

47th Aachener Gießerei-Kolloquium

Klimaschutz macht Angst! Was bedeutet der CO²-Footprint und die Dekarbonisierung für die Gießerei-Industrie?



Ingo Bitzer, CEO MAT EUROPE

17th March 2023



**GLOBAL REACH, LOCAL PRESENCE:
YOUR CASTING, MACHINING & ASSEMBLY
PARTNER**

A WORLD-LEADER IN ENGINEERING AND MANUFACTURING
CAST AND MACHINED AUTOMOTIVE PRODUCTS





INDUSTRIAL

Our Industrial division, MAT Dania, provides total solutions for **iron casting, machining and assembly**. From its multiple **European sites**, MAT Dania manufactures high quality components for OEMs and Tier 1 suppliers.



TRANSMISSION & CV

Our Transmission and CV division incorporates MAT Neunkirchen, Schmidt Automotive, PTR and MAT Machining Europe. From **state-of-the-art** plants across **Germany** and the **US**, we produce transmission components for commercial vehicles globally.



BRAKES

With plants in the **UK, Europe, China** and **Mexico**, our Brakes division – incorporating Ueckermunde, MDAP, Mincer and Eurac – manufactures **high-grade braking components** for the passenger car market, commercial vehicles and racing applications.

MFG | MARKET SECTORS

OUR CORE SPECIALISMS: A GUIDE IN NUMBERS



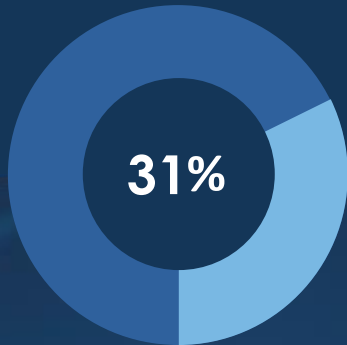
40 MILLION
BRAKE COMPONENTS MANUFACTURED
ANNUALLY



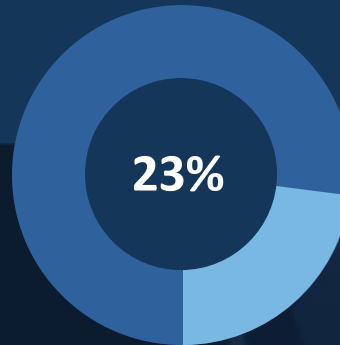
9 MILLION
TRANSMISSION COMPONENTS
MANUFACTURED ANNUALLY



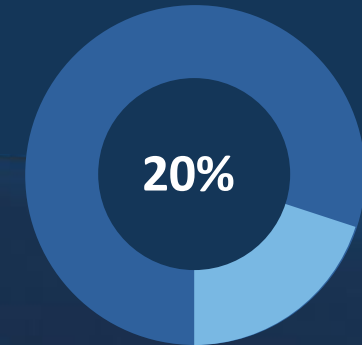
11 MILLION
COMMERCIAL VEHICLE COMPONENTS
MANUFACTURED ANNUALLY



EU BUILT CARS HAVE MFG
BRAKE PARTS



EU BUILT CARS HAVE MFG
TRANSMISSION PARTS



MARKET SHARE OF EUROPEAN FREE
AFTERMARKET ON BRAKE DISCS

The image features a variety of metal cast components, including flanges, valves, pipes, and structural parts, arranged in a grid-like pattern around the central text. The parts are shown in different orientations and colors, highlighting their diverse shapes and sizes.

OUR PRODUCTS

PASSENGER VEHICLES

PRODUCT OVERVIEW:

Each year, MAT Foundry Group produces an incredible 20 million automotive and industrial products. In fact, over one third of all vehicles on Europe's roads contain our safety components. In addition, our continued global expansion means our specialist equipment is now being used in vehicles across Asia and North America.

We manufacture the following products for Passenger Vehicles:

- Brake Disks
- Brake Drums
- Wheel Hubs
- Brake Calipers
- Brake Carriers
- Lanchester Housings
- Backplates
- Cam Shaft
- Balance Shaft
- Diesel Pump Housings
- Differential Casings



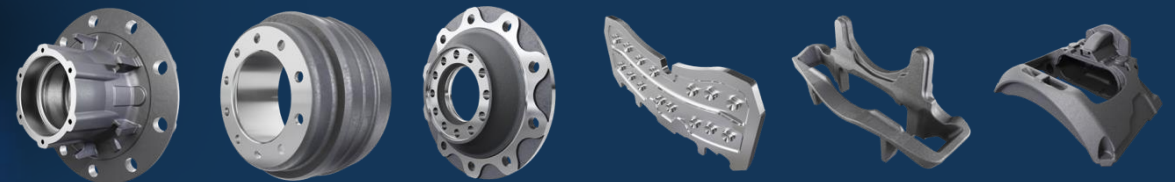
COMMERCIAL VEHICLES

PRODUCT OVERVIEW:

We provide unparalleled manufacturing services to all leading brands within the commercial vehicle market. Our commitment to consistency and quality means that each and every one of our commercial vehicle components delivers optimum efficiency without fail.

We manufacture the following products for Commercial Vehicles:

- Brake Hub
- Brake Drum
- Wheel Flange
- Brake Carrier
- Backplate
- Brake Calipers

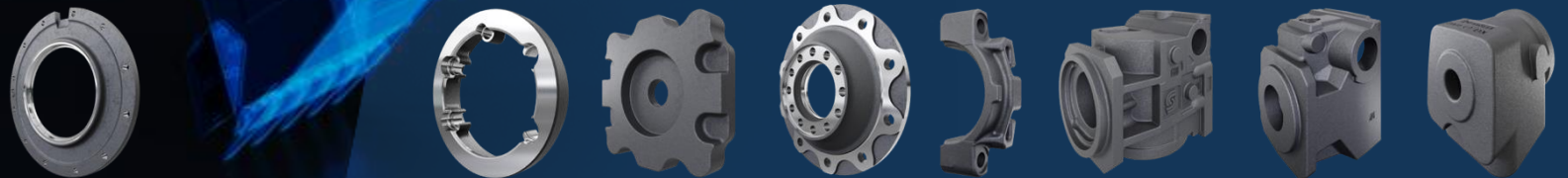


INDUSTRIAL VEHICLES PRODUCT OVERVIEW:

MAT Foundry Group supplies high quality hydraulic castings and machined components to world leaders within the fluid power industry. MAT Dania, as a specialist in the hydraulic component sector, dedicates over 60% of its capacity to hydraulic components.

We manufacture the following products for Industrial Vehicles:

- Disk Brakes
- Flanges
- Differential Carriers
- Pump Housings
- Motor Housings
- Pump Housings
- Motor Housings



STATE-OF-THE-ART CASTING, MACHINING & ASSEMBLY TECHNOLOGY

50 years' experience, MAT Foundry

18 facilities across 8 countries

3,000 dedicated employees

360,000 tonnes of iron every year

500 Mio. € turnover



CREATING VALUE IN EVERYTHING WE DO™

PADS & SHOES

MAT FRICTION
GROUP

SHIMS & BACK PLATES

MAT FRICTION
GROUP

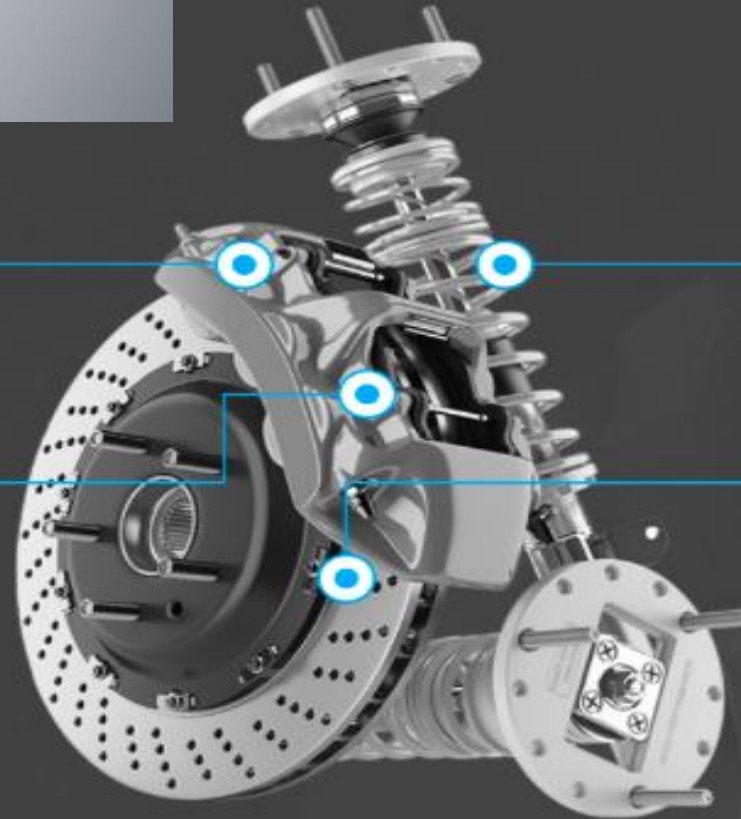
MAT HOLDINGS INC., AUTOMOTIVE

SHOCKS & STRUTS

RIDE CONTROL
A HANSON TECHNOLOGY INC. BRAND

DISCS & DRUMS

MAT FOUNDRY
GROUP LTD



Steve Wang

Seit 1985, Familienunternehmen
> 50 Standorte, 3 Kontinente

16.000 MA

1,7 Mrd. \$ Umsatz

MAT HOLDINGS INC., AUTOMOTIVE



FRICTION GROUP

Products:

Brake Pads/Shoes
Back Plates
Shims
Shim Material

Customers:

O'Reilly
Advance
AutoZone
General Parts

Sales:

\$499,350,770



SUSPENSION GROUP

Products:

Shock Absorbers
Struts
Suspension Systems
Accessories

Customers:

Hendrickson
Zone Compra
NAPA
Navistar

Sales:

\$126,327,566



FOUNDRY GROUP

Products:

Brake Rotors/Discs
Brake Drums
Balancing Systems
Calipers/Brackets

Customers:

Continental
Robert Bosch
ZF
Daimler

Sales:

\$485,324,629



HEAVY DUTY GROUP

Products:

Relined Brake Shoes
Brake Kits
Wheel Kits
Brake Riveting

Customers:

FleetPride
Rush
Stemco
Aurora

Sales:

\$46,899,727



MAT HOLDINGS, INC.

CREATING VALUE IN EVERYTHING WE DO™

MAT HOLDINGS INC., CONSUMER



LAWN & GARDEN GROUP

Products:

Shepherd Hooks
Chain Link Fencing
Trellises
Tomato Cages

Customers:

Home Depot
Werner
True Value
Tractor Supply

Sales:

\$226,043,419



POWER EQUIPMENT GROUP

Products:

Tillers
Leaf Blowers
Augers
Field Trimmers

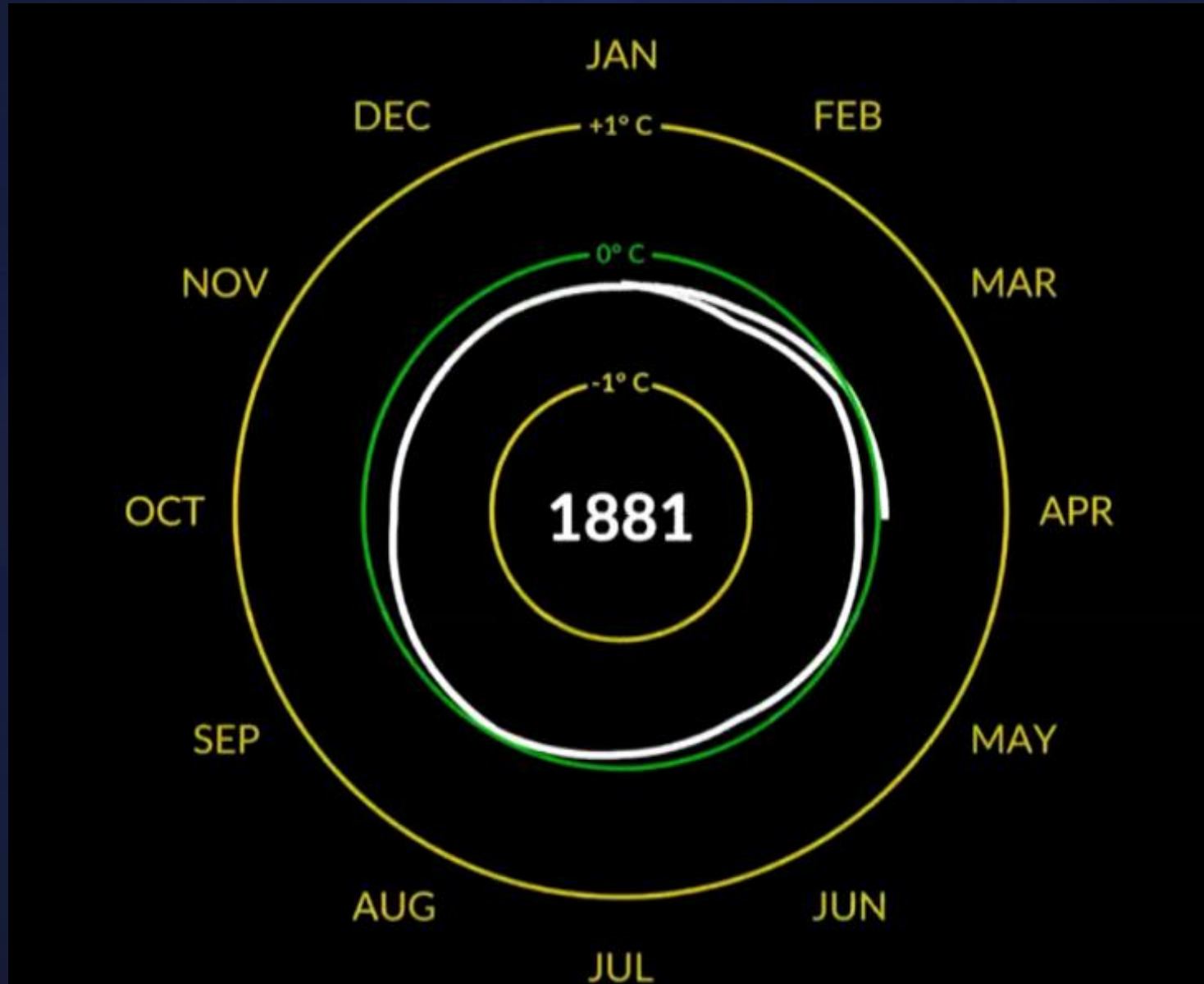
Customers:

Home Depot
Menards
Amazon

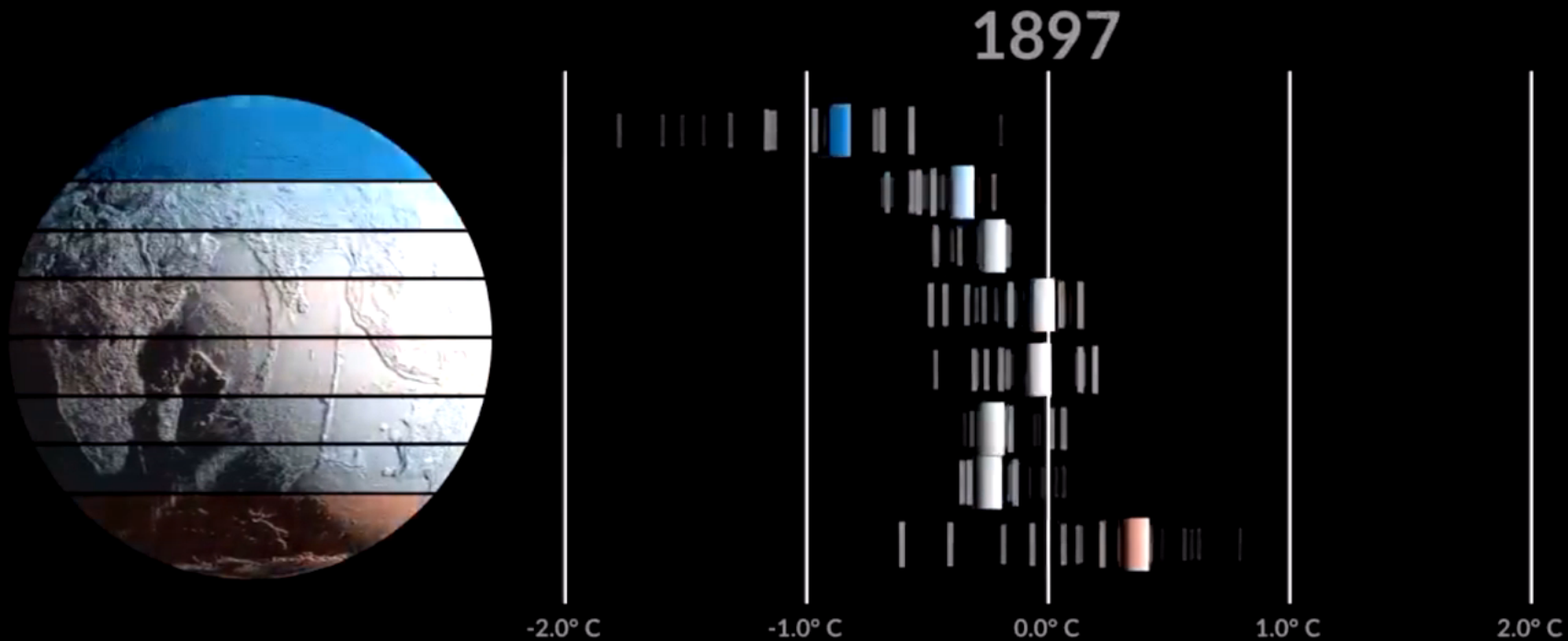
Sales:

\$22,861,473

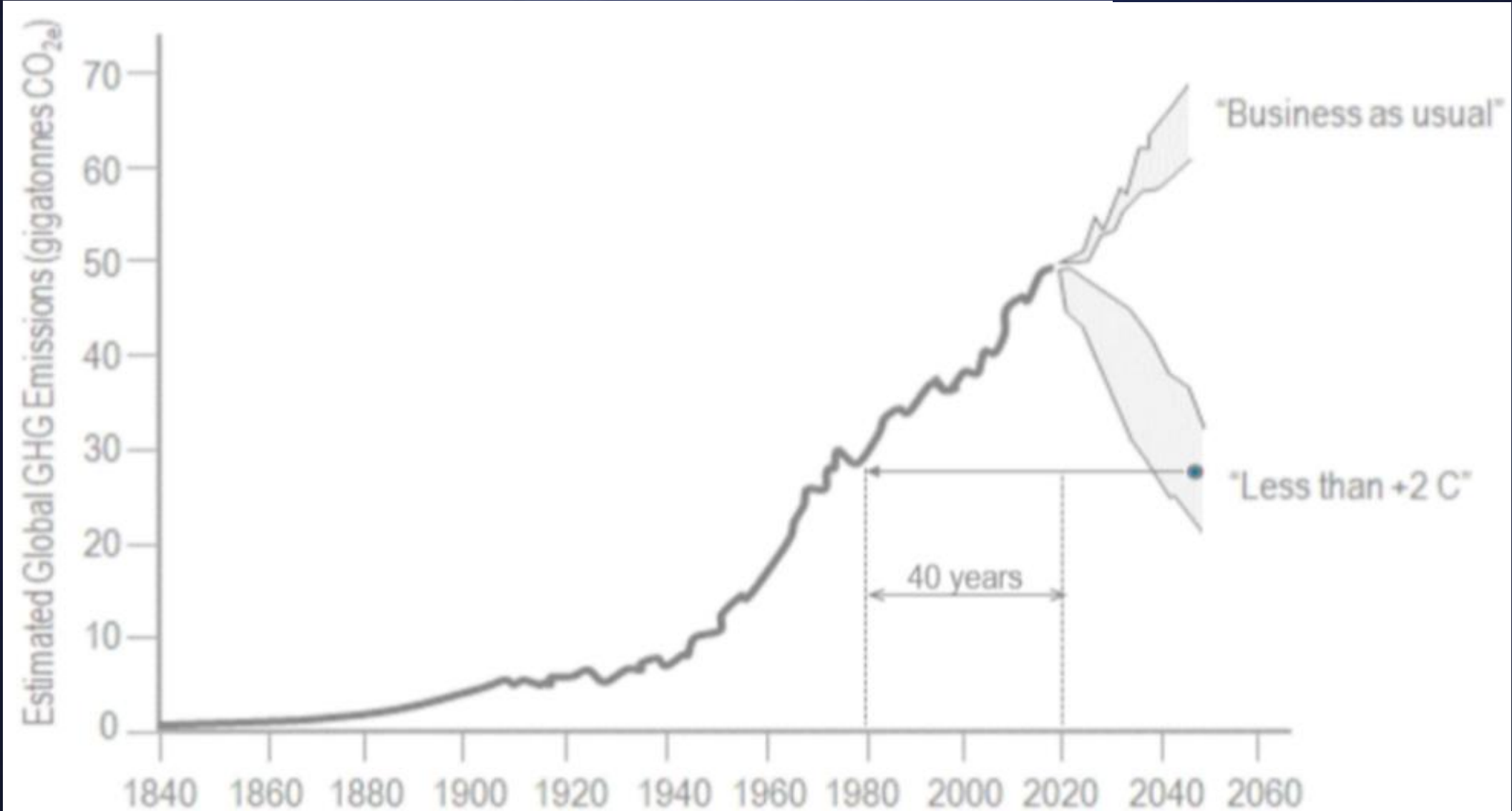
Klimaschutz macht Angst!



Klimaschutz macht Angst!

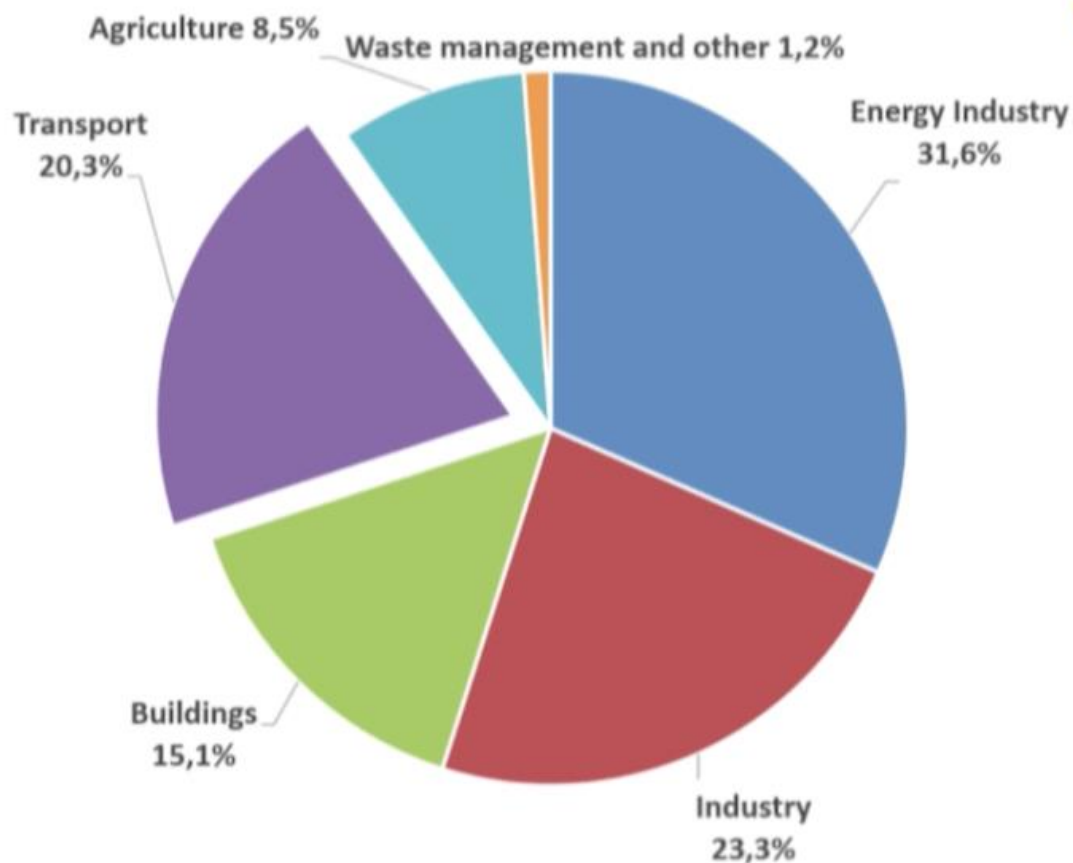


Klimaschutz macht Angst!

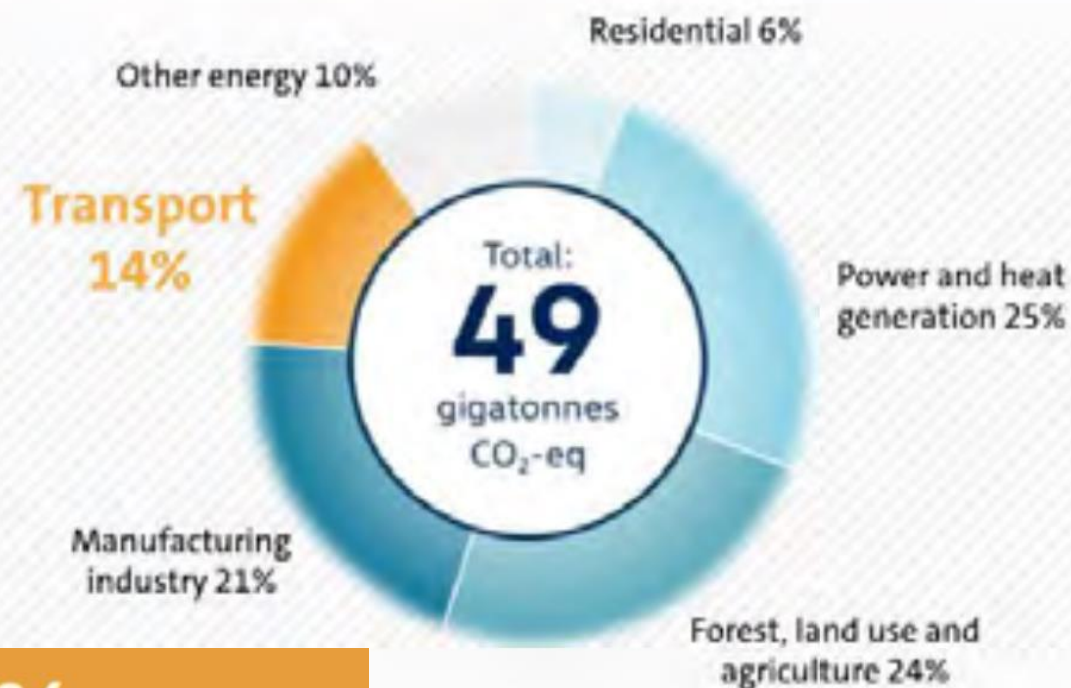


Klimaschutz macht Angst !

Distribution of Global GHG Emissions



Source: UBA, 2020

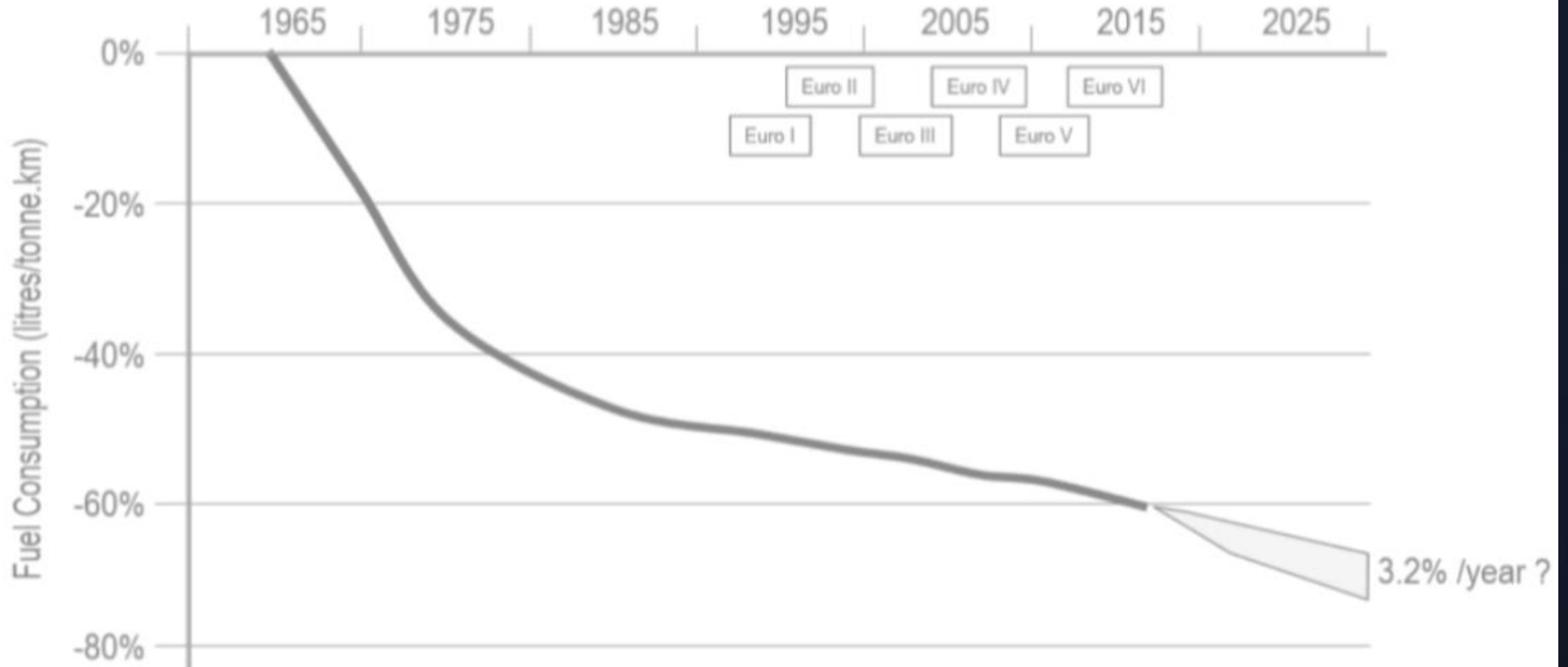


20% of Germany's greenhouse gas emissions are attributable to transport.

What's with the 80-85%?

Klimaschutz macht Angst!

What's with the 80-85% ?



MAT Neunkirchen GmbH

old process
old product

400 MA
50.000 t Guss
70 Mio. € Umsatz





AVOID
REDUCE
COMPENSATE

MAT Neunkirchen GmbH

REUSE NEW DUCE CYCLE

TOWARDS A SUSTAINABLE FUTURE

We understand the impact our industry can have on the environment. Taking steps to manage and mitigate this impact is a high priority. We are committed to continually improving our environmental performance, and focus on these four key areas:



REUSE

**95% of the raw
materials we
purchase are
recycled**



RENEW

**86%
green energy**



REDUCE

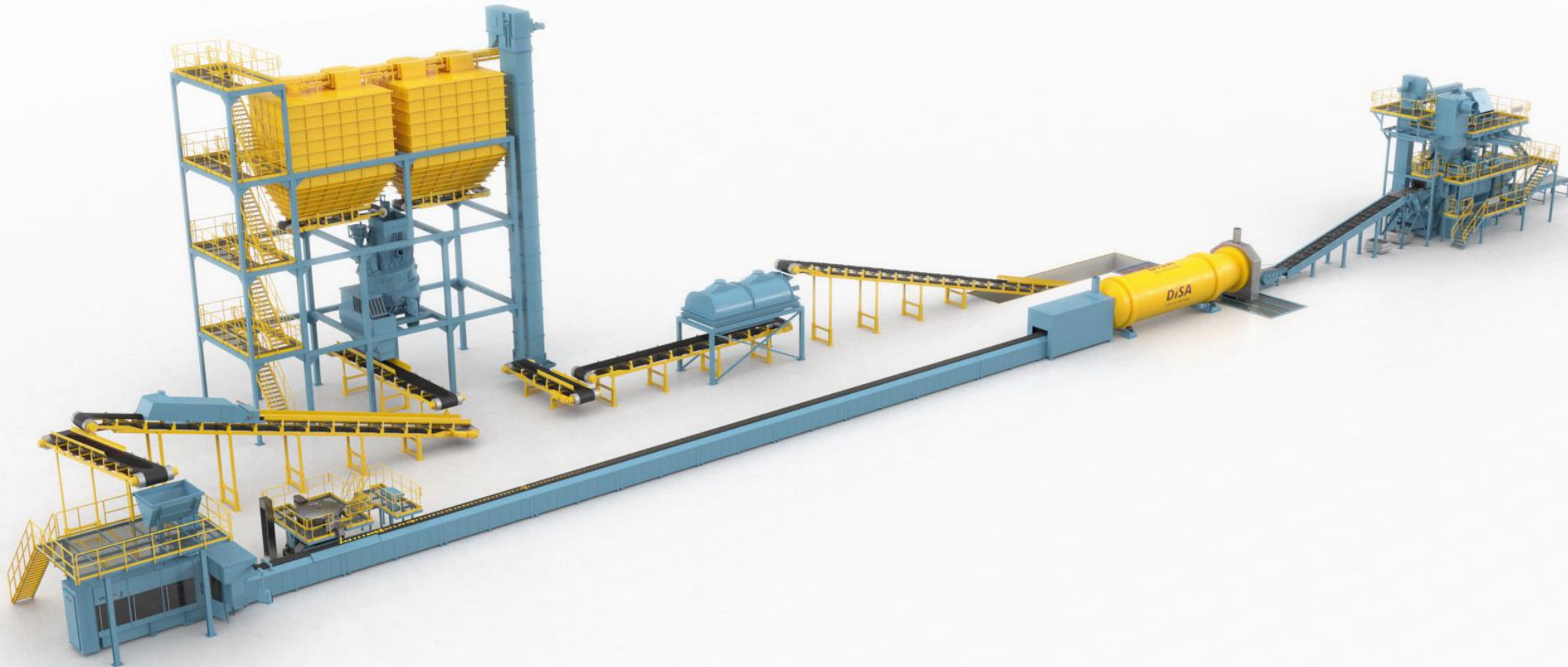
**1 t of CO2 per
2,5 t goods
shipped**



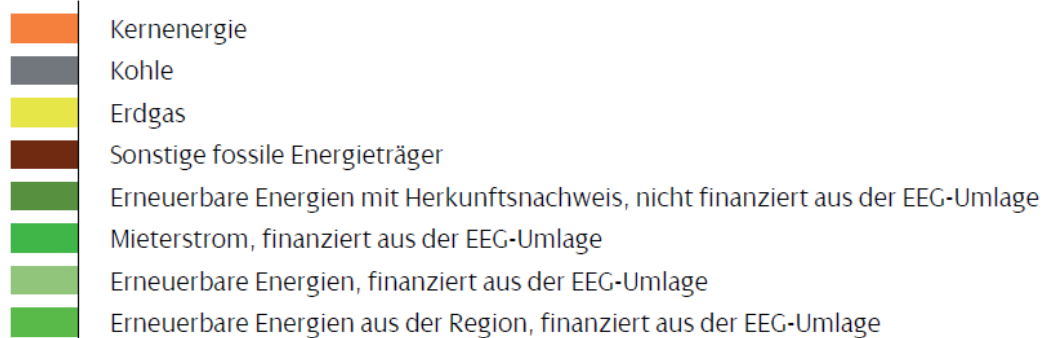
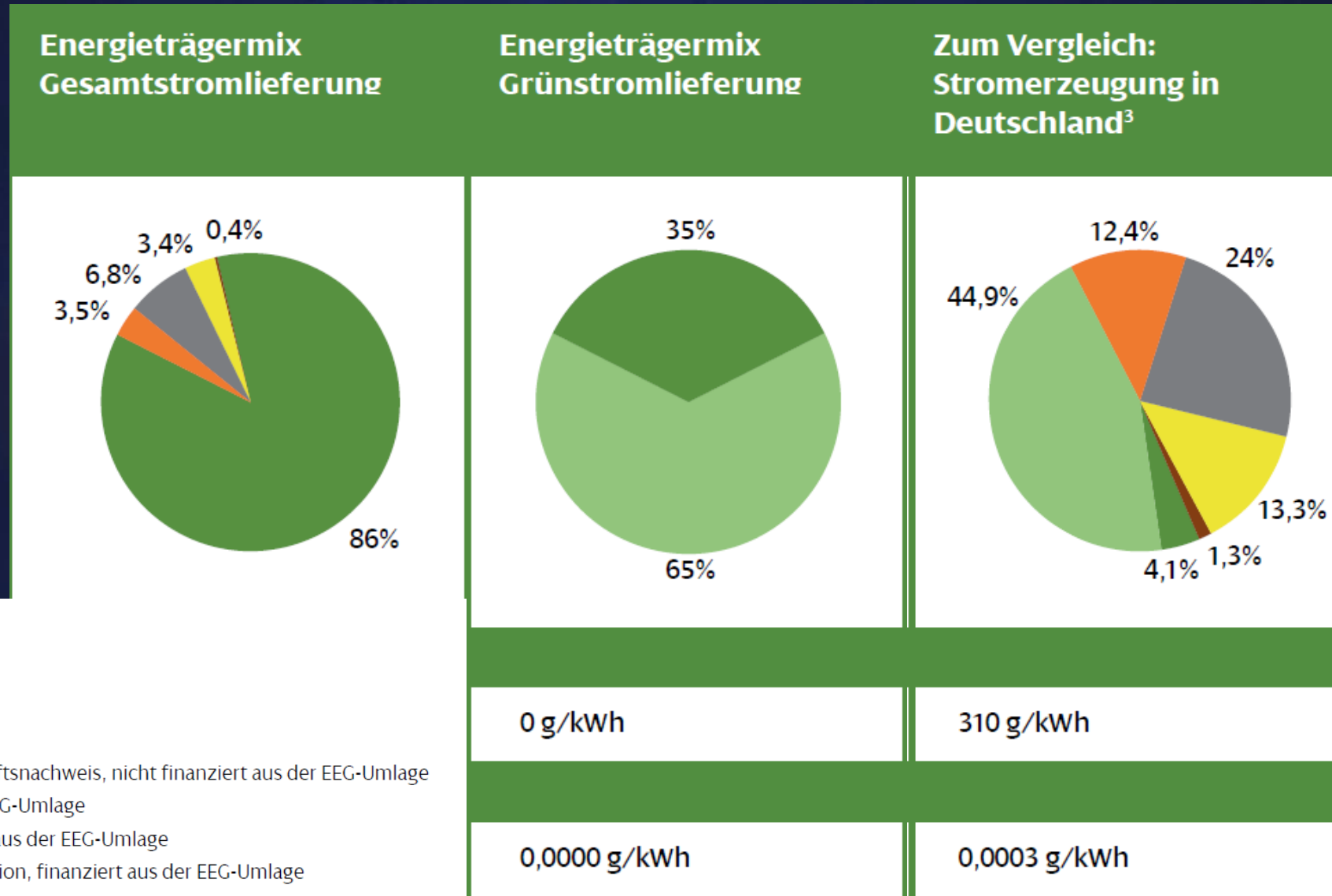
RECYCLE

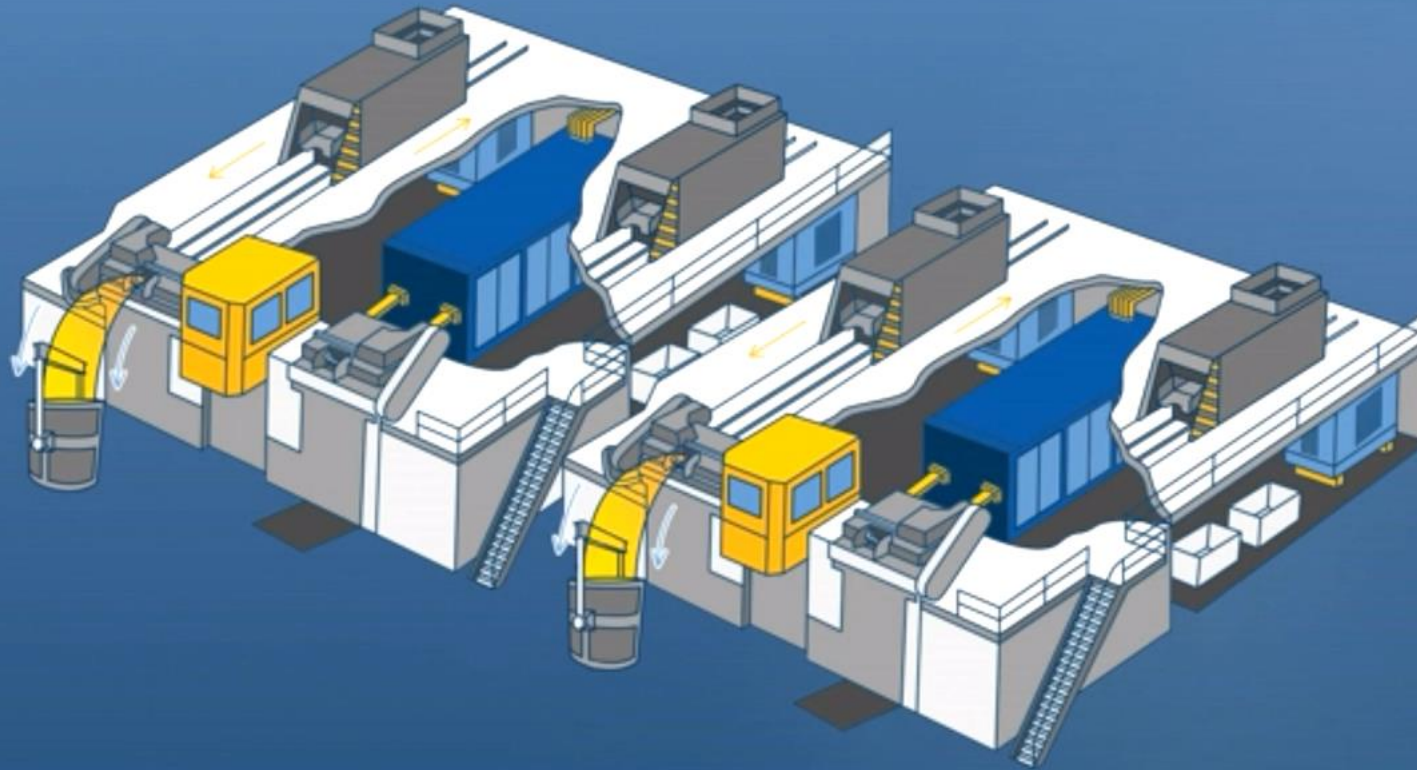
**90% of waste
is recycled**

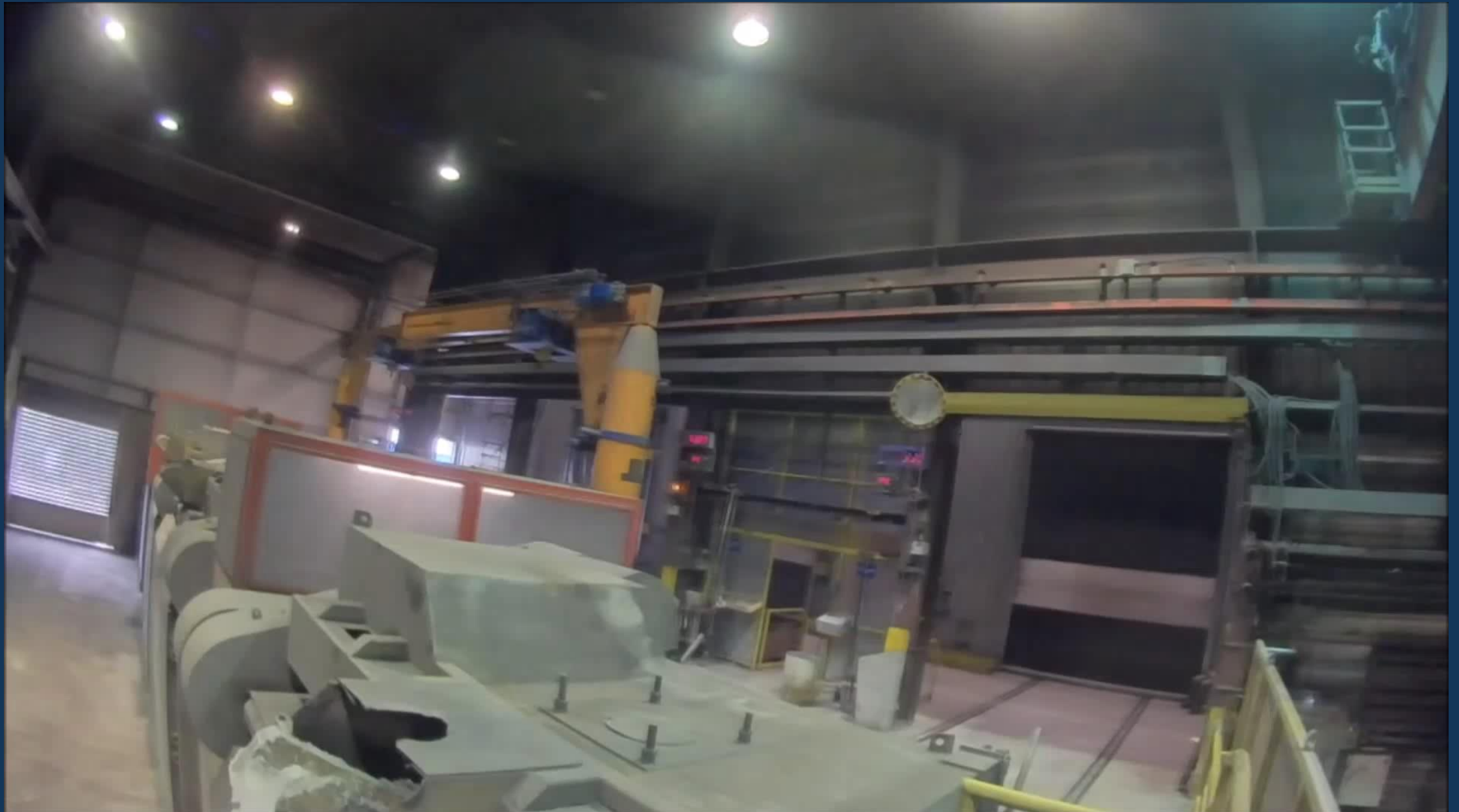




Klimaschutz macht Angst!







MAT Neunkirchen GmbH

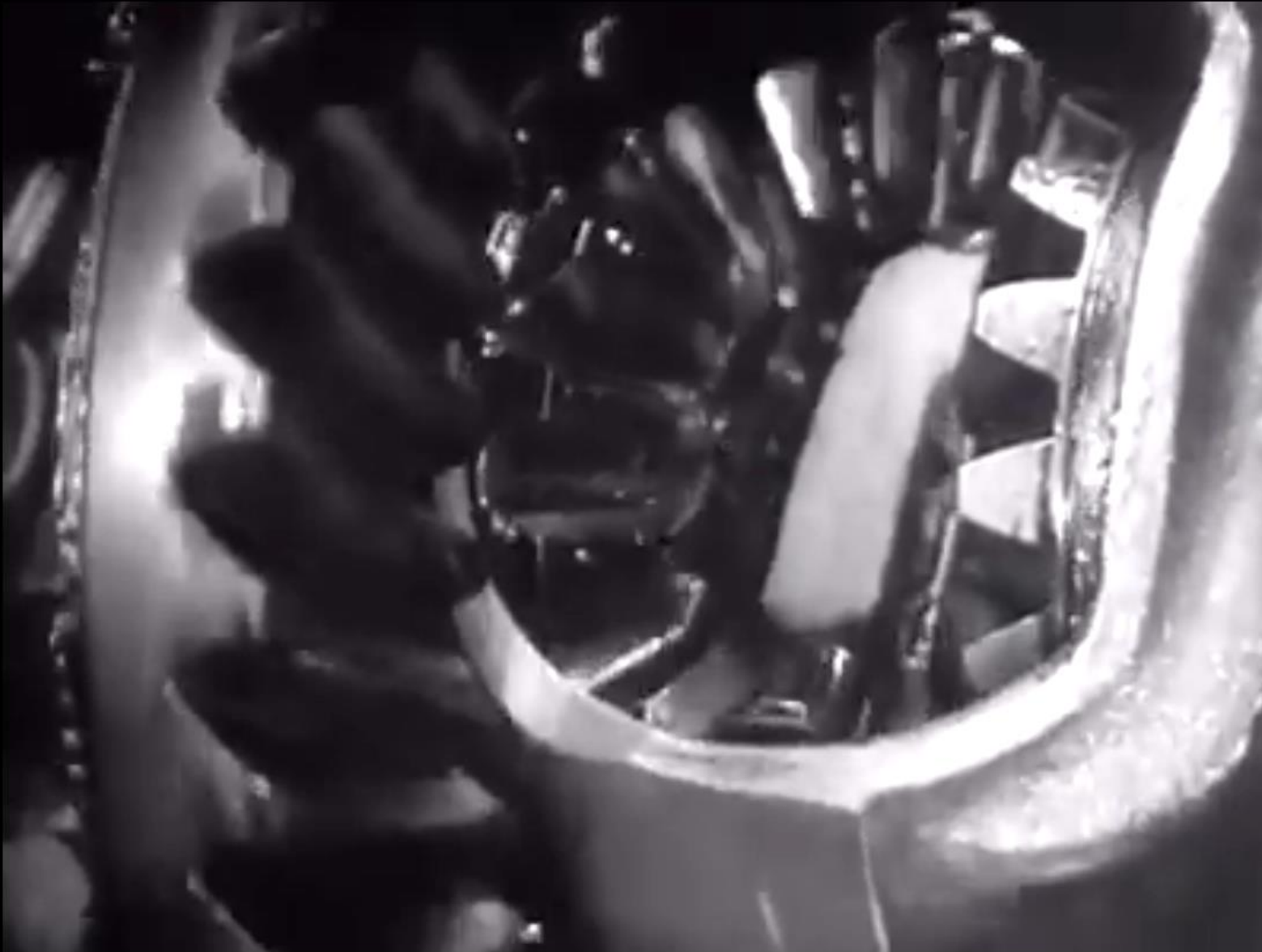
old process
old product

400 MA

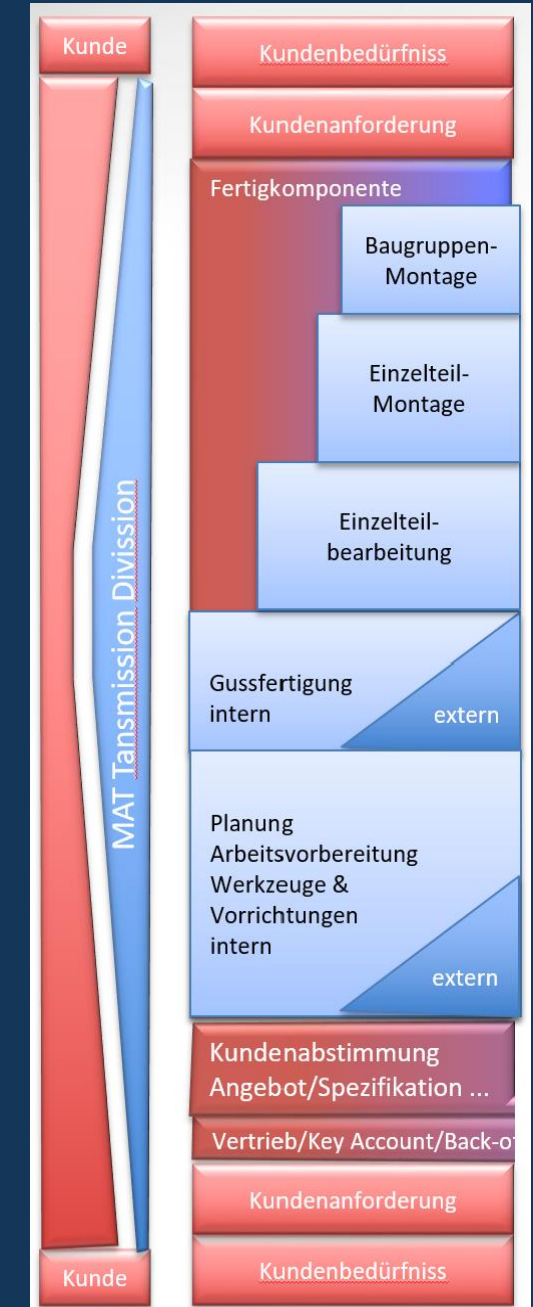
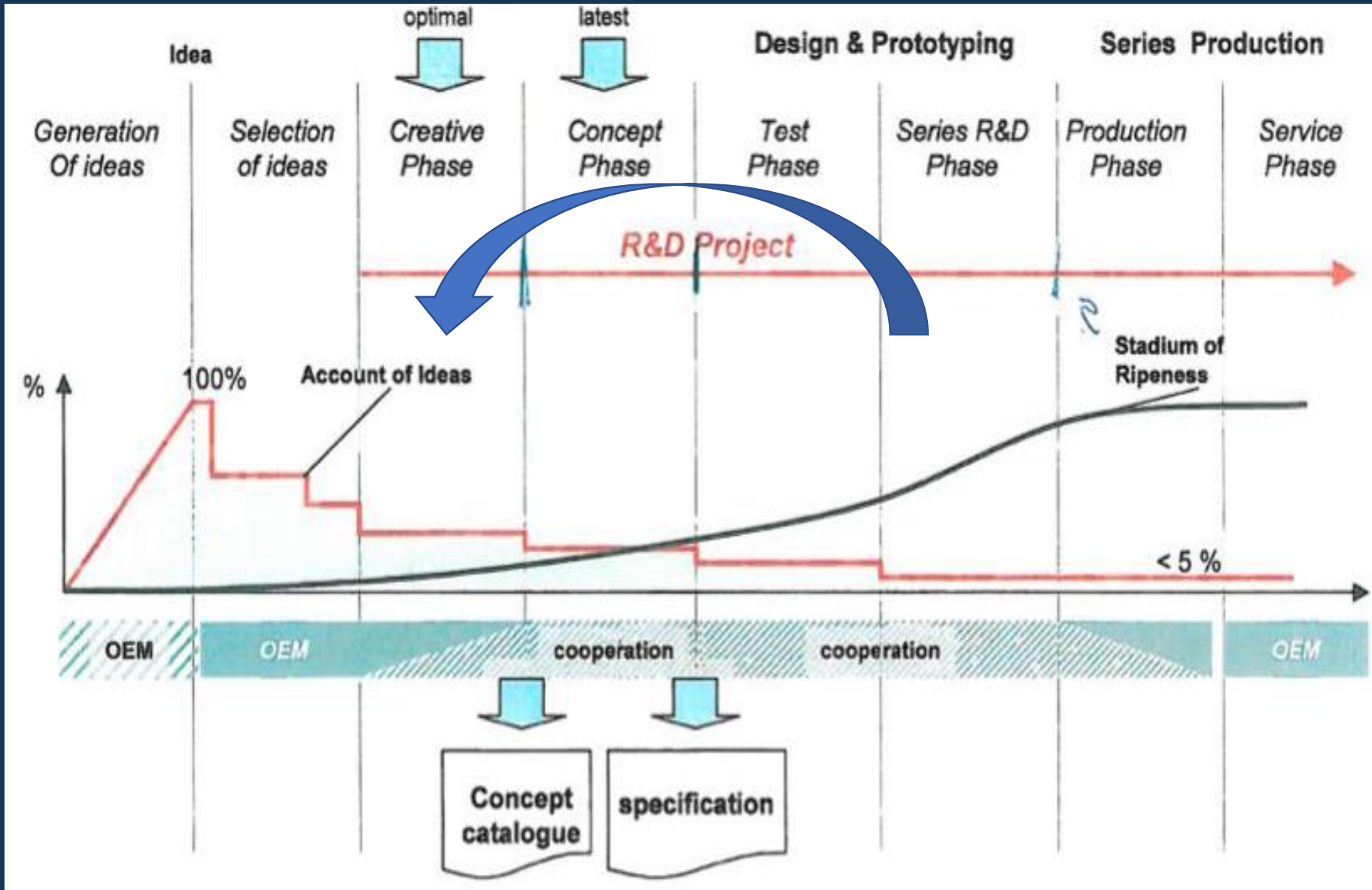
50.000 t Guss

70 Mio. € Umsatz

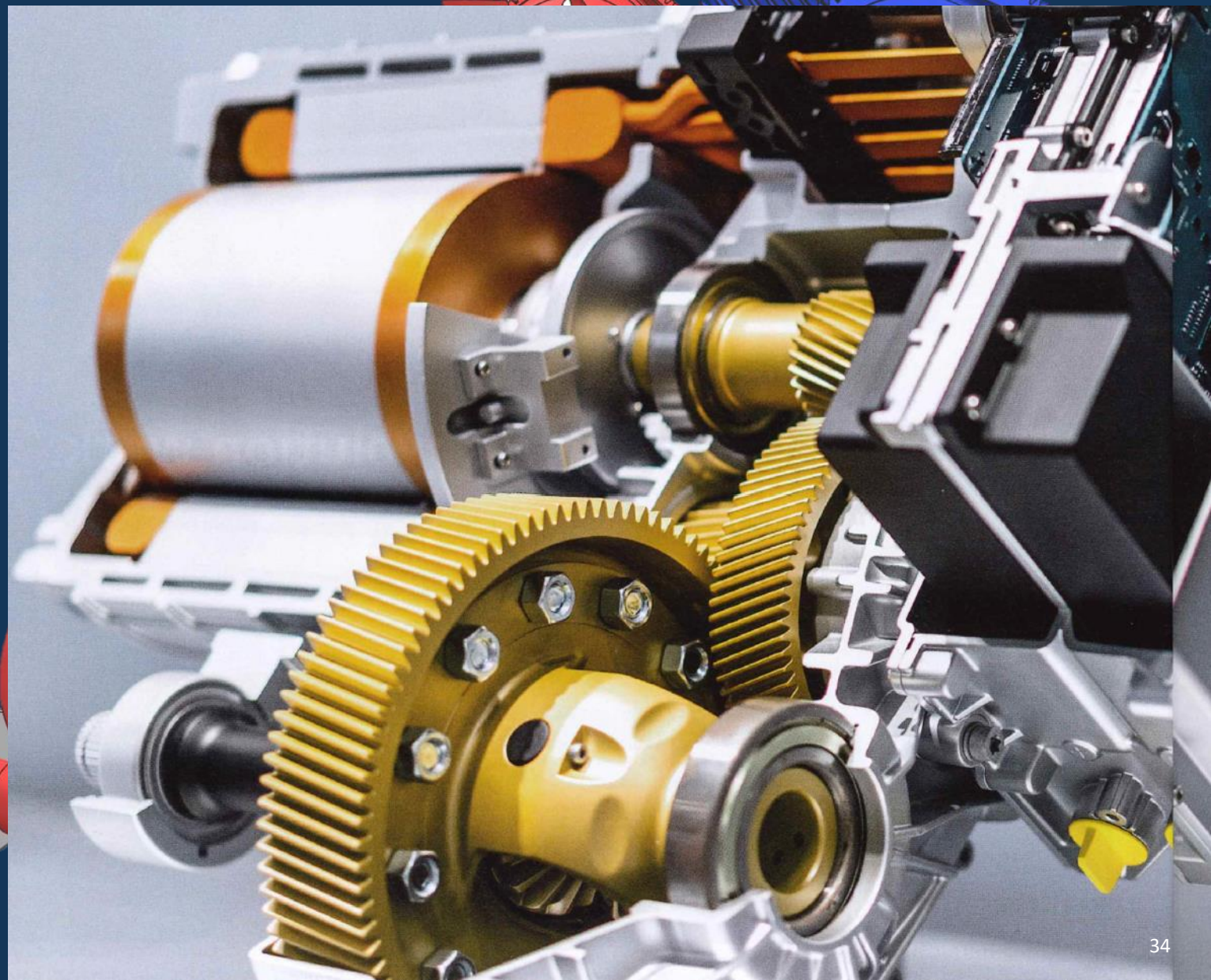
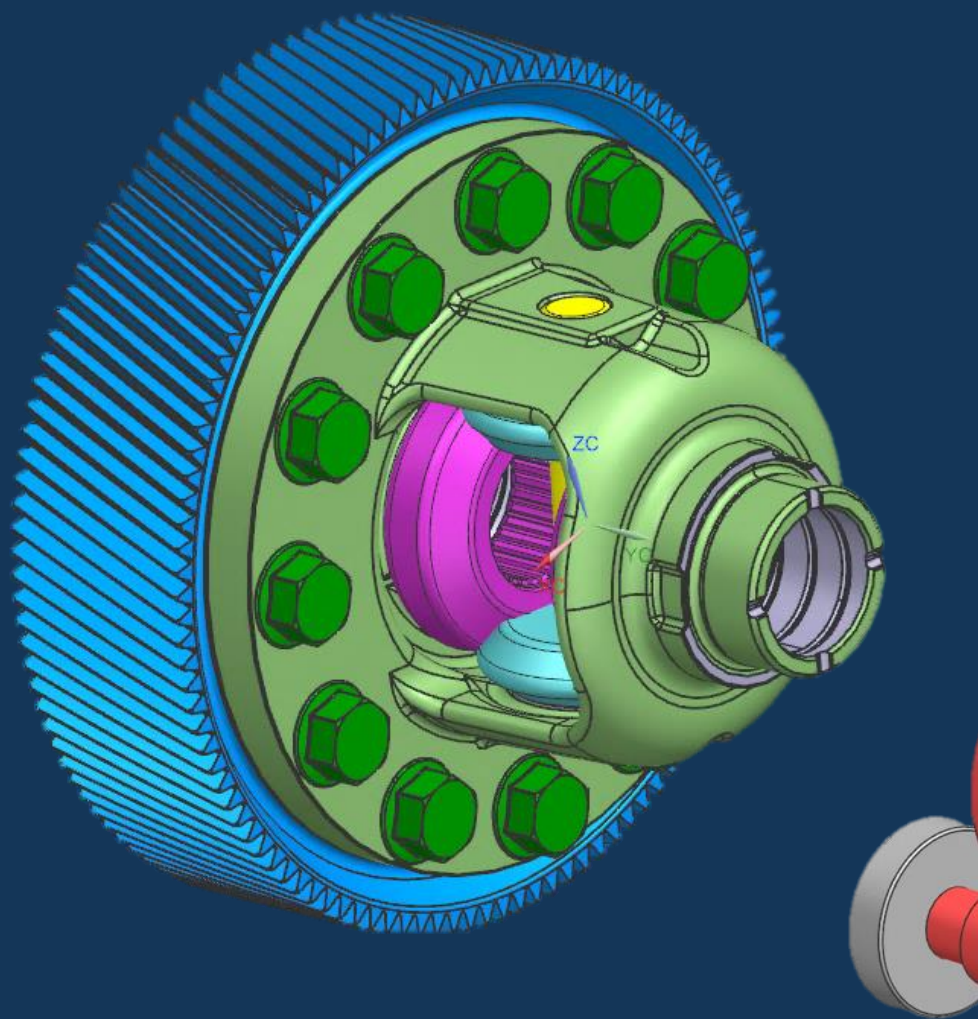


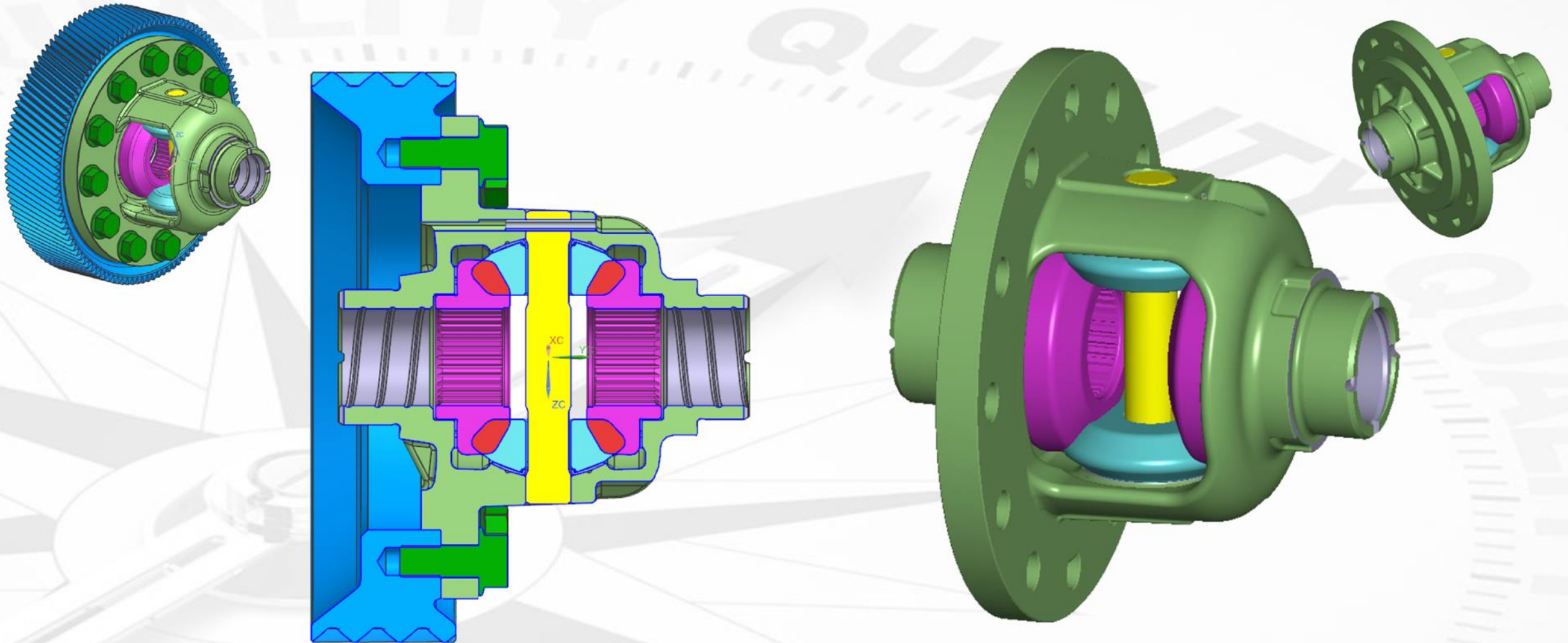


MTD, Engineering & Added Value



MTD, Engineering





MTD, Engineering

FEM: first impression

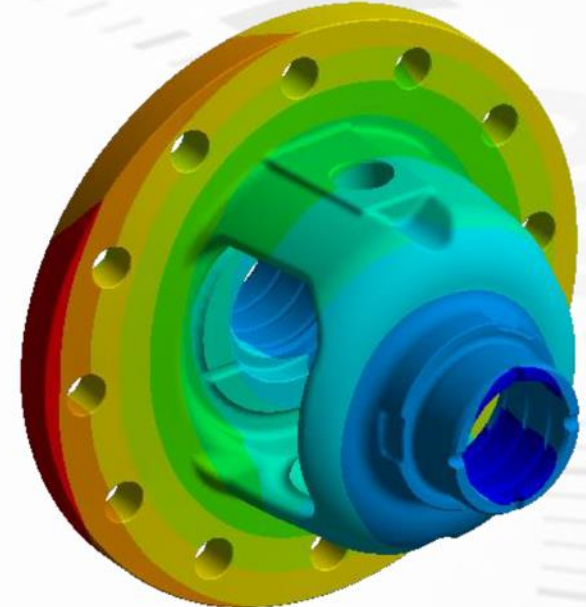
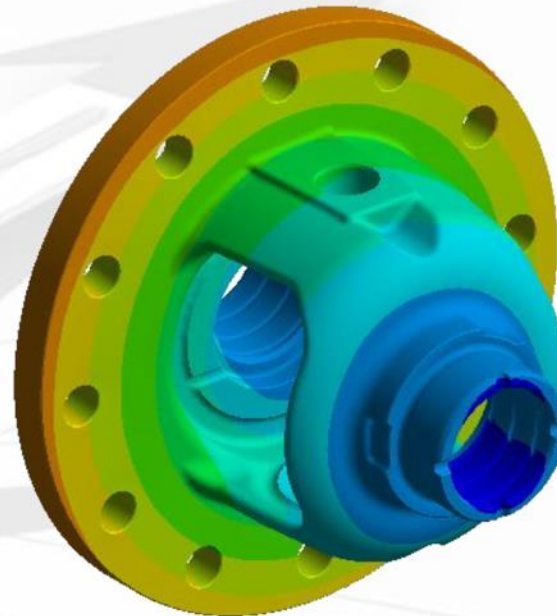
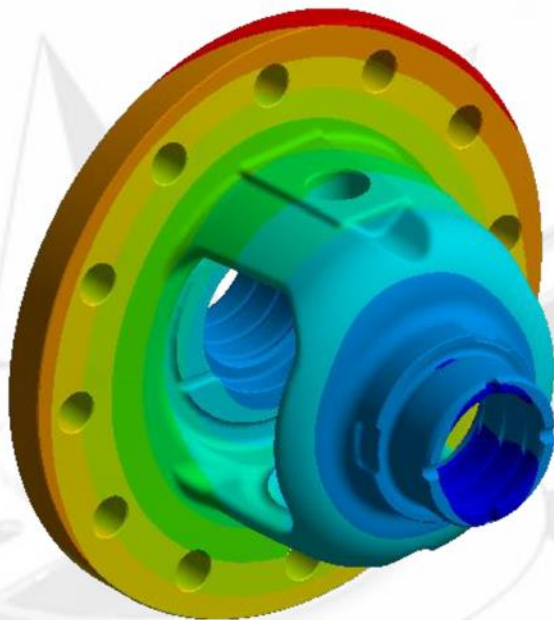
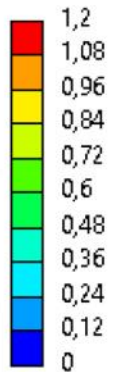
Overall deformation - Grade 30% GCVW uphill

Pos. 1

Pos. 2

Pos. 3

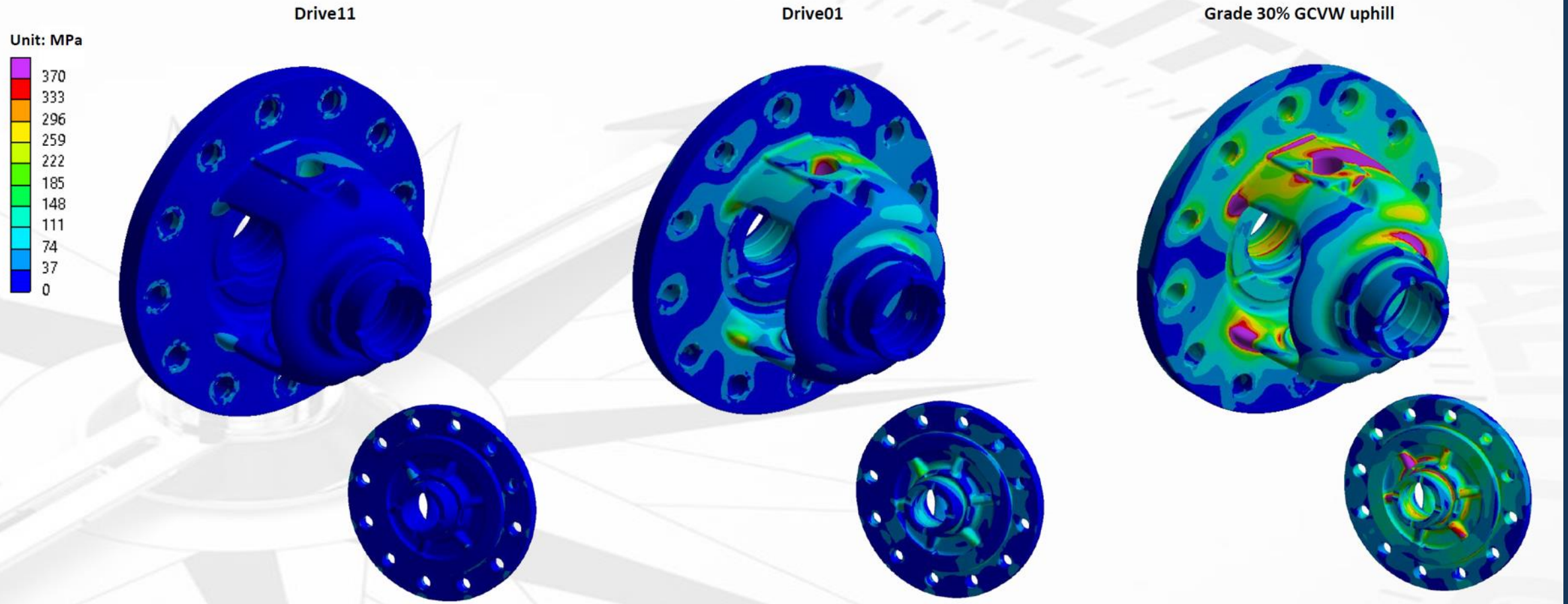
Unit: mm

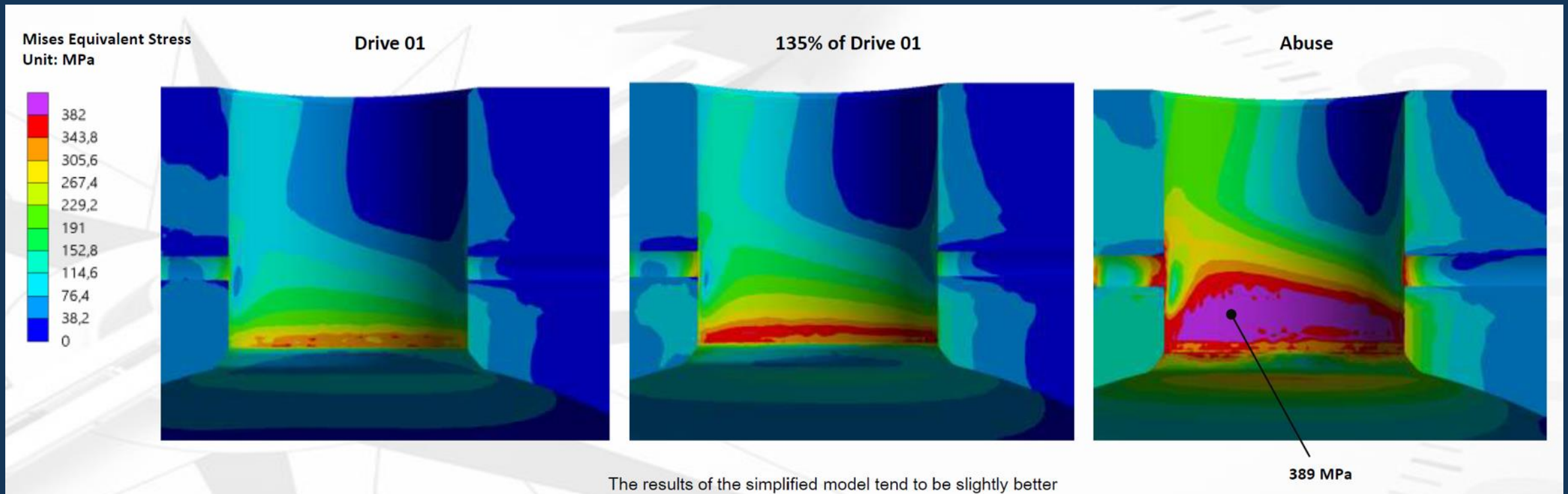


MTD, Engineering

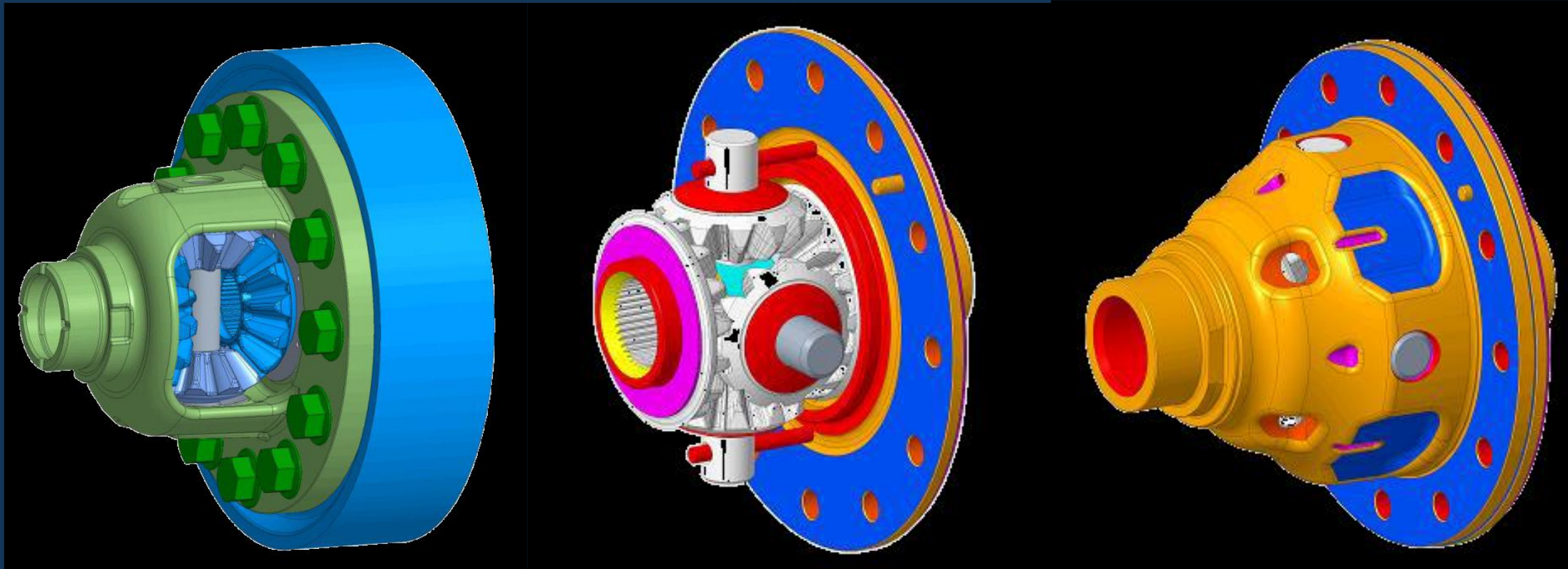
FEM: first impression

Mises Equivalent Stress – Pos. 1

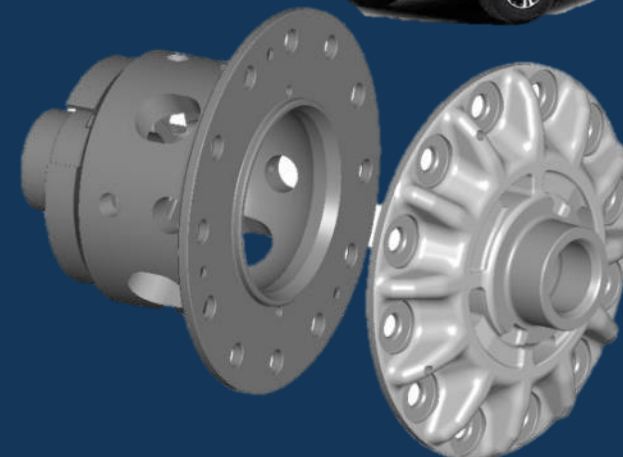
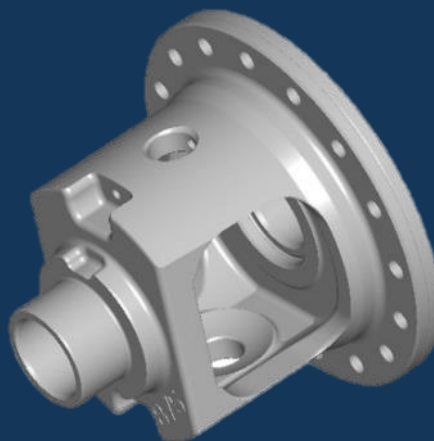




MTD, Engineering

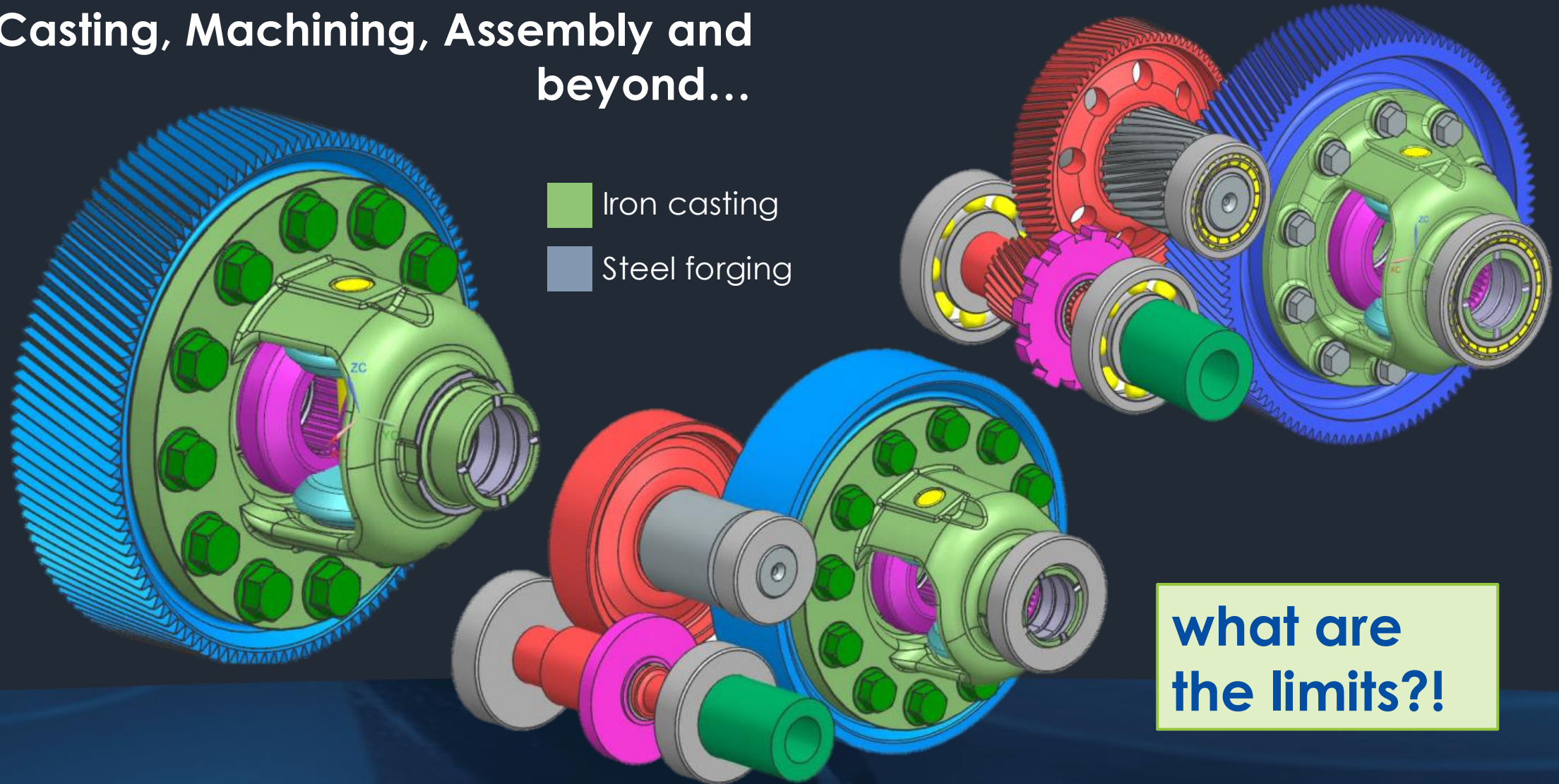


MTD: BUSINESS CASES



MTD: Engineering

Casting, Machining, Assembly and
beyond...



**what are
the limits?!**

Weightreduction

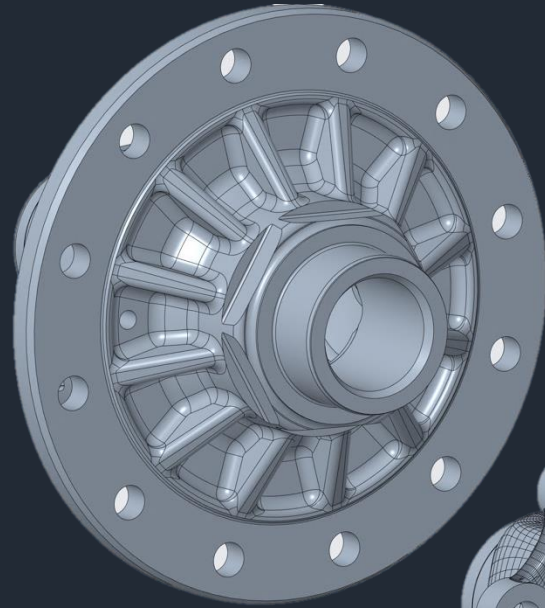
higher
demand on
material!

optimized
topology!

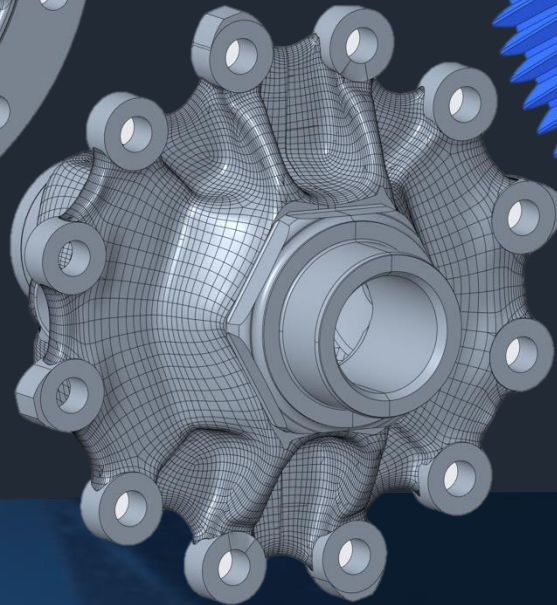
- 10 %
weight!

Weightreduction

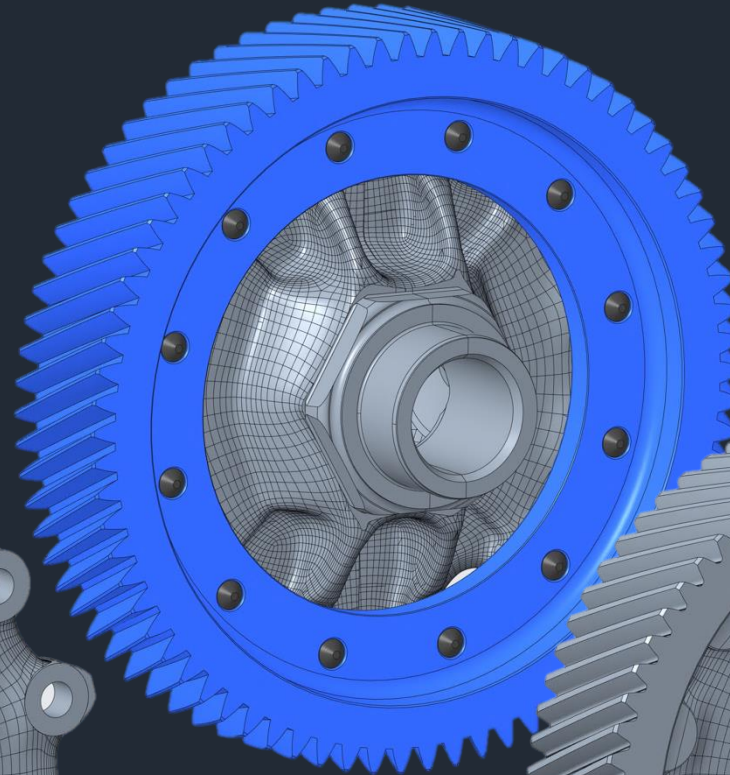
higher
demand on
material!



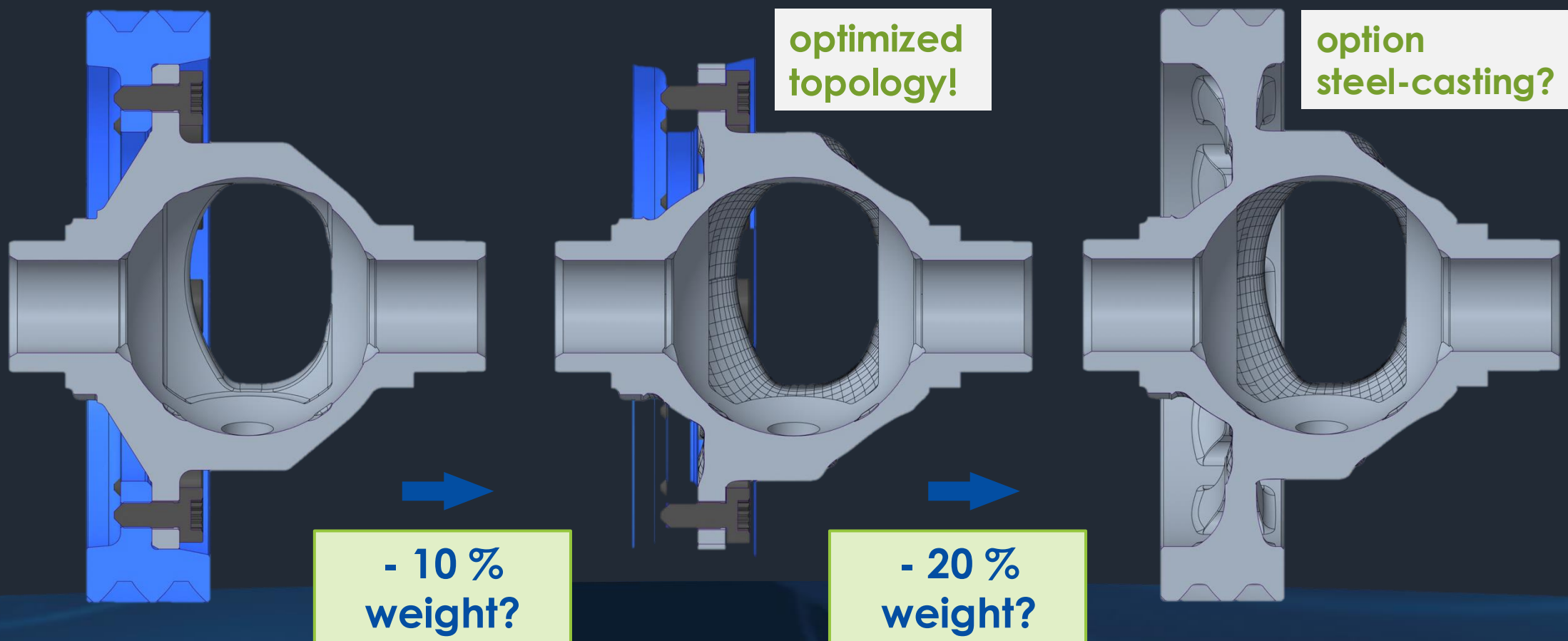
optimized
topology!



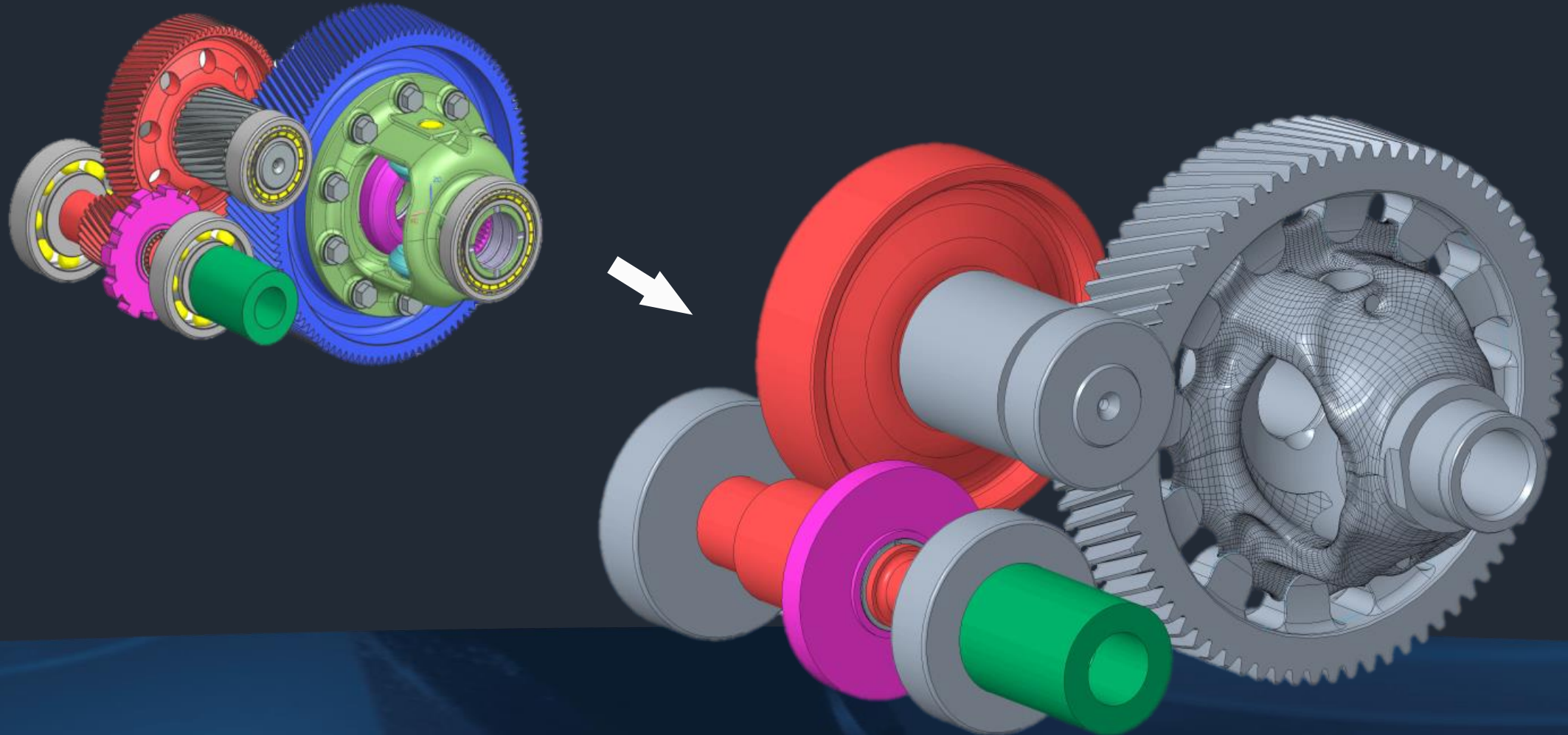
- 10 %
weight!



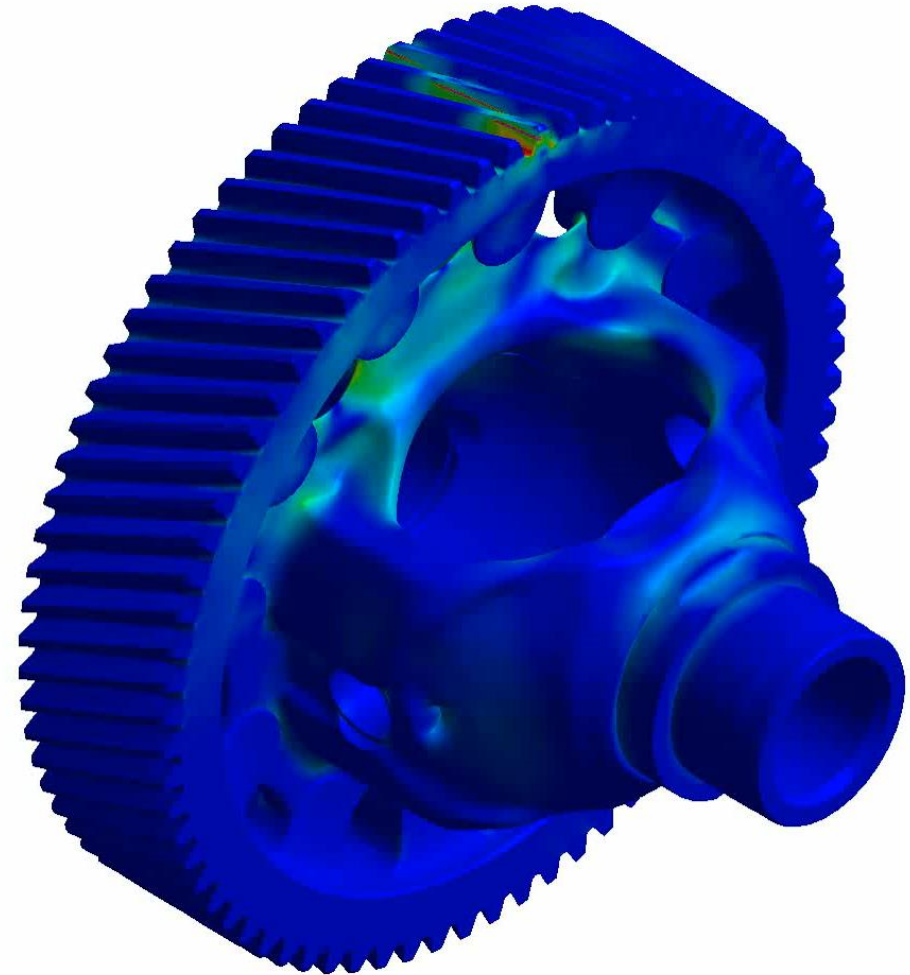
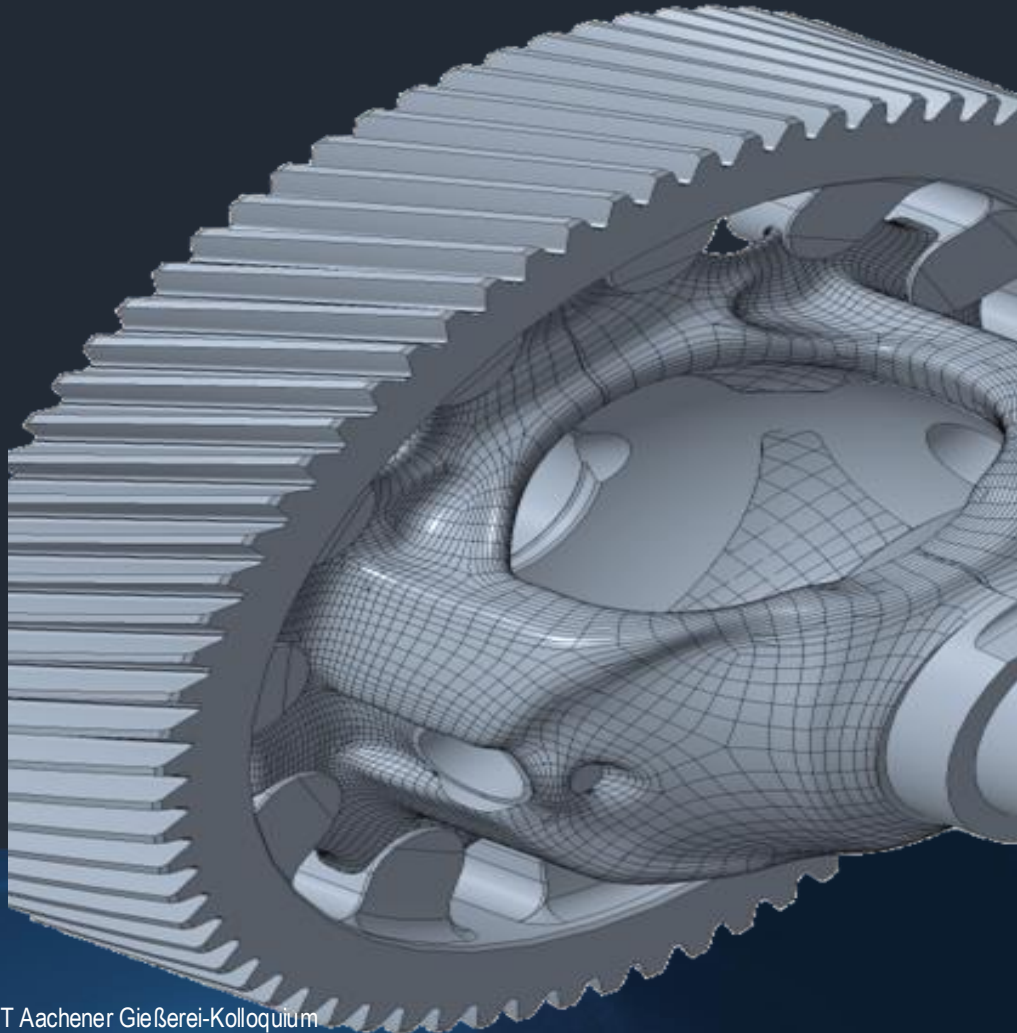
Weightreduction & Systemintegration steel casting



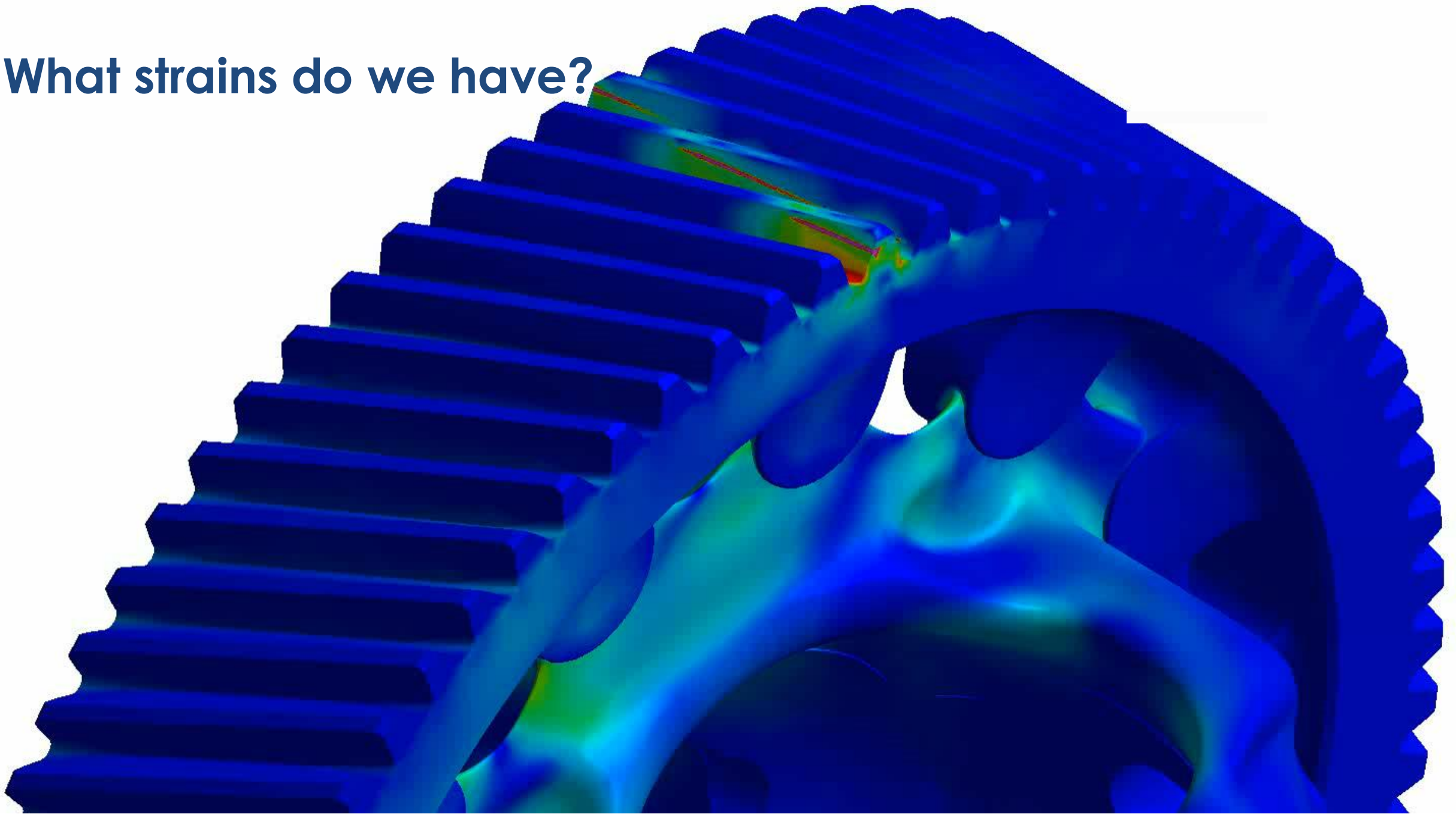
What strains do we have?



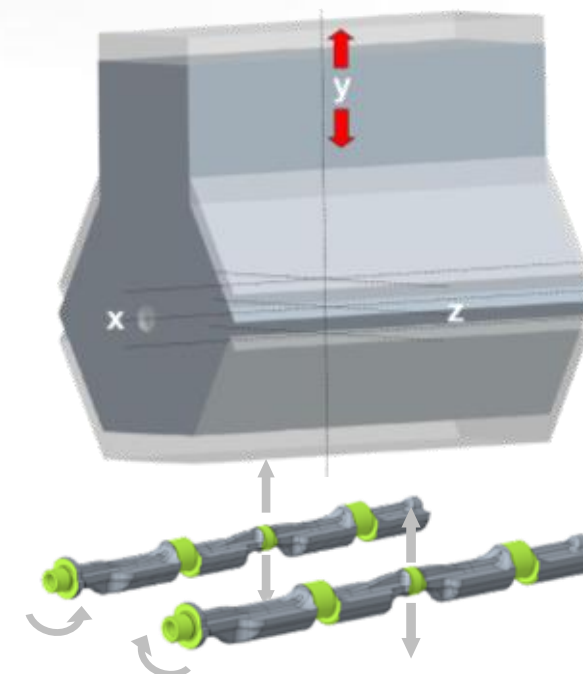
What strains do we have?



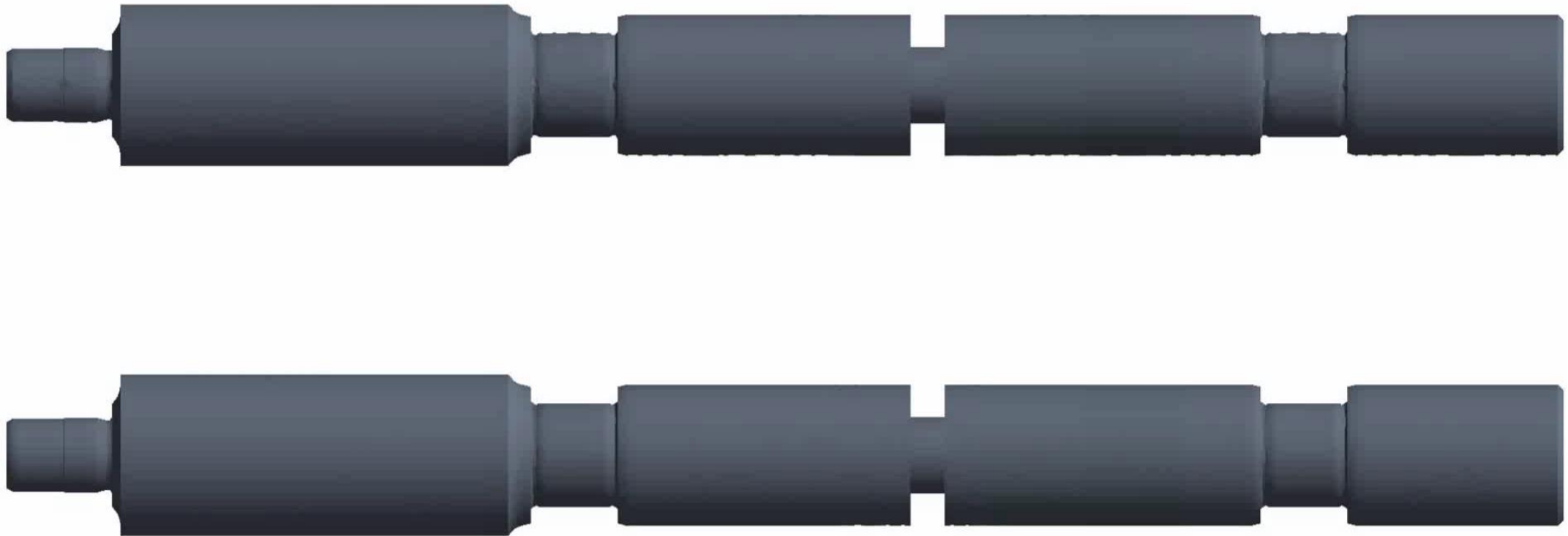
What strains do we have?



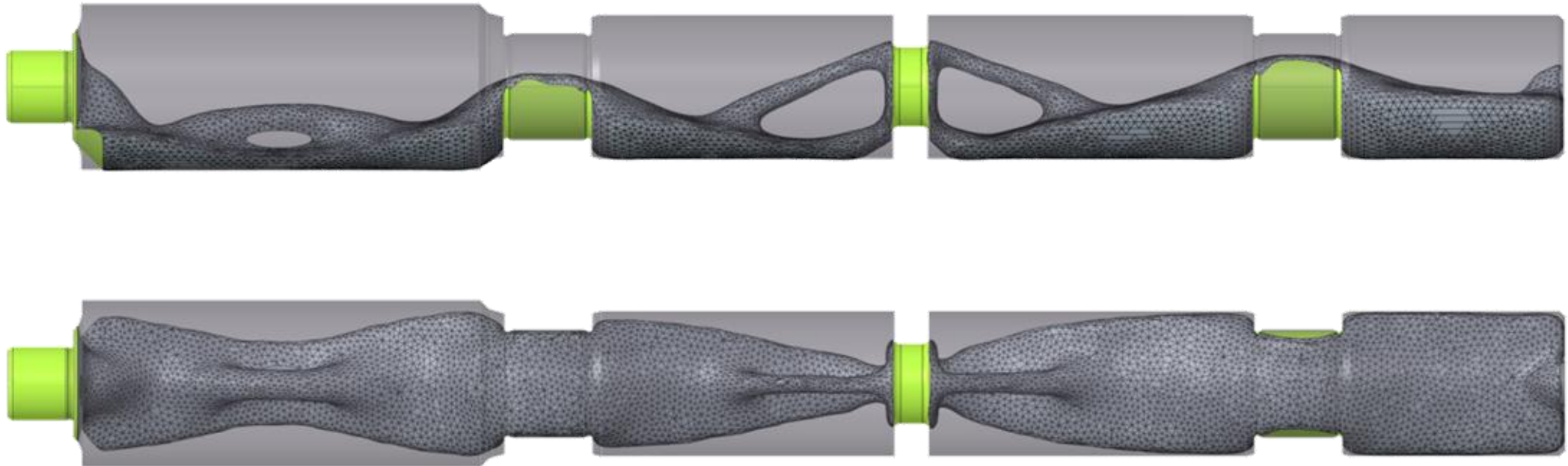
Balance shaft - Function



Balance shaft - Topology Optimization

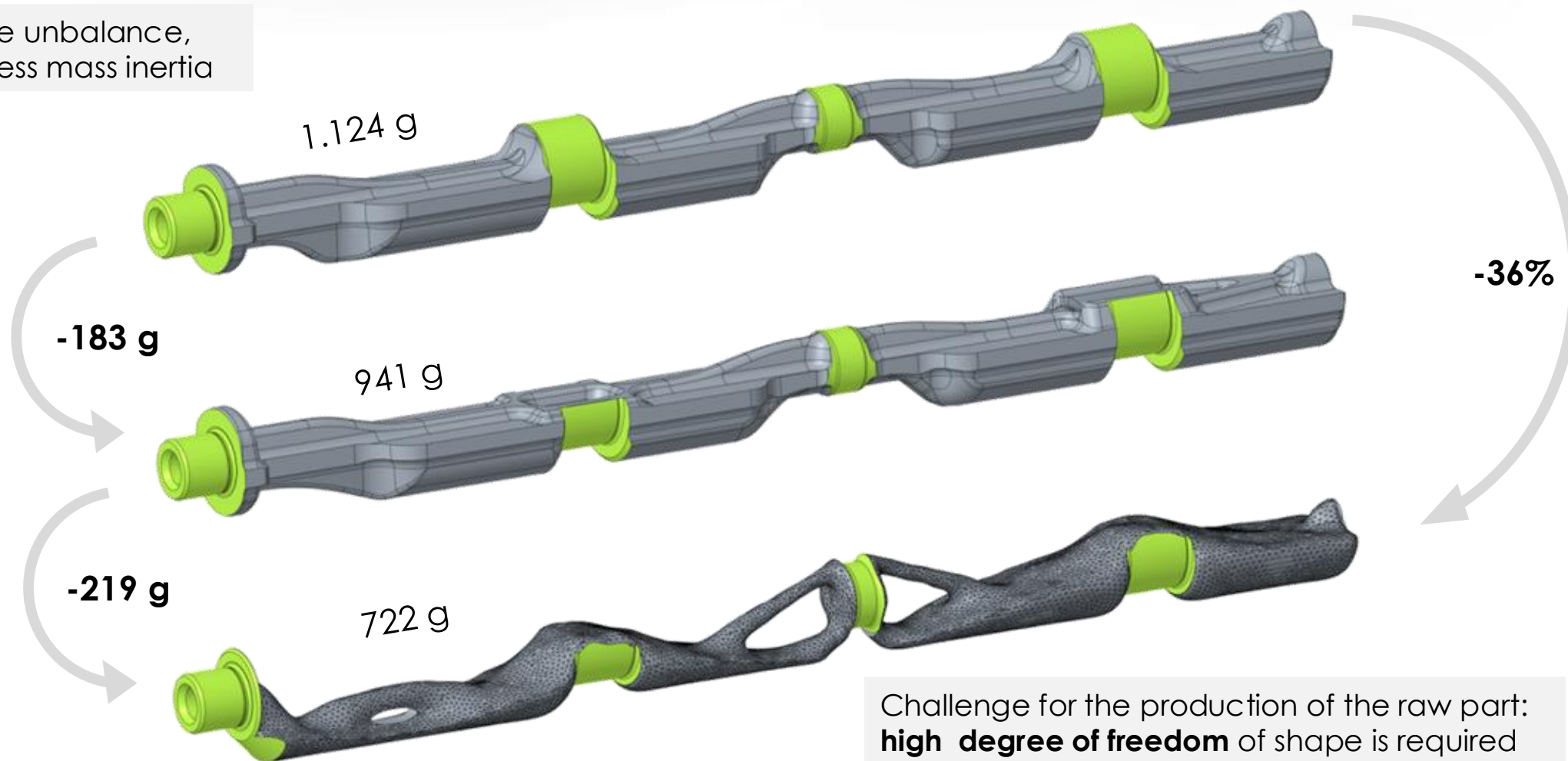


Balance shaft - Topology Optimization Results

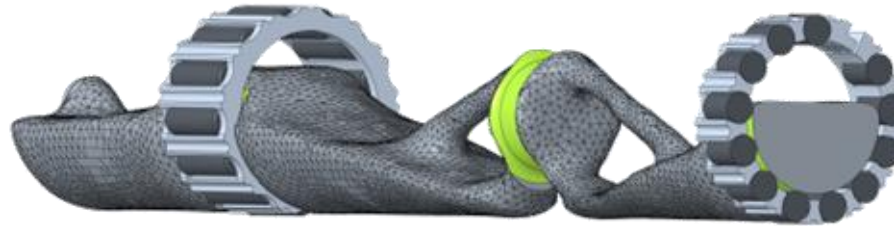


Balance shaft - Topology Optimization Results

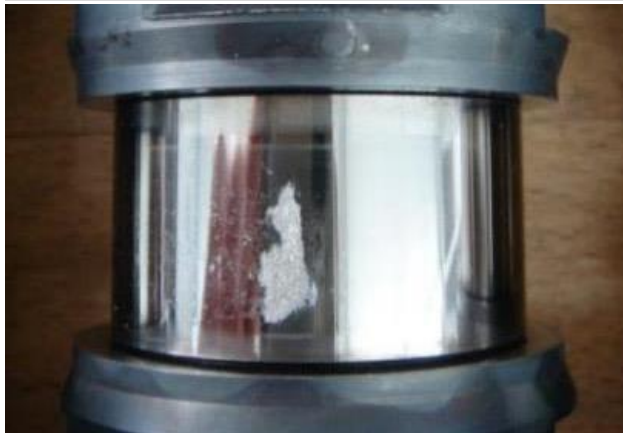
Same unbalance,
but less mass inertia



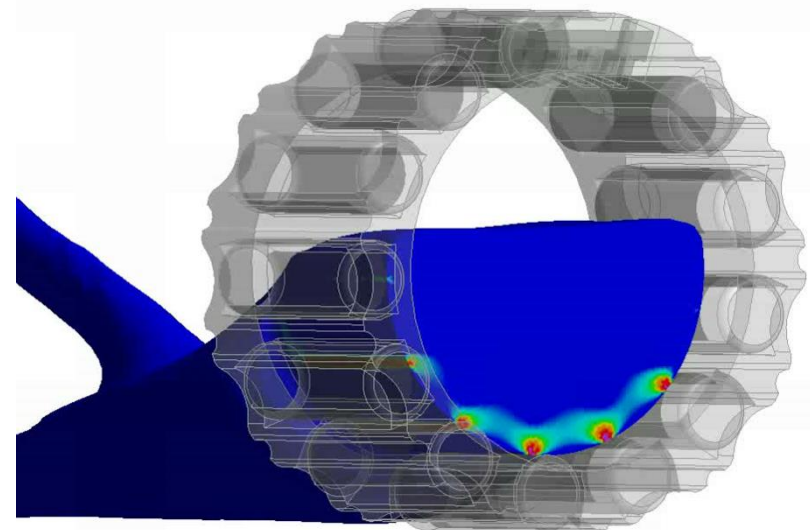
Balance shaft - Blank Material



Cast Iron → Pitting



Due to high
Hertzian pressures



Summary!

OUR TARGETS FOR THE FUTURE

Sustainability & environmental protection has always been an important topic for MFG, with our facilities holding an environmental accreditation ISO 14001 for many years.

However, we need to push even further to reduce our carbon emissions.

Let's take a look at MFG's current situation & our targets set for improvements.



2021

Data Collection, Analysis & Reporting
Product Carbon Footprint (PCF) for core products

— TARGETS FOR THE FUTURE —

2025

10% off
2021 PCF

2030

20% off
2021 PCF

2040

30% off
2021 PCF



Renewable Energy

Increase usage of renewable energy by **30%**

50%
increased
usage

75%
increased
usage

90%
increased
usage



Recycled Materials

Increase usage of recycled materials by **95%**

95.5%
recycled
materials

96%
recycled
materials

97%
recycled
materials



Energy Efficiencies

Increase energy efficiency by **1% each year**

4%
more
efficient

9%
more
efficient

19%
more
efficient



Procurement & Supply Chain

Scope 3 emissions, levers & reduction **goals set**

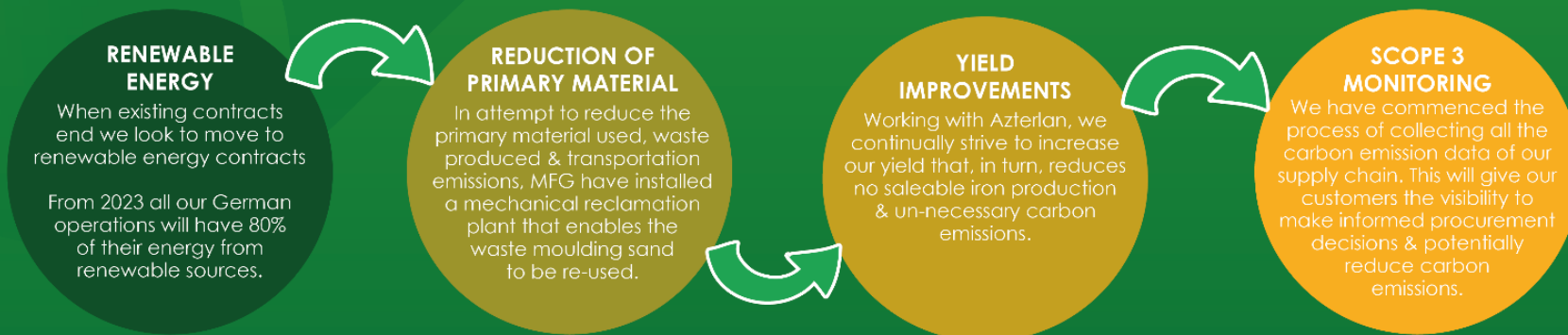
Increase local procurement to... **95%** from country of facility by 2040

Summary!

For more information
about casting &
machining technology,
contact us today.

+44 1202 715050
www.matfoundrygroup.com

KEY PROJECTS TO HELP REACH THESE TARGETS:



Summary!

MAT **FOUNDRY**
GROUP LTD

Summary!



Questions?

