Entwicklung modularer Antriebssysteme für Rolläden

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Johnson Electric Germany GmbH & Co. KG
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Germany

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About
Johnson Electric

Global Leader in Motion Solutions

Motors
Pumps & Valves
Solenoids
Switches
Relays
FPC & Microelectronics

World Class Customers Across Diversified Industries

Proven Financial Stability

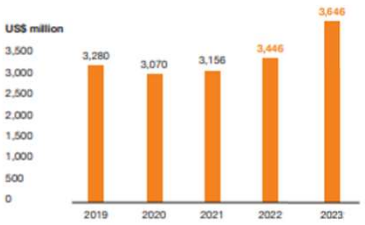
Founded in 1959

Stock code
179
Listed on the Hong Kong Stock Exchange since 1984

Generating Total Sales Revenue
US$3.6 billion
Net Income
US$158 million

Operating in
22 countries
across
4 continents

Total Group Sales



Employing over
35,000 people
including
1,500+ engineers

Providing motion solutions to over
1,700+ customers

JOHNSON ELECTRIC

Engineering Expert in
Various Industries

Johnson Electric
Your Technology Expert

-
Differentiation with innovative engineered solutions
-
Technology roadmaps for multiple technologies
-
High volume manufacturing technology
-
Product roadmaps for continuous improvement
-
Quality & reliability designed-in

Dedicated application engineering team to focus on customer requirements and application needs:

Engineering and Simulation Centers

- CAD Design
- Electromagnetic Simulations
- Injection Molding Simulations
- Structural Simulations
- Thermal Simulations
- Computational Fluid Dynamics

Test and Analysis Centers

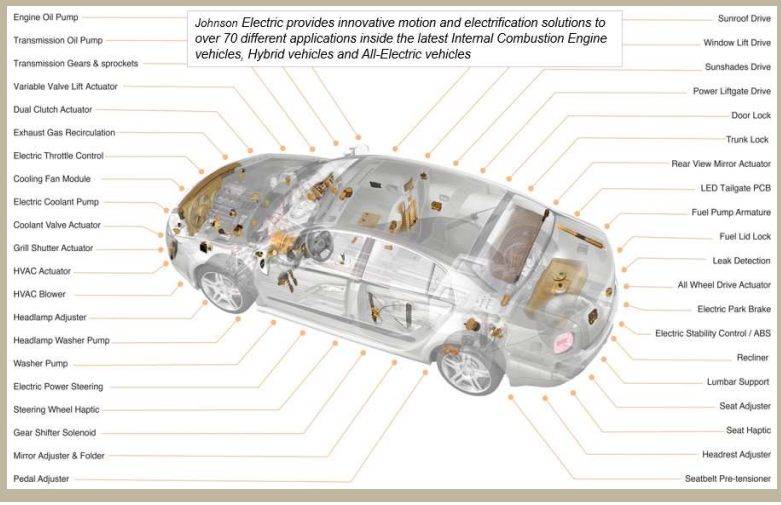
- X-Ray Computed Tomography
- Scanning Electron Microscope
- Structural Vibrations Laser Vibrometer
- Characteristics of Lubricants Analysis
- Vibration/Temperature Testing
- Climate & Life Cycle
- Environmental Testing
- EMC Anechoic
- NVH Anechoic
- Sound/Noise Measurement
- Cyclic Corrosion Test
- Salt Spray Test
- Airflow Test Bench

JOHNSON ELECTRIC

Engineering Expert in
Various Industries

Johnson Electric
Your Technology Expert

Johnson Electric provides innovative motion and electrification solutions to over 70 different applications inside the latest Internal Combustion Engine vehicles, Hybrid vehicles and All-Electric vehicles



JOHNSON ELECTRIC

Engineering Expert in
Various Industries

Building a global-local manufacturing footprint

We aim to support our customers by being close to where they operate and being able to ensure fast and reliable supply and a highly responsive service. To execute this strategy, we are strengthening in-region capabilities, introducing advanced resource- and energy-efficient manufacturing technologies to our factories across Asia, North America, South America and Europe.

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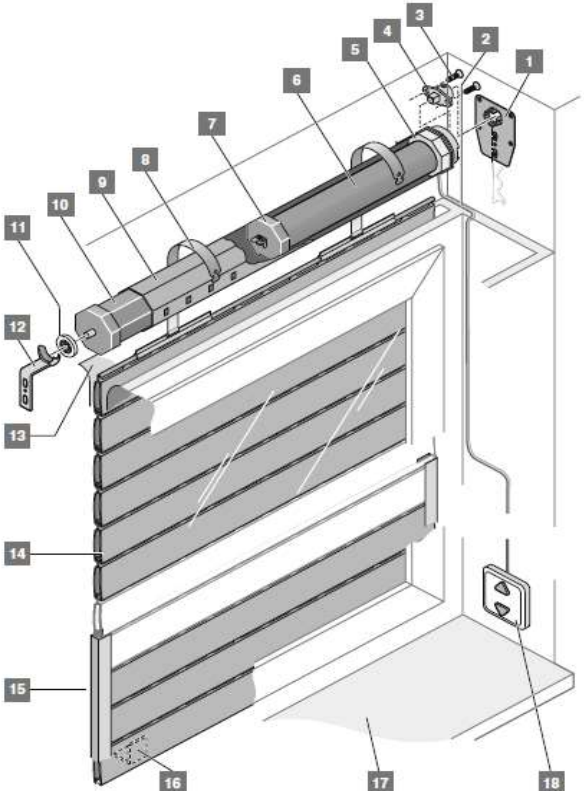
IPG Engineering Competence Center Dresden

- Produktentwicklung von Studien bis zum fertigen Produkt für Großserienproduktion
- ~ 80 Mitarbeiter Entwicklung
- Globale Produktion (Polen, China, Serbien, Mexico, Indien)
- Produkte:
  - Schrittmotoren
  - Getriebe
  - Ventile
  - Relais
  - Komplettsysteme
  - Elektronik / Software

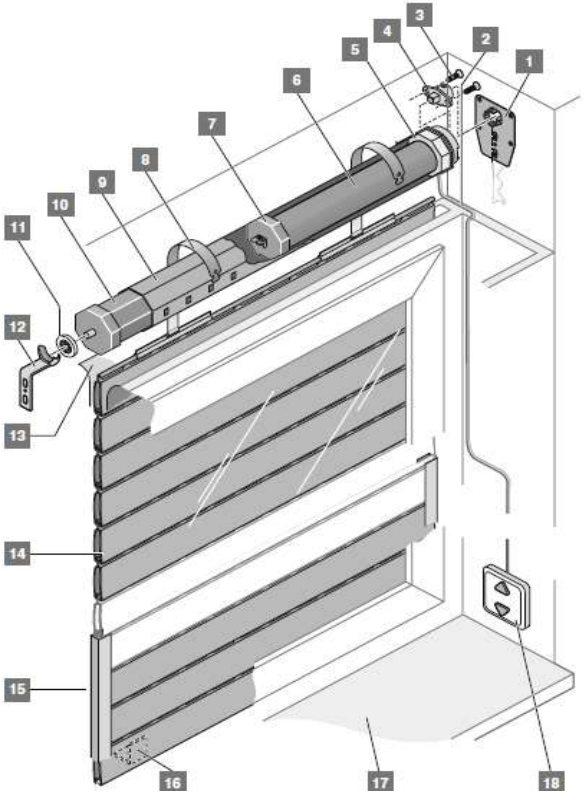
JOHNSON ELECTRIC

Inhalt

Gebäudeverschattung



Gebäudeverschattung



v=const.

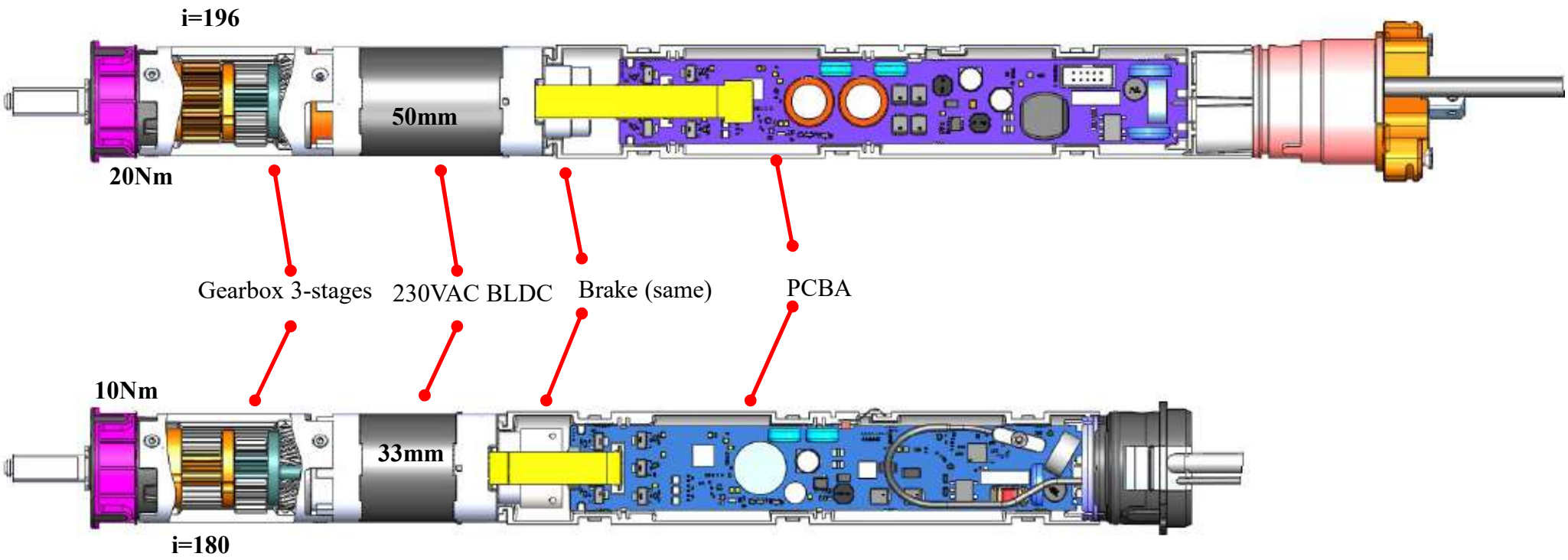
Breite

T=changing

Statisches Selbsthaltemoment

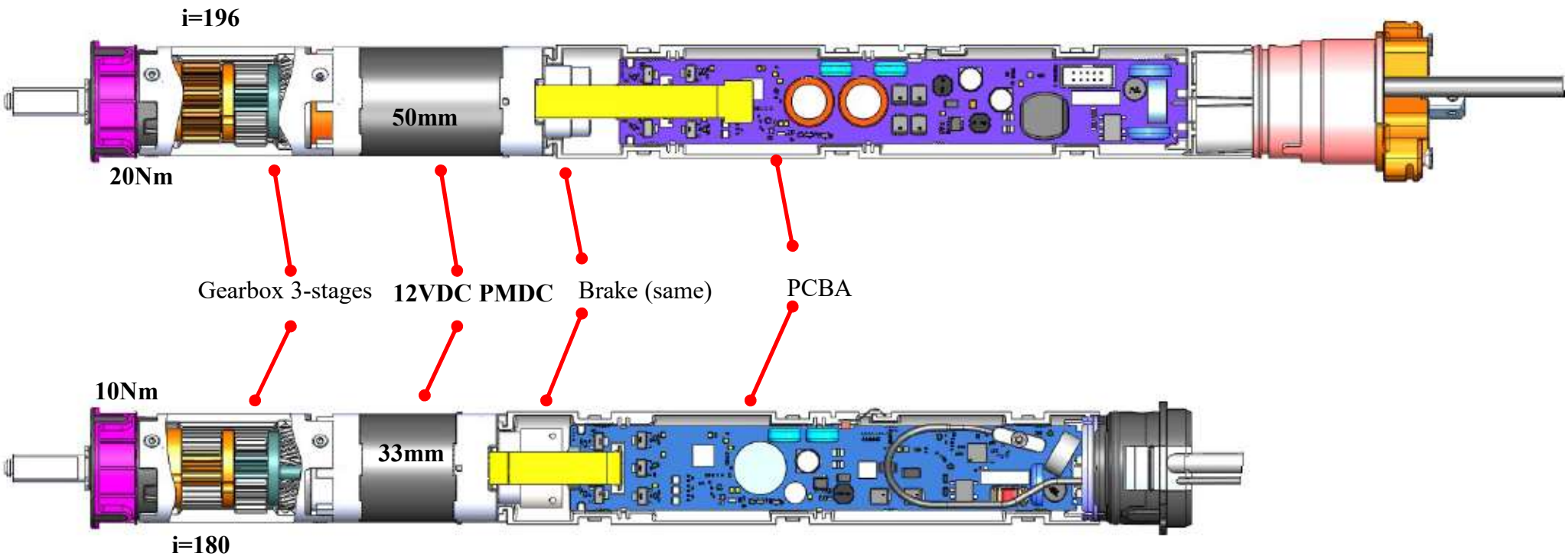
JOHNSON ELECTRIC

Aufbau Antriebssystem - Rohrmotoren Ø45mm

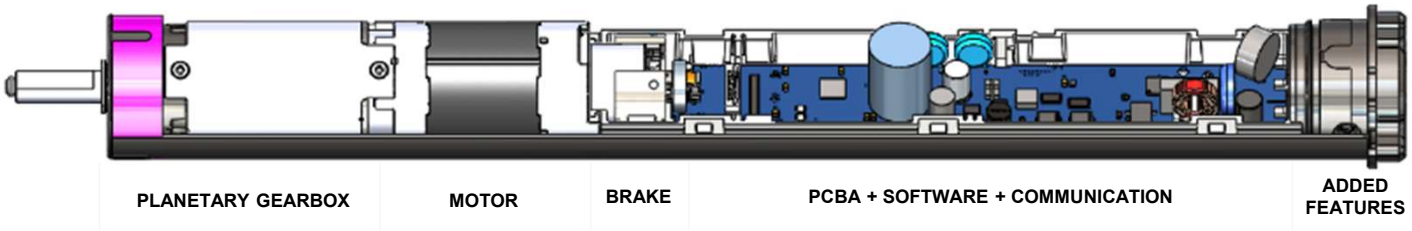


JOHNSON ELECTRIC

Aufbau Antriebssystem - Rohrmotoren Ø45mm

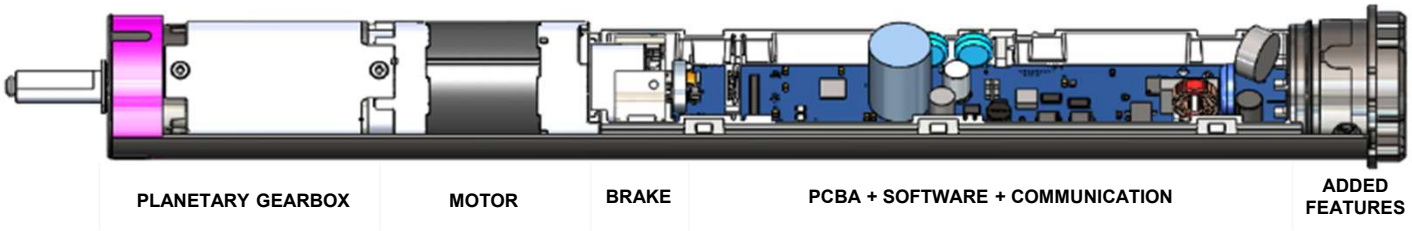


Modularität System



Body Care

Modularität System



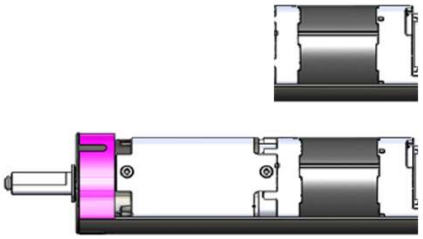
From

bare motor

to

complete

systems



Body Care

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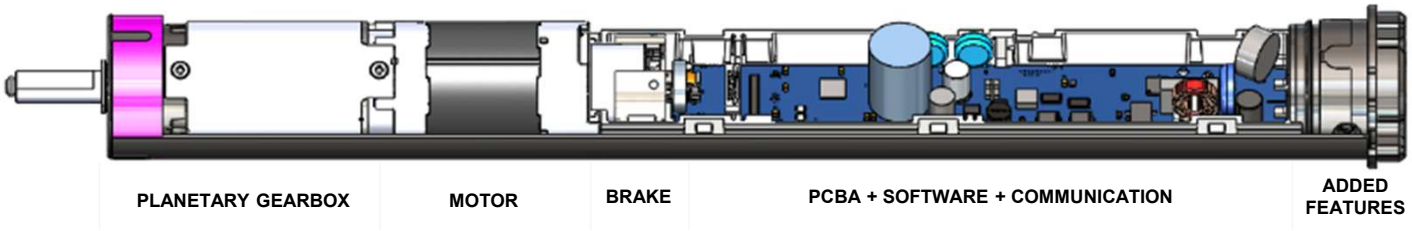

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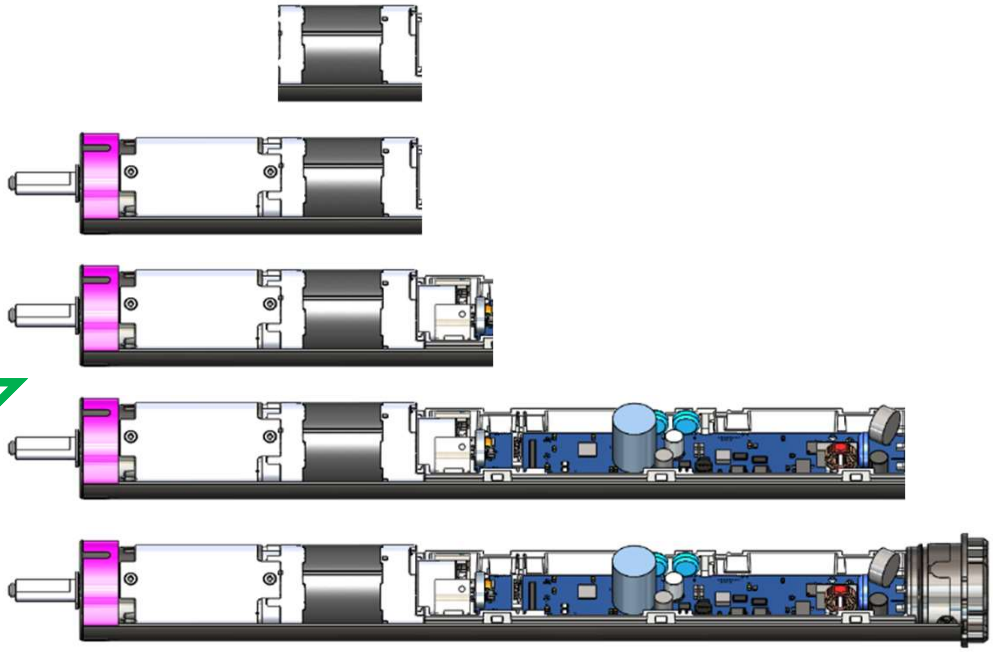
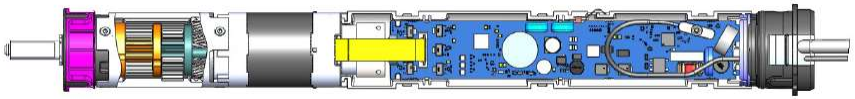


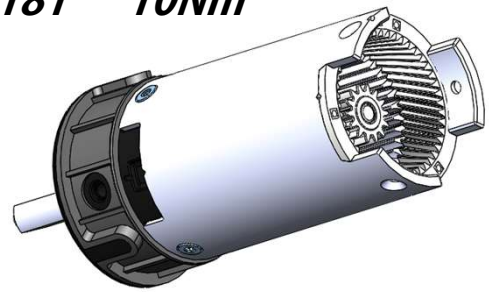
Details Mechanik

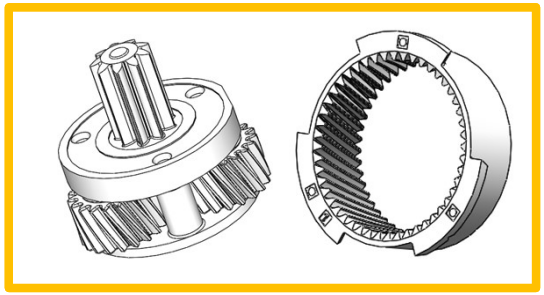


Getriebe

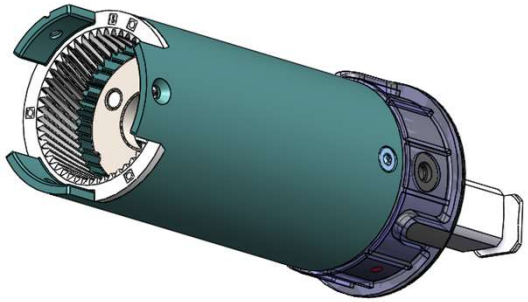
- 1. Getriebestufe schrägverzahnt wird für 10Nm und 20Nm genutzt:

i=181 - 10Nm



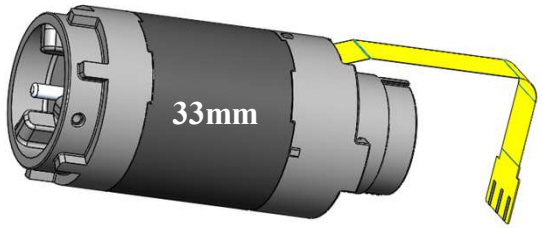


i=196 - 20Nm



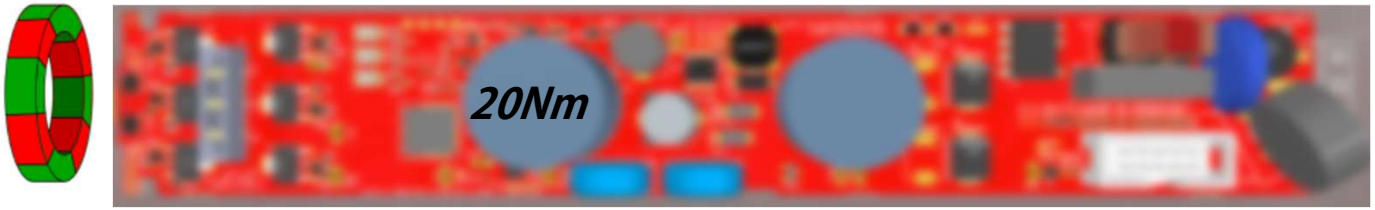
Motor

- Kappen sind gleich, aber Statorlänge skalierbar



Details Elektronik / Software

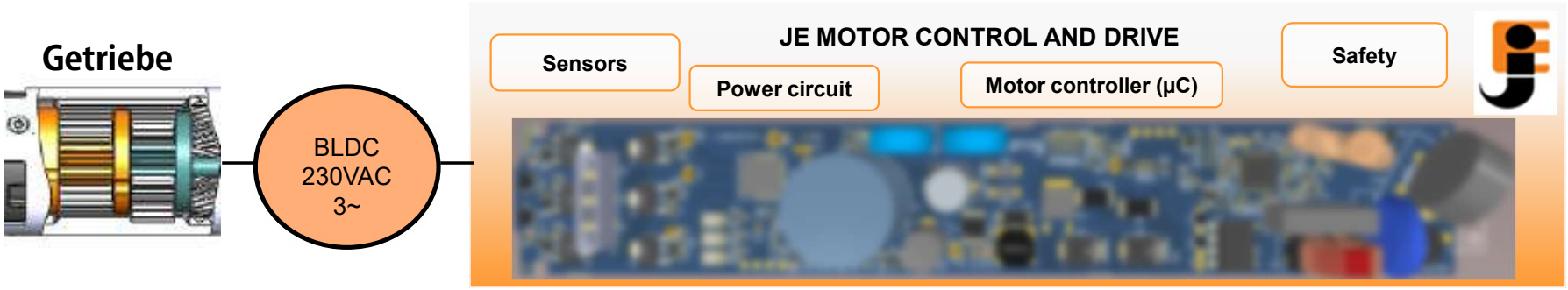
- **PCBA:**
  - Sensorpositionierung gleich
  - Verbindungstechnik Motor
  - Microcontroller gleich



- **Software:**
  - Algorithmen zur Sensorauswertung wiederverwendbar
  - Regelkreis gleich
  - Kommunikationsschnittstelle gleich

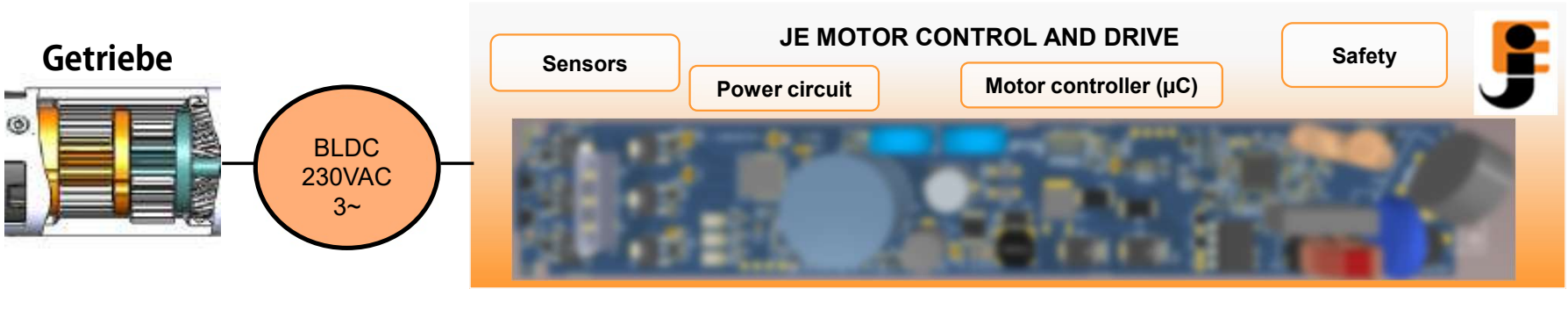
Kommunikationsschnittstelle

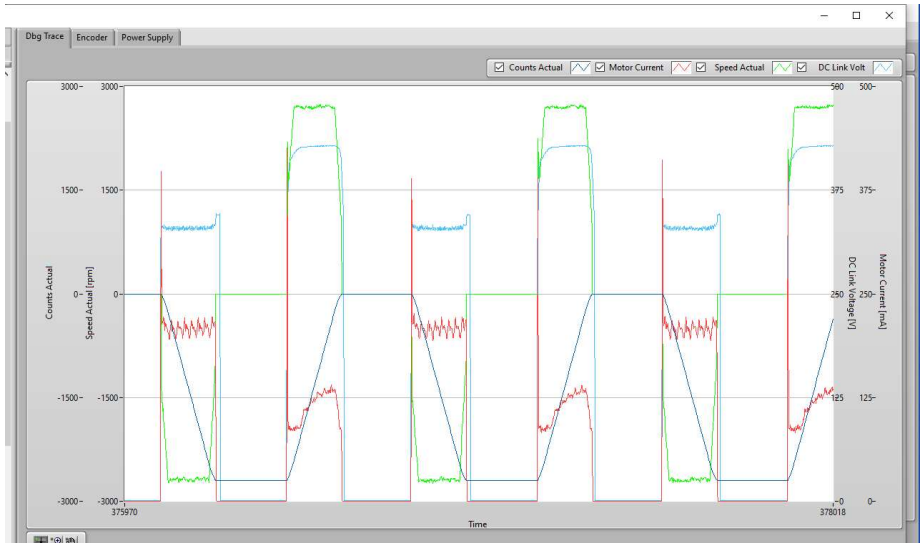
- Produktelektronik als Diagnosetool in der Entwicklung

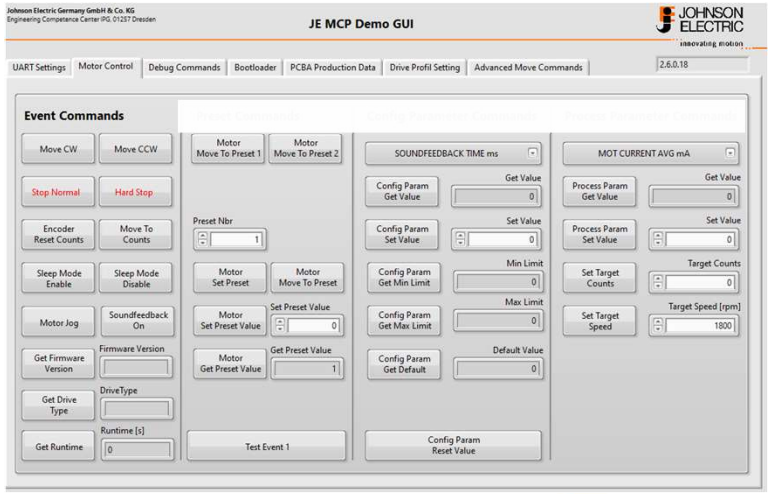


Kommunikationsschnittstelle

- Produktelektronik als Diagnosetool in der Entwicklung

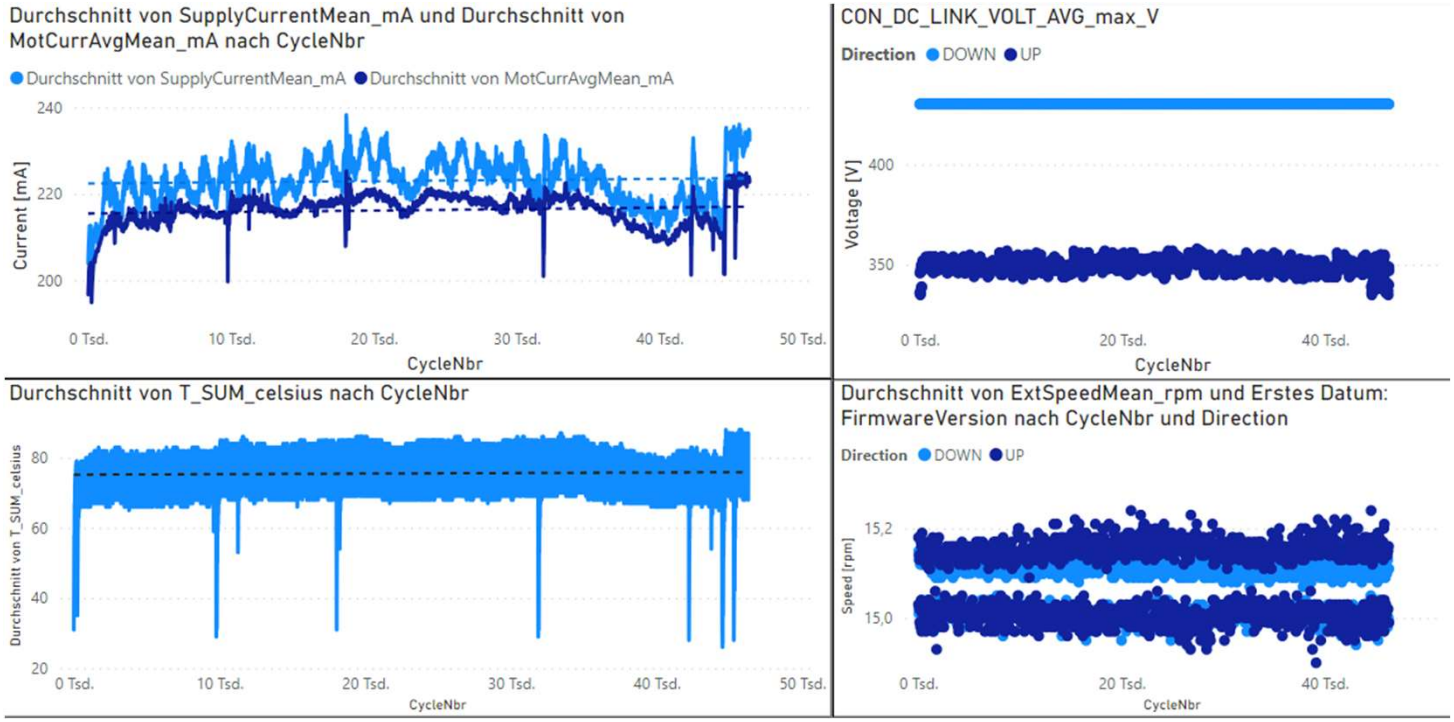






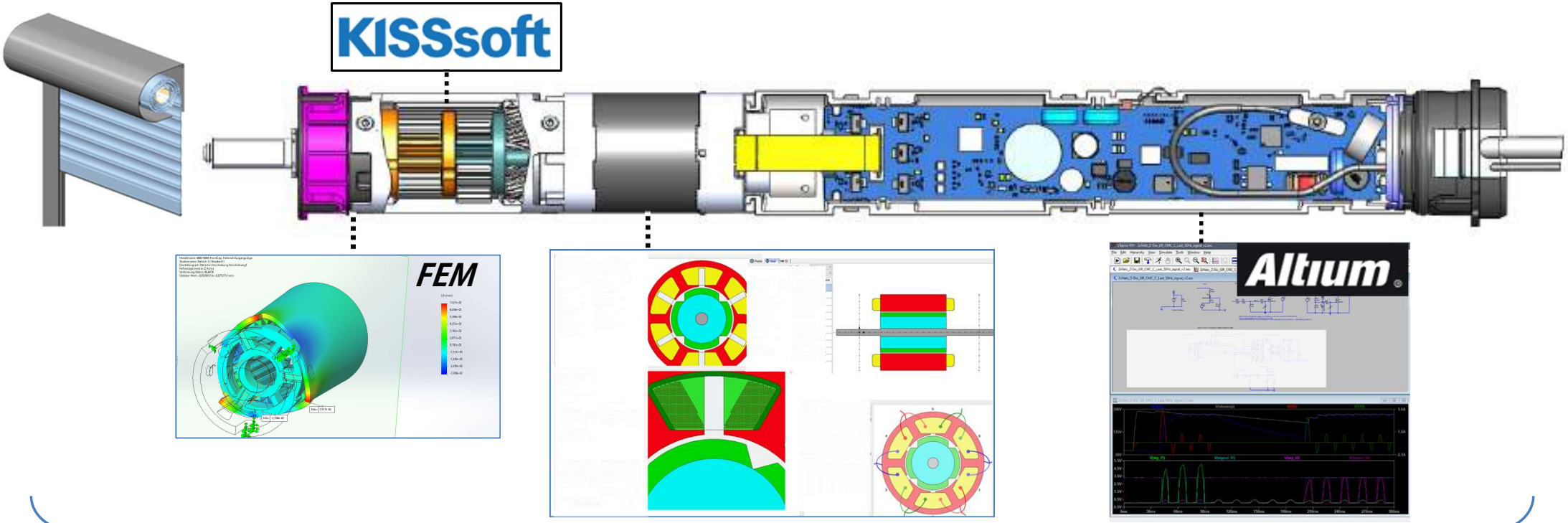
Lebensdauer Dashboards als Unterstützung der Entwicklung

- Produktelektronik als Diagnosetool in der Entwicklung



- z.B. Monitoring vom Motorstrom gibt Hinweise auf Lebensdauer
- Hinderniserkennung

Digital Twin für System Design



SIMULATION X®

Ausblick / Zusammenfassung / Erfahrung

- **Modulares Systemdesign erlaubt effiziente Nutzung von Einzelkomponenten**
- **Digitale Zwillinge helfen bei der Auslegung und dem Systemverständnis**
- **Systemingenieure, welche alle Elemente zusammenfügen können, sind sehr wichtig (einschliesslich Elektronik+Software)**
- **Schnittstellendefinition ist aufwendig, aber lohnt sich… (eigener Vortrag möglich)**
- **Nutzung der Systemelektronik/software als Diagnosetool zu empfehlen**

Kontakt

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