



Volkswagen

ID.

INSIGHTS

TRANSFORMATION
ZWICKAU

BOOKLET

ZWICKAU, NOVEMBER 2018

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ID. Insights – Transformation Zwickau

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AT A GLANCE

KEY FACTS ON THE ZWICKAU PLANT AND THE TRANSFORMATION

> **Major transformation:** this will be the world's first major car factory to be fully transformed **from 100 percent internal combustion engines to 100 percent electric drive systems.**

> **No compromises:** at Zwickau, **only electric cars** based on the modular electric toolkit MEB are to be produced in the future.

> **330,000 vehicles per year:** with a production capacity of 330,000 vehicles per year, **Zwickau is to be the Group's largest, highest-performance electric car plant.**

> **Climate protection:** The production of the ID.* will be carbon neutral. Zwickau is committed to using **green electricity** produced by hydropower plants.

> **Pioneering plant:** Zwickau will be
a pioneer for the transformation
of production. Volkswagen's electric car production
network will continue to grow.

> **Start in one year:** the compact ID.* will roll off the production
line at Zwickau from the end of 2020. In future, the plant will produce
six electric models of three Group brands.

> **Factory of the future:** with highly
advanced production systems and
innovative production technologies,
the vision of an intelligent, networked factory will
gradually be realized at Zwickau.

> **High-voltage training:** in **13,000 training days,**
the team at Zwickau will be prepared for the production of the
ID. family and the handling of high-voltage power.

> **Made in Germany:** in addition to Zwickau,
five other Volkswagen plants
will be involved in the development and
production of the ID.*.

Notes:

You will find this press release as well as images and films on Volkswagen e-mobility on the Internet at www.volkswagen-newsroom.com.

*The study car is not yet available for sale and is therefore not subject to Directive 1999/94 EC

THOMAS ULBRICH,
MEMBER OF THE VOLKSWAGEN BRAND BOARD
OF MANAGEMENT RESPONSIBLE FOR E-MOBILITY:

„The start of production of the ID. in one year' time will herald a new era for Volkswagen. We want to take e-mobility out of its niche and to make the electric car affordable for millions of people. Large volumes and efficient production will lay the foundation. This is why we are bundling electric car production at Zwickau and making the plant the nucleus of our major electric offensive.“



ZWICKAU VEHICLE PLANT TO BE HIGHEST-PERFORMANCE ELECTRIC CAR FACTORY IN EUROPE



MOBILITY OF THE FUTURE

E-mobility is the drive system of the future. Volkswagen is consistently forging ahead with technological change, as the automaker who will take the electric car out of its niche. The Volkswagen brand has always been committed to making progress and innovation affordable for many people. "That was the case with the Beetle, it is still the case with the Golf and it will remain the case for the fully connected electric vehicles in the new ID. family," says Thomas Ulbrich,

Volkswagen Brand Board Member responsible for E-Mobility. The mission is e-mobility for everyone – with attractive models at affordable prices. Over the next few years, Volkswagen will be launching the largest electric offensive in the automobile industry. By 2025 at the latest, the brand intends to sell more than 1 million electric vehicles per year throughout the world. "We will pave the way for the breakthrough of e-mobility," says Thomas Ulbrich.

100 % ELECTRIC

The modular electric toolkit (MEB) is the technological backbone of the electric offensive – this is a full-electric, modular technology platform for mass-produced electric vehicles. "With this platform, we will be exploiting the possibilities of electric cars at the same time as generating enormous economies of scale," says Ulbrich. All the models in the ID. family will therefore be full-electric vehicles. Volkswagen is also forcing the pace with production:

right from the outset, the ID. family is to be produced at specially equipped plants. Zwickau is being converted into the largest, highest-performance electric car plant in Europe. In future, up to 330,000 electric cars per year will roll off the assembly lines here – more than at any other Volkswagen Group plant. The production of the compact ID.*, the world's first MEB vehicle, is to start at the end of 2019. Other MEB plants are being created in Europe, China and North America.



ZWICKAU VEHICLE PLANT TO BE HIGHEST-PERFORMANCE ELECTRIC CAR FACTORY IN EUROPE

NEW ERA IN PRODUCTION

Volkswagen has decades of experience in production. The Volkswagen brand alone produces more than 100,000 vehicles per week with outstanding production quality. Over the past few years, we have successfully completed the start of production of more than 200 models throughout the world. In brief, Volkswagen can “do” mass production. We are now using this know-how for the production of the new electric car.

The ID* will also herald a new era in production. Production will become more intelligent, more efficient and more flexible. In future, six different models from three Group

brands will roll off the assembly lines in Zwickau– an entirely new dimension in flexibility. Volkswagen is also committed to sustainable, green production. At Zwickau, production of the ID.* will be entirely carbon-neutral. “The start of production of the ID.* in a year’s time will herald a new era for Volkswagen,” says Thomas Ulbrich, Volkswagen Brand Board Member responsible for E-Mobility. “We wanted to take e-mobility out of its niche and to make the electric car affordable for millions of people. As the first MEB plant in the world, Zwickau will play a pioneering role for this future-oriented technology.”

ID. made in Germany



These plants participate in the new ID.

1 Wolfsburg

The MEB platform and ID. family is developed by the technical development department (TE) and the E-Mobility series.

2 Zwickau

By the end of 2019, the ID. CROZZ will be leaving the assembly line.

3 Dresden

The Gläserne Manufaktur will also build ID. Models.

4 Braunschweig

Employees manufacture battery systems for the ID. family.

5 Kassel

The competence centre is responsible for electric drives.

6 Salzgitter

The stator and rotor for e-machines are being manufactured here.

KEY ASPECTS

THE PLANT

TRADITION MEETS FUTURE

There is a long tradition of carmaking at Zwickau. More than 100 years ago, August Horch & Cie. Automobilbau AG and Audi Automobilwerke GmbH started vehicle production at this location. Later, the two companies became part of Auto Union AG and finally AUDI AG. Following German reunification, Volkswagen returned to the region and established Volkswagen Sachsen GmbH in 1990. Currently, some 7,700 people are employed at the Zwickau plant. Last year, they produced about 290,000 vehicles. Thomas Ulbrich: "The Zwickau team has the know-how and passion required for producing electric cars of the very highest quality."

MADE IN GERMANY

All in all, six Volkswagen plants in Germany are involved in the development and production of the Volkswagen ID.*. The model is being conceived and developed by the E-Mobility Series Group and Technical Development in Wolfsburg. The heart of the ID.*, the battery system, is to be produced in Brunswick. The plant is currently being expanded in order to produce up to half a million battery systems per year in the future. The entirely newly developed MEB powertrain is to be produced in Kassel. And Salzgitter is to start with pre-series production of the rotor and stator for the MEB this year.

"This is a strong commitment to Germany as an automobile production location. We intend to take the country into the lead with respect to the electric car and to ensure that it remains strong in the long term," says Thomas Ulbrich.

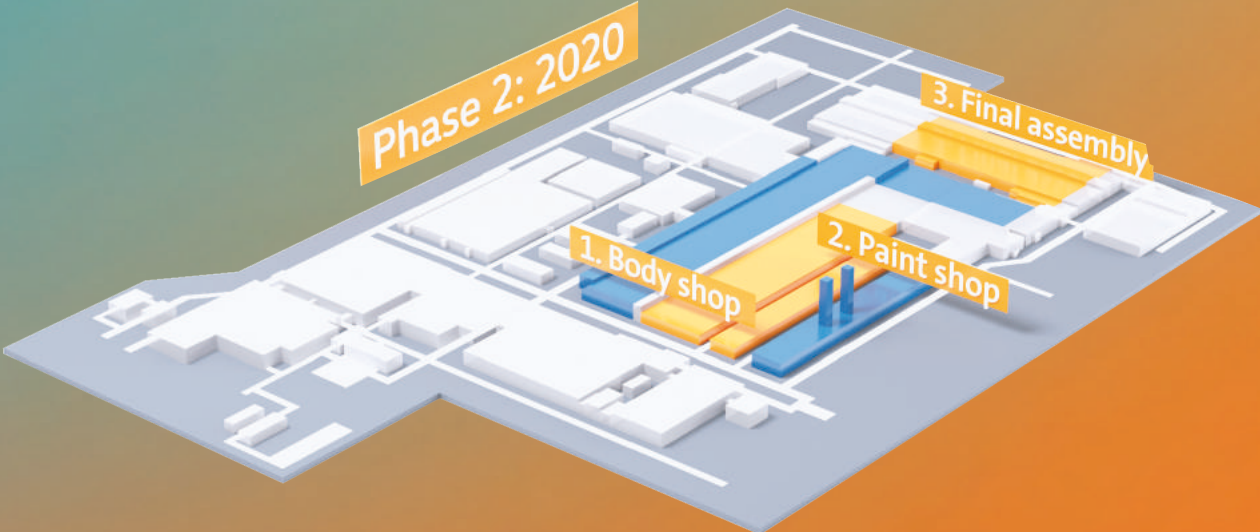
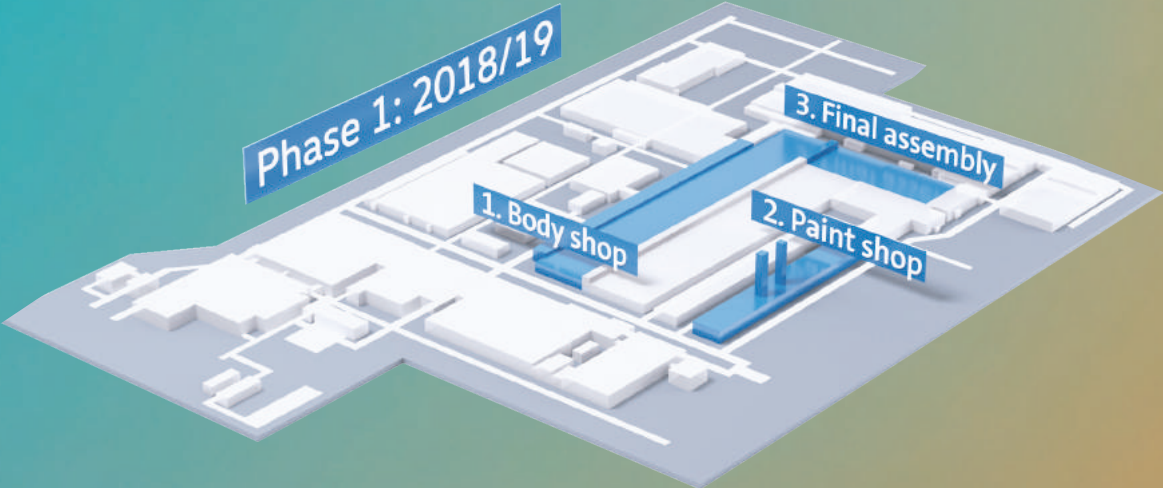
REINHARD DE VRIES,
MEMBER OF THE MANAGEMENT BOARD OF VOLKSWAGEN
SACHSEN GMBH RESPONSIBLE FOR TECHNOLOGY & LOGISTICS:

„We have planned the transformation of the Zwickau plant very carefully. Detailed preparations and planning are all- important for a megaproject of this type. After all, we’re talking about the beginning of a new epoch in the automobile state of Saxony and this transformation is to be completed without interrupting production.“



THE TRANSFORMATION

HOW ZWICKAU WILL BE CONVERTED TO A PURE E-FACTORY



KEY ASPECTS

THE TRANSFORMATION

A COMPLETE CONVERSION

The Zwickau plant is to be converted from the current situation, with 100 percent internal combustion engines, to 100 percent electric drive systems. This will be the first complete transformation of a major car factory to e-mobility in the world. A special challenge will be the completion of the transformation while the plant remains in operation. At the same time as the development of ID. production, production of the Golf Estate is to continue up to mid-2020.

The transformation is to be completed in several stages and has already started. The first production line is to be changed over step-by step in only 24 months. Up to the planned start of production of the ID.*, at the end of 2019, the body shop, paint shop, assembly unit and infrastructure will be comprehensively modernized and renewed. Among other items, it will be necessary to prepare the entire conveyor systems for electric cars, which are heavier.

HOT PHASE FROM SUMMER 2019

The hot phase of the changeover will start in the summer of 2019. From the works holidays in July 2019, the first production line will be equipped for the new MEB vehicles within only a few weeks. The second production line is to be changed over following the same procedure in 2020 and to start production the same year. The maximum production capacity of the Zwickau plant is to be increased by 10 percent from the present figure of 1,350 to 1,500 vehicles per day, which will probably be reached from 2021 onwards. In the course of the transformation, an estimated 9,000 tonnes of steel are to be processed and factory halls with a total of 50,000 square meters are to be constructed.

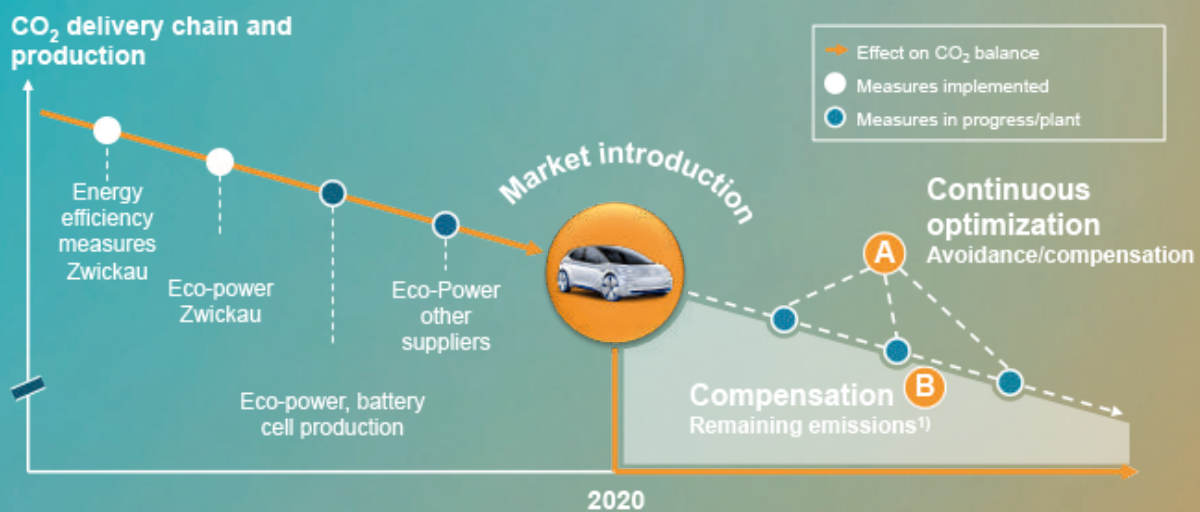
DR. MARTIN GOEDE,
HEAD OF TECHNOLOGY PLANNING AND DEVELOPMENT AT VOLKSWAGEN:

„The factory of the future combines a ground-breaking car with highly innovative production processes. At Zwickau, we have therefore opted for highly advanced, intelligent production technologies. This way, we will lay the foundation for the fast, trouble-free production of the ID to outstanding quality standards.“



GREEN PRODUCTION

THE CO₂ EMISSIONS OF THE ID. WILL BE CONTINUALLY REDUCED – AND REMAINING EMISSIONS WILL BE COMPENSATED FOR



1) By certified projects – e.g. VCS (Verified Carbon Standard) or REDD+ (reducing emissions from deforestation and forest degradation)

THREE PRINCIPLES:

1. **FIRST AVOID CO₂ ...**
(e.g. use of eco-power)
2. **... THEN REDUCE**
(e.g. energy efficiency measures)
3. **... AND THEN COMPENSATE FOR UNAVOIDABLE EMISSIONS**
(e.g. protection of tropical rainforests)

KEY ASPECTS

GREEN PRODUCTION

CARBON-NEUTRAL PRODUCTION

The electric car can only make a meaningful contribution to climate protection if it is built and operated with energy from renewable sources. This is why, in connection with the Volkswagen ID.* produced at Zwickau, we set ourselves the target of delivering a vehicle that had been produced in a carbon-neutral way to customers for the first time. We are following the principle of avoiding the production of CO₂ where possible and reducing emissions where this is not possible. Other climate protection measures are to be taken to compensate for emissions which cannot be avoided.

For the ID.*, this means that we will be optimizing CO₂ emissions in the delivery chain and production and compensating for the remaining emissions up to delivery to the customer. We have already addressed the key CO₂ hot spots:

it has been agreed that our suppliers will use "green" power from renewable sources for the production of the battery cells. We are working actively on similar agreements with other suppliers.

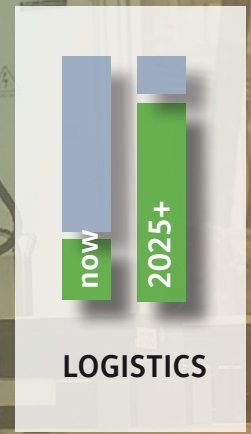
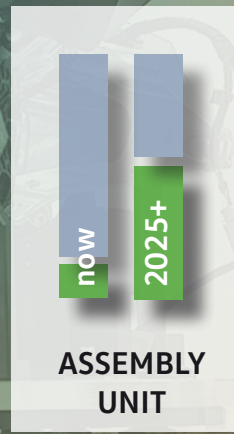
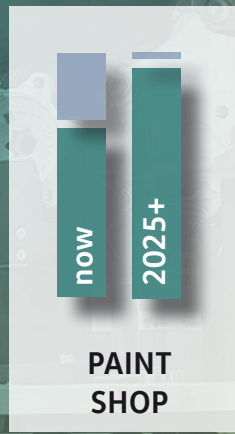
ZWICKAU IS COMMITTED TO HYDROPOWER

Since 2017, the external power used at the Zwickau has already been replaced by eco-power from hydropower plants operated by the Austrian energy supplier Verbund. By the start of production of the ID.*, the remaining emissions from the highly efficient compact cogeneration plant at the facility will be compensated for by climate protection projects certified to officially approved standards.

This way, Volkswagen intends to make a measurable contribution to climate protection going beyond statutory requirements on a voluntary basis.

THE FACTORY OF THE FUTURE

AUTOMATION IN VEHICLE ASSEMBLY



KEY ASPECTS

THE FACTORY OF THE FUTURE

A MODEL DIGITAL FACTORY

The realignment of the Zwickau vehicle plant towards e-mobility will gradually raise automation and efficiency to the latest standards without any impact on employment. The vision is the factory of the future – an intelligent, sustainable, fully networked factory. Digitalization concerns all areas of production, although the effects differ. While the body shop and paint shop are already highly automated, the degree of automation in vehicle assembly will almost be tripled in the course of the changeover to the electric models.

ROBOTICS

At the Zwickau plant, Volkswagen is consistently opting for highly advanced Industry 4.0 robots and expanding the use of human-robot cooperation. In the completely transformed factory, a total of 1,700 production robots will be used. For example, the cockpit

will be installed as a complete module fully automatically using an industrial robot in the future. In addition to shorter process times, automation will bring benefits for the employees. Human-robot cooperation will relieve the burden of physically exhausting work with unfavorable ergonomics. There will also be new possibilities as regards quality. At the end of assembly, the fully networked ID.* will carry out an electronic quality check.

DRIVERLESS TRANSPORT SYSTEMS

Driverless transport systems are another key technology on the way to the factory of the future. They will supply the parts required to the assembly line entirely autonomously along defined routes, revolutionizing processes within the plant. Volkswagen plans to use this technology on a large scale at Zwickau. The current plans call for about 500 driverless transport vehicles.

DIRK COERS,
MEMBER OF THE MANAGEMENT BOARD OF
VOLKSWAGEN SACHSEN GMBH RESPONSIBLE FOR
HUMAN RESOURCES AND ORGANIZATION:

*„At Zwickau, we are
launching one of the
largest training campaigns
in the automotive industry.
The employees are at the
center of our transformation.“*



THE WORKFORCE

ZWICKAU EDUCATING FOR E-MOBILITY

How employees at the site are trained for the new ID. production



7,700 Employees are preparing for e-mobility



3,000 Employees are receiving specific training at the e-mobility training centre



1,500 Employees are taking a high voltage licence test



13,000 Training Days collectively invested by the workforce into the future of mobility

Electric offensive:
Volkswagen trains top experts for the production of the ID. Family

KEY ASPECTS

THE WORKFORCE

TRAINING CAMP FOR E-MOBILITY

Volkswagen is transforming itself into a leading supplier of fully connected full-electric vehicles. This also means preparing the team for new requirements and jobs arising in connection with electrification and digitalization. At Zwickau, Volkswagen has launched the largest training campaign in the company's history. Up to 2020, all 7,700 employees are to be involved in the change process and to be prepared for the new mission of the Zwickau plant by information events. 3,000 employees are to complete the e-mobility training center, covering specific specialist aspects of e-mobility. All in all, the campaign will include 13,000 training days.

HIGH-VOLTAGE TRAINING

In addition, about 1,500 employees will complete a sort of high voltage license. The training will range from high-voltage sensitization to the qualification of high-voltage experts. The main focus will be on the safe handling of higher voltages.

Training as an electrical specialist or an electrical specialist for specified tasks, both state-recognized training vocations, will also be possible.

The training campaign is to be completed together with the Volkswagen Training Institute at Zwickau. For this purpose, a dedicated high-voltage laboratory with electric training vehicles has been established. In addition to preparatory training concerning basic skills at the E-mobility training centre, the focus will be on training in robotics, highly advanced automation technology and vehicle electronics.

THE ZWICKAU PLANT – FACTS AND FIGURES

TEAM

About 7,700 employees,
300 apprentices

AREA

The Zwickau vehicle plant has a total area of more than 1,800,000 square meters, of which 1,400,000 square meters are covered by buildings.

PRODUCTION

Now:

280,000 vehicles

From 2021:

up to 330,000 vehicles

Since the plant was established in 1990, more than 5.5 million vehicles have rolled off the production line.

MANAGEMENT

Dipl.-Ing Thomas Ulbrich has been Member and Speaker of the Management Board of Volkswagen Sachsen GmbH since April 5, 2018.

MODELS

Now: Volkswagen Golf, Golf Variant
From 2021: ID.*

in the final stage of development, six electric models from three brands will be produced at Zwickau.

ENVIRONMENTAL PROTECTION

The objective is to deliver vehicles which have been produced with a neutral CO₂ balance to customers. Among other measures, external power supplies to the Zwickau plant have been switched to eco-power from the hydroelectric power plants of the Austrian energy supplier Verbund.

Information as of December 2017



Volkswagen

Press contact

Volkswagen Communications

Christoph Adomat
Head of Future Technology Communications
Phone: +49 5361 9-86266
Christoph.Adomat@volkswagen.de

Andreas Groß
Future Technology Communications
Phone: +49 5361 9-89043
Andreas.Gross1@volkswagen.de

Volkswagen Sachsen

Gunter Sandmann
Spokesperson Volkswagen Sachsen GmbH
Phone: +49 375-55-2820
Gunter.Sandmann@volkswagen.de

Carsten Krebs
Head of Communications, Transparent Factory
Phone: +49 351-420-4245
Carsten.Krebs1@volkswagen.de

More information
volkswagen-newsroom.com

EN

© Volkswagen Product Communications
P.O. Box 1971
38436 Wolfsburg
Germany