Leading the Transformation.

Dr. Herbert Diess
Chairman of the Board of Management,
Volkswagen AG

CAPITAL MARKETS DAY 2019
The following presentations contain forward-looking statements and information on the business development of the Volkswagen Group. These statements may be spoken or written and can be recognized by terms such as “expects”, “anticipates”, “intends”, “plans”, “believes”, “seeks”, “estimates”, “will” or words with similar meaning. These statements are based on assumptions, which we have made on the basis of the information available to us and which we consider to be realistic at the time of going to press. These assumptions relate in particular to the development of the economies of individual countries and markets, the regulatory framework and the development of the automotive industry. Therefore the estimates given involve a degree of risk, and the actual developments may differ from those forecast. The Volkswagen Group currently faces additional risks and uncertainty related to pending claims and investigations of Volkswagen Group members in a number of jurisdictions in connection with findings of irregularities relating to exhaust emissions from diesel engines in certain Volkswagen Group vehicles. The degree to which the Volkswagen Group may be negatively affected by these ongoing claims and investigations remains uncertain.

Consequently, a negative impact relating to ongoing claims or investigations, any unexpected fall in demand or economic stagnation in our key sales markets, such as in Western Europe (and especially Germany) or in the USA, Brazil or China, and trade disputes among major trading partners will have a corresponding impact on the development of our business. The same applies in the event of a significant shift in current exchange rates in particular relative to the US dollar, sterling, yen, Brazilian real, Chinese renminbi and Czech koruna.

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E-MOBILITY IS THE ONLY WAY FORWARD TO ACHIEVE CLIMATE TARGETS

• Our Target: CO₂ neutral fleet by 2050

• Increase share of future technologies – Focus E-Mobility

• Implementation of further measures to become CO₂ neutral
PRIMARY ENERGY DEMAND IS LOWEST WITH BEVS

### PRIMARY ENERGY REQUIREMENT IN WH/KM FOR LIFECYCLE

<table>
<thead>
<tr>
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<th>Fossil</th>
<th>Regenerative</th>
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<tbody>
<tr>
<td>Diesel¹</td>
<td>1.000</td>
<td>#1</td>
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<tr>
<td>Gasoline¹</td>
<td>1.500</td>
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<tr>
<td>Full Hybrid (Gasoline)¹</td>
<td>1.000</td>
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<td>Gasoline (eFuel)</td>
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<td>Gas (eCNG)</td>
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<tr>
<td>Full Hybrid (eFuel, Gasoline)</td>
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<td>Fuel Cell (eH2)</td>
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<td>Plug-In Hybrid (eFuel, Gasoline)</td>
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THE MODEL OF THE ENERGY BALANCE LIFECYCLE

- Vehicle development
- Vehicle production
- Fuel production
- Fuel consumption
- Recycling

Example: A-Segment 200.000 km, CO₂ emissions & energy over lifecycle of vehicle and fuel
¹) not fully comparable with energetic base, not CO₂ neutral
BEVS ARE FIRST CHOICE AS THE MOST COST EFFICIENT SOLUTION FOR CO₂ REDUCTION

Example Volkswagen Brand: Ranking CO₂ efficiency indicators (average) for selected CO₂ measures
**CO₂ FLEET TARGETS HAVE CHANGED PRODUCT PROFITABILITY**

**IMPACT ON PRODUCT DECISIONS:**

- **TRANSITION PERIOD:** ICES STILL MORE PROFITABLE
- **RIsing costs of CO₂ compliance negatively impact ICE profitability**
- **BEVS NECESSARY FOR CO₂ COMPLIANCE**
- **INCREASING VOLUME OF BEVS drives profitability**

The diagram illustrates the profitability of different models (ID., ID. Crozz, Golf, T-Cross, Arteon, Tiguan) with and without CO₂ impact.
BEV AND ICE COSTS AND MARGINS ARE CONVERGING SOON\textsuperscript{1)}

\textbf{BEV}
Battery Electric Vehicle

\textbf{ICE}
Internal Combustion Engine Vehicle

\textsuperscript{1)} Schematic overview
E-MOBILITY TRANSFORMATION IS REFLECTED IN OUR CORPORATE PLANNING

PARIS IMPLICATIONS AND TRANSFORMATION PATH

- Conventional platforms
- Conventional projects

SOP

EOP

>10 years Fleet renewal

“Zero Emission“ in the existing fleet

Broad product portfolio

CO₂-Emissions

CO₂ neutral cars

New business model

2020

2050
DEDICATED PLATFORMS (MEB/PPE) GUARANTEE SUPERIOR CUSTOMER EXPERIENCE, SCALE AND VERSATILITY

SCALABLE TECHNOLOGY

- Long wheelbase short overhangs
- Spacious interior for driver & passengers
- No center tunnel
- Various bodystyles
- Big wheels
- Rear-wheel & four-wheel drive
- Central computing unit
- Trunk volume ~ ICE
- New Design
OUR E-MOBILITY STRATEGY COMES TOP DOWN...

PREMIUM

VOLUME

HOLISTIC APPROACH with GREEN ENERGY
SUMMARY E-MOBILITY STRATEGY

- Only way to meet Paris climate target
- Most cost efficient way to meet fleet targets
- Dedicated platforms put Volkswagen in pole position
- Volume in China and Group guarantees scale effects
- Multi-brand plants provide efficiencies
- Top down strategy (premium → volume)
- Holistic customer focus: dealers well prepared, infrastructure in progress, affordable
- Battery supply secured

Fully reflected in corporate planning
Today

- 100 million lines of code per vehicle
- Approximately $10 per line of code
- Example: Navi system 20 million lines of code

Tomorrow

- > 200 - 300 million lines of code are expected
- Level 5 autonomous driving will take up to 1 billion lines of code
THE CAR BECOMES THE MOST COMPLEX INTERNET DEVICE

Car

- Distributed customer functions

No own Software stacks

Control units: approx. 70

Fully connected car

- Software Stacks: Infotainment, Navigation, Emergency Assist ...
- Cloud/Backend

Today

Tomorrow

- Basic Software: Operating System
- vw.OS

- Functions/Software

Today

- Development of Volkswagen's own Software stacks

High Performance Computers 3-5

Further control units for safety relevant functions
FIRST STEPS TAKEN IN SOFTWARE TRANSFORMATION

- **E³ architecture** for premium (PPE) and volume (MEB) under way
- **Separating** hardware and software development
- Ramp up **software competencies** started (Carmeq)
- **Partnerships** and acquisitions (Microsoft/WirelessCar/Diconium)
- **Board position** for **Software** development
- **Strategy:**
  - Volkswagen Group owns software stack
  - Deploys software continuously into the fleets / all car brands
INCREASED FOCUS ON VALUE CREATION

- First steps to **release shareholder value**: TRATON in preparation and further steps in portfolio optimization in consideration
- **Performance share plan introduced** introduced to Top Level Management (~380) and similar plan to be introduced to total Management (~6.800)
- **Efficiency and Performance programs, complexity reduction and synergies** in all brands
- Roll out of **Integrity-Program** well on the way
- **Leadership program** expanded
1. Leading the industry in e-mobility
2. Cost effective transformation path
3. First in transforming into software OEM
4. Increased focus on value creation
5. Update on Strategy Together 2025+ in summer