXPERT SPEAKERS

69

TECHNICAL
PROGRESS REPORTS



13 OEM REPORTS
provide insights into current key topics

8

FOCUS SESSIONS
along the process chain "painted car body"



TOP TOPICS:
+ Digital Development
+ Flexible Production
+ New Lightweight Body Structures



GUIDED TOURS
theme-specific tours of the exhibition
for congress participants



DAILY TICKETS available



JUNE 4-5, 2019
Exhibition Centre, CCN West

VENUE & DATE

Exhibition Centre, 90471 Nuremberg, Germany
June 4, 2019, 9–18 h
June 5, 2019, 9–17 h

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#AEE19



All exhibitors and products
at a glance!

NÜRNBERG MESSE

TICKETING

	ALL-INCLUSIVE TICKET	EXPO ONLY TICKET
Exhibition	X	X
Masterclasses	X	X
Innovation Park	X	X
Product Briefings	X	X
Guided Tours	X	X
Congress	X	

EXPO ONLY TICKET

Day Ticket	EUR 18
Season Ticket	EUR 35

All prices incl. legal value added tax.

ALL-INCLUSIVE TICKET

Automobile Manufacturer/Exhibitor	1 day	EUR 545
Automobile Manufacturer/Exhibitor	2 days	EUR 995
Automotive Supplier	1 day	EUR 645
Automotive Supplier	2 days	EUR 1.195

All prices plus legal value added tax.

SPECIAL TICKET: DEEP DIVE
(limited number, can be booked separately)

Single Ticket	EUR 450
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Price plus legal value added tax.

**Tickets and programme at
automotive-engineering-expo.com**

ARRIVAL

Nuremberg has always been a central traffic junction in Europe. Whether by train, car or plane – you have a free choice.



STAY & OVERNIGHT STAY

Business & Service
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