



# Tønder Site Visit

December 5, 2019

# Agenda December 5



08:30 - 09:00	Welcome and introduction – Stian Hasle, Head of Investor Relations
09:00 - 10:00	Extrusion Europe and Tønder – Mette Boye Sørensen, Managing Director Hydro Extrusion Denmark
10:00 - 11:00	Precision Tubing and Tønder – Tommy Seeberg, Managing Director Hydro PT Tønder
11:00 - 11:45	Lunch
11:45 - 12:00	Prepare for plant visit
12:00 - 14:00	Plant visit, split in 2 groups
14:00 - 14:30	Prepare for departure
14:30 -	Departure for Hamburg / Billund



# Hydro and Extruded Solutions

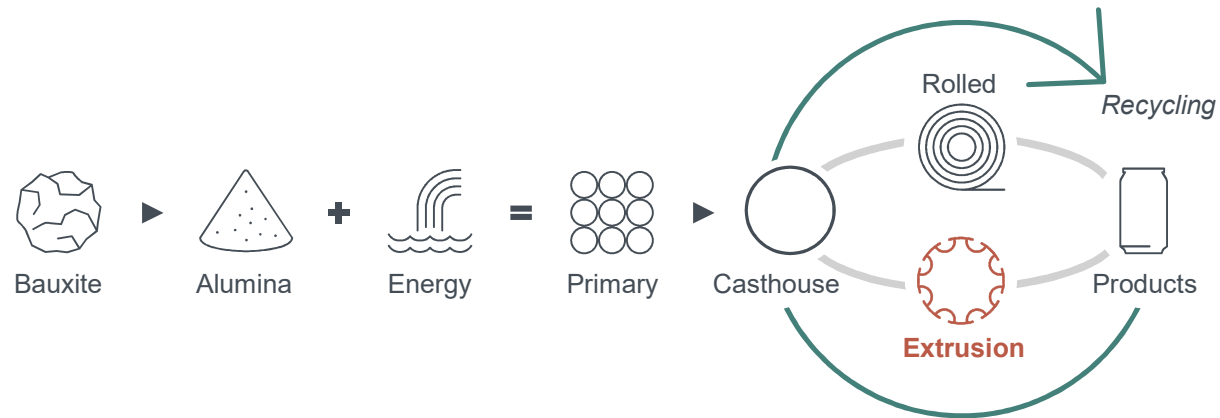
Lifting profitability, driving sustainability



Stian Hasle, Head of Investor Relations

December 5, 2019

# Hydro is engaged in the entire aluminium value chain



35.000 people



150 locations  
40 countries

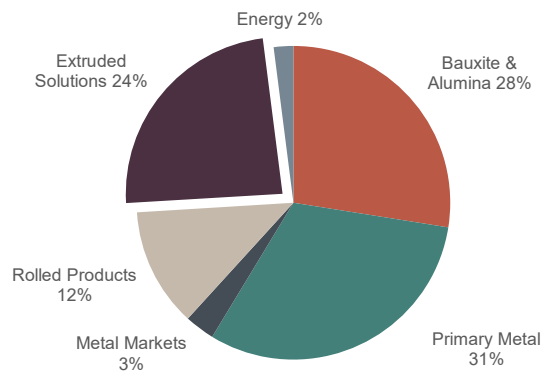


~ NOK 160 billion

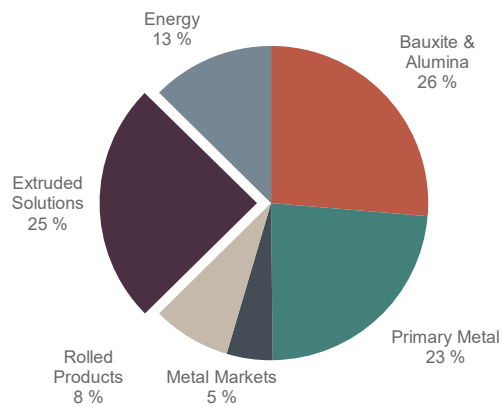
# Extruded Solutions – a big part of Hydro today



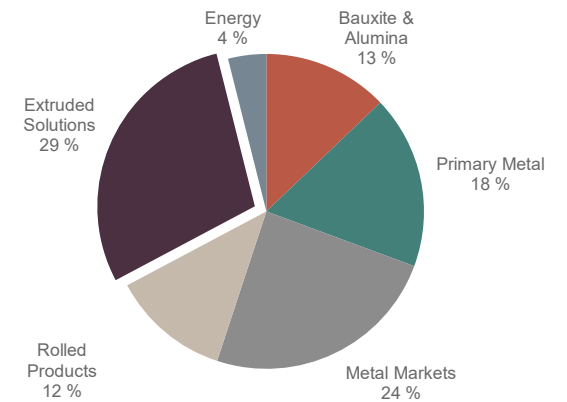
~1/4 of Hydro's capital employed, 2018



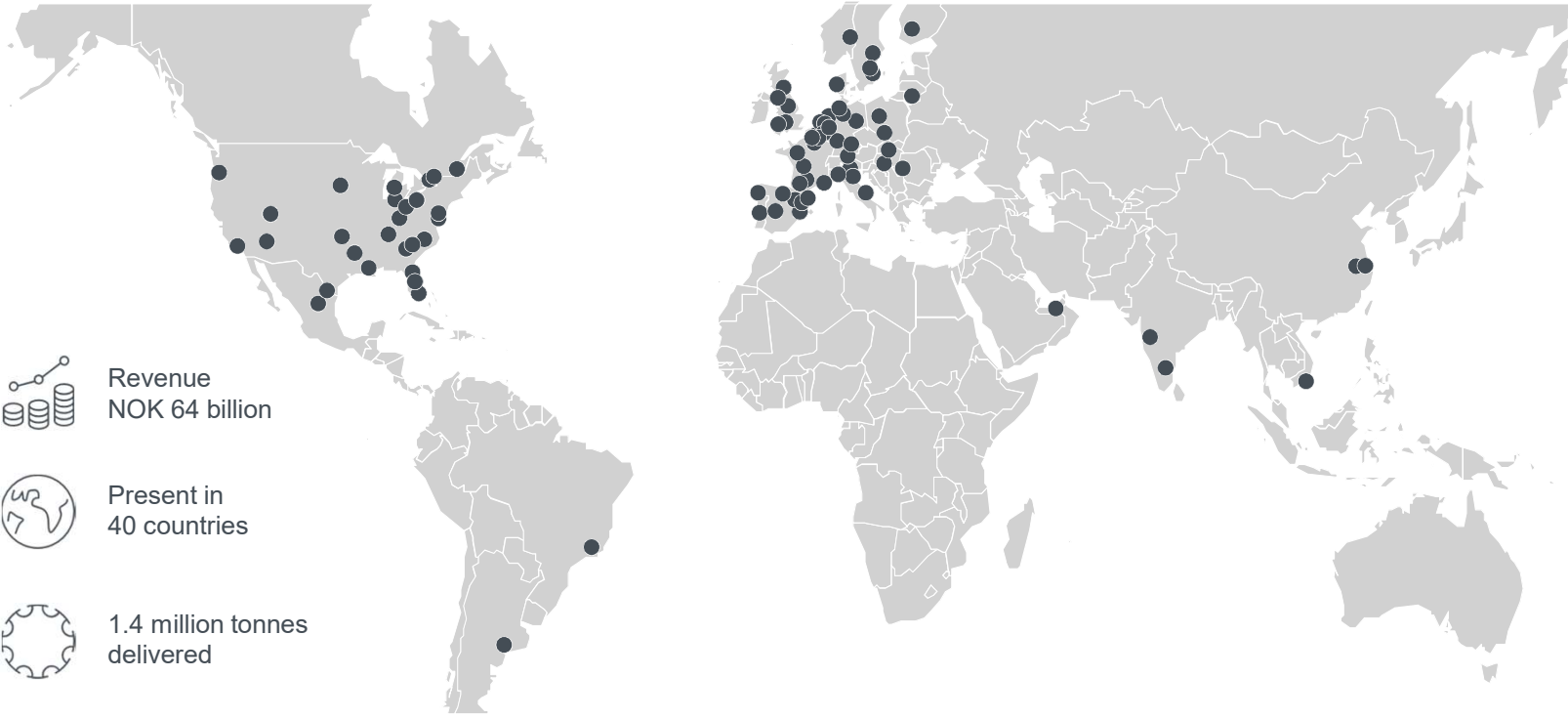
~1/4 of Hydro's Underlying EBITDA, 2018



~1/3 of Hydro's total revenue, 2018





# Extruded Solutions – #1 in the global aluminium extrusion industry

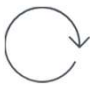


 22,200 employees

 Revenue NOK 64 billion

 More than 100 locations

 Present in 40 countries

 50% of production based on recycled aluminium

 1.4 million tonnes delivered

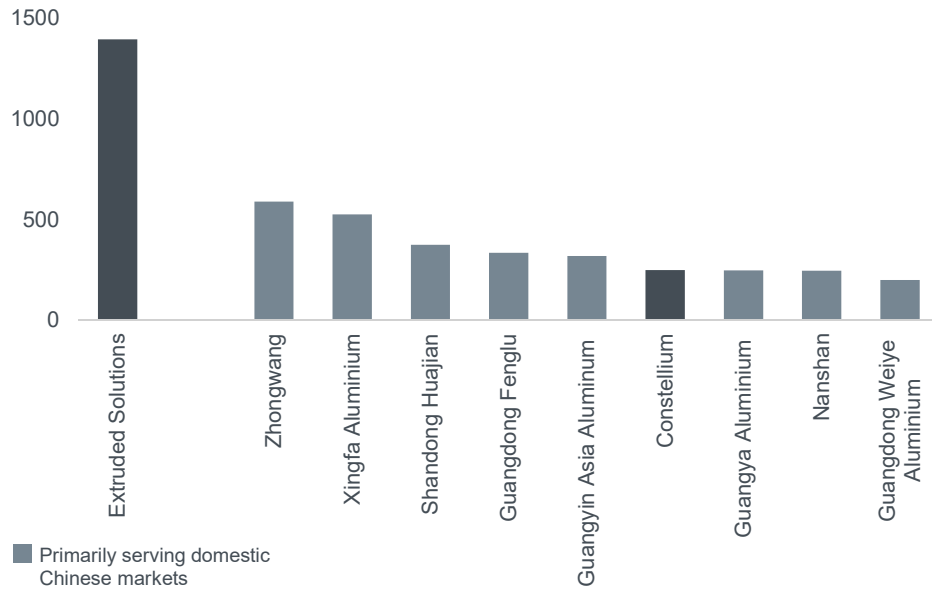
# The global extrusion champion – worldwide reach, local presence



Clear leader in a fragmented industry where closeness to customers and markets are key success factors

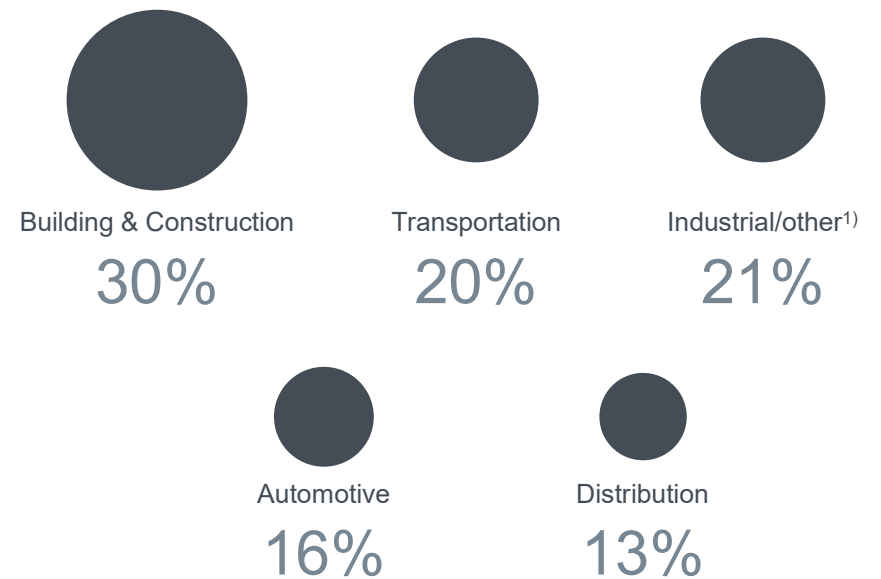
## Unrivalled position as #1 extrusions provider globally

Extrusion sales volume (2018), in thousand mt



## Customers in diversified end-markets

(Share of Extruded Solutions sales volumes in 2018)



Source: CRU

\* Including HVAC&R, Heating, ventilation, air conditioning and refrigeration

# Organized in four business units



22,200 highly competent people across the world, total turnover of BNOK 64

## Extrusion Europe



- Market leader focusing on value-added products
- 20% market share
- 40 locations, 9,500 people

Revenue **BNOK 24.9**  
EBIT **BNOK 0.7**

## Extrusion North America



- Uniquely positioned as the only coast-to-coast supplier
- 24% market share
- 23 locations, 6,400 people

Revenue **BNOK 25.0**  
EBIT **BNOK 1.3**

## Precision Tubing



- Technology leader in selected market niches
- 35% market share globally
- 17 locations, 3,400 people

Revenue **BNOK 7.2**  
EBIT **BNOK 0.2**

## Building Systems



- Leading European player with multi-brand portfolio
- 20% market share in Europe
- Presence in 29 countries, 2,900 people

Revenue **BNOK 8.1**  
EBIT **BNOK 0.4**

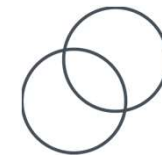
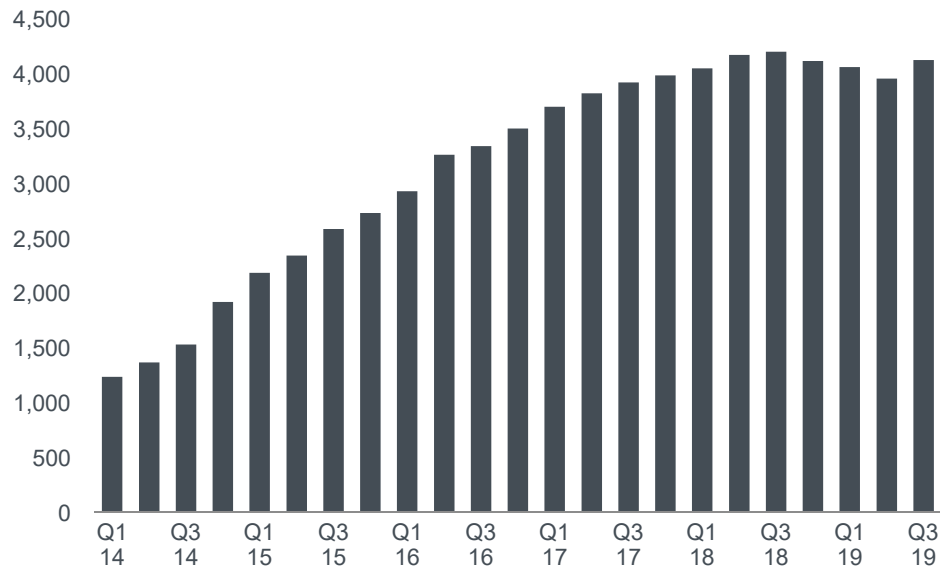


# Proven track-record of value creation with further potential



Successful value-over-volume strategy

Last 12 months underlying EBITDA  
in MNOK



**Simplify and collaborate**

Simplification drive to increase focus, reduce complexity and cost



**Deliver value-added to our customers at a reasonable cost**

Higher share of value-added solutions to customers through commercial excellence and innovation



**Grow to lift margins and profitability**

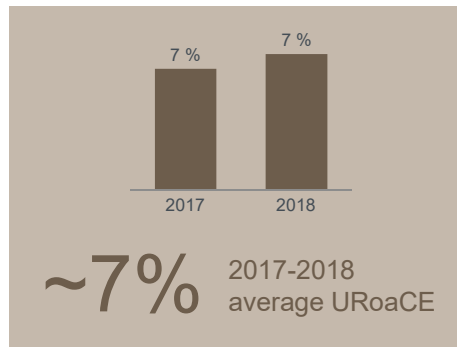
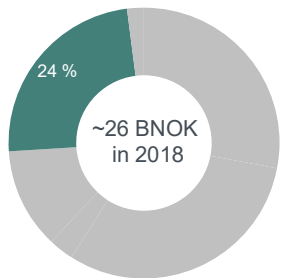
Lifting margins and creating more customer value through selective growth

# Capital return dashboard for Extruded Solutions



Returns in line with the cost of capital reflecting leading market positions and value-over-volume strategy

Capital employed in ES



URoaCE > CoC

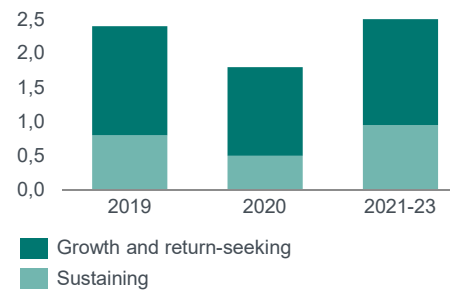
7-8%  
Nominal long-term cost of capital

**1.0 BNOK**  
on EBIT by 2023 in improvement potential

Key initiatives to reduce NOC

- Reduction in safety billett stocks

Capex, BNOK

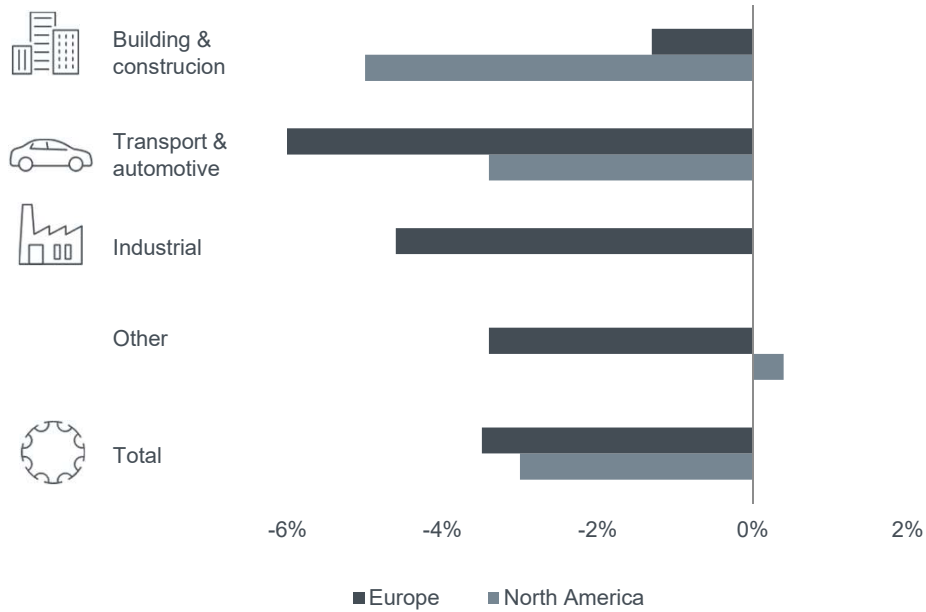


# Negative extrusions demand in Europe and North America

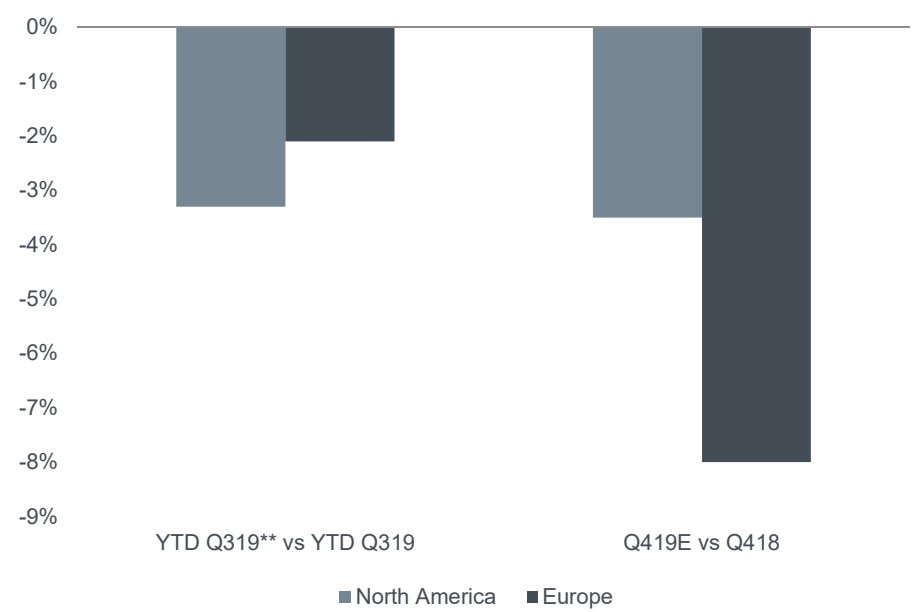


Driven by weak macroeconomic development

Extrusions – estimated market growth 2019 vs 2018 (%)



Extrusions – estimated market growth 2019 vs 2018 (%)



Source: CRU / Hydro analysis

\* Industrial includes consumer durables, electrical and machinery

\*\* Q319 numbers for North America are based on July and August estimates as September numbers have not yet been published  
Europe excluding Russia/Turkey

# Extruded Solutions taking firm measures in weak markets

- Restructuring in Europe
  - Full closures: Pinto (Spain), Redditch (UK), Rotherham (UK), Wakefield warehouse (UK), Lodz warehouse (Poland), Dusseldorf office (Germany), Drunen fabrication unit (Netherlands)
  - Divestments: Chisineu Cris (Romania), Santa Oliva (Spain)
- Restructuring in North America
  - Full closures: Belton (South Carolina), Kalamazoo (Michigan)
- Business largely transferred to other sites
- Additional restructuring and cost reduction initiatives under way
- These initiatives support ongoing BNOK 1.0 improvement target for Extruded Solutions
- Restructuring and impairment cost of MNOK 156 booked in Q3 (excluded from underlying EBIT)
  - MNOK 228 booked in Q2





# CIRCAL is being chosen by builders and architects

More than 40 large buildings are now being built using Hydro CIRCAL for the facade, at the request of the final users



**BREEAM®**



# Extrusion Europe

Mette Boye Sørensen, MD Extrusion Denmark

December 5, 2019

# One Extrusion Europe



9.500 People



40 plants



Sales: 2.4 BEUR



586 Ktons of profiles



# Hydro Extrusion Europe – Success through differentiation



- Close to the customers with regional presence
- Strong Key Account management across borders
- One-Stop-Shopping enabled by large variety of presses and Value Added activities
- Many possibilities for fabrication and surface treatment inhouse and with strategic external partners
- High precision fabrication
- First class customer service





# Hydro Extrusion Europe

Who we are

## **We are Aluminium.**

We offer efficient, innovative solutions to our customers, make them successful.

We unite excellent quality in extrusion, highest precision in surface treatment and fabrication and outstanding customer experience.





## Remelting

Supporting a circular economy and flexibility for customers of Extruded Solutions

### 8 W2W Recycling Plants

- 380K tonnes capacity
- 6”–16” extrusion ingot diameters
- 6000 series alloys + some 7000 & 3000
- Scrap sourcing coordinated with Primary
- Take back systems with Extrusion customers
- Opex collaboration with Primary Metals



## Extrusion

Excellence in aluminium profiles

### 60 Extrusion presses

- 660K tons capacity
- 6”–16” diameters
- Primarily 6000 series alloys
- Big profiles, small profiles
- Tight tolerances, unique mechanical properties and high precision

Capacity from Pinto and Chisineu Cris not included



# Profiles are the core of our business

Experience from hundreds of thousands of designs



**From 6" Mini Extrusions**  
in La Selva & Offenburg



**To 16" Large & Wide Extrusions**  
in Lichtervelde & Harderwijk

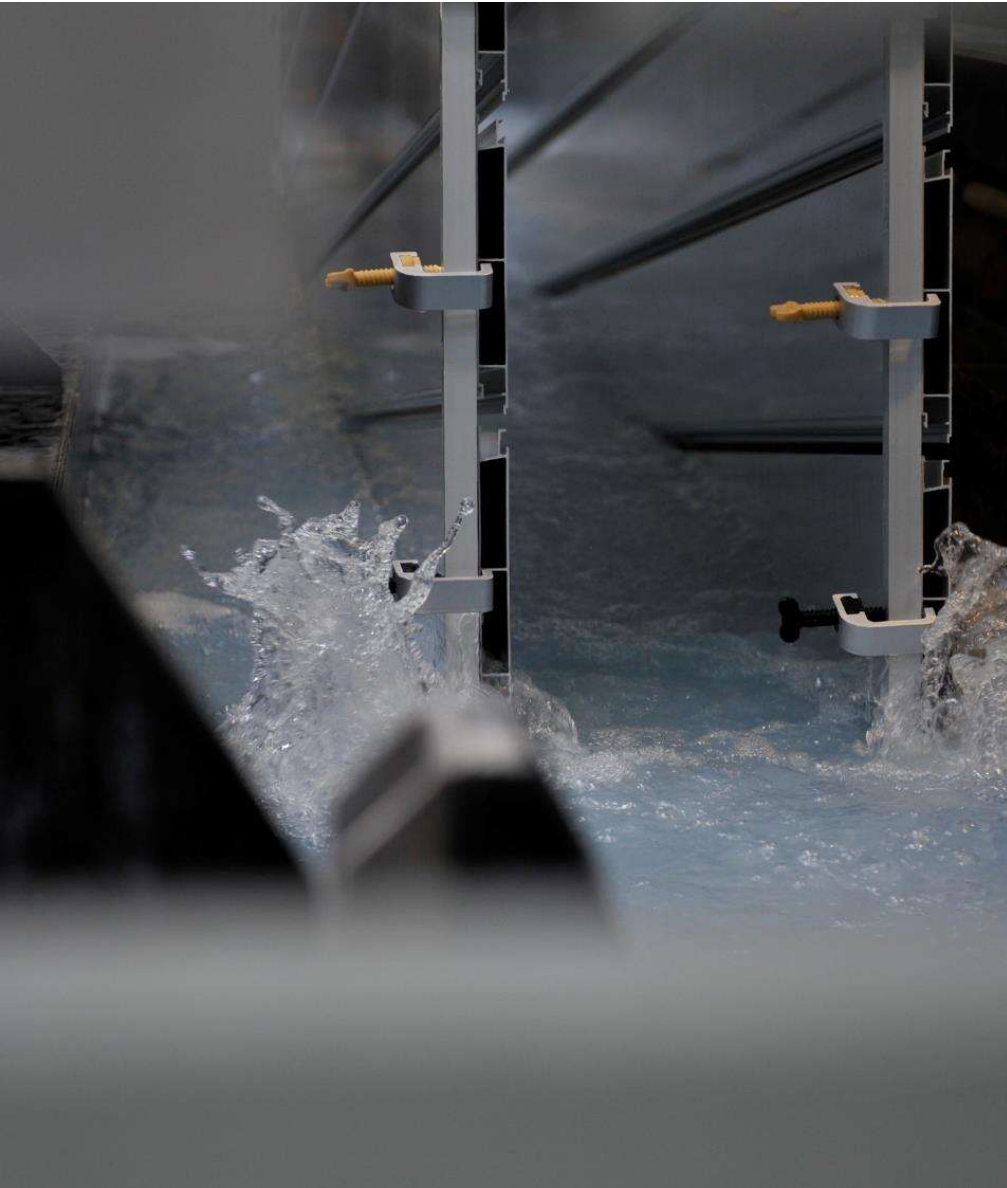


## **Fabrication**

Value over Volume

### **Extensive value-added services**

- Punching
- Drilling
- Cutting
- Friction Stir Welding
- Bending
- Deburring
- Milling
- Assembly
- CNC Machining
- Welding
- Joining
- Kitting



## Surface Excellence

We are strong supplier in surface treatment

- Largest installed anodizing capacity in Europe
- 14 anodizing lines in Europe
- 8 Painting lines in Europe
- One of the biggest powder coating consumer

# Products for every day's life...



## At home

- Windows and doors
- Furniture
- Electronics
- Greenhouses
- Balconies
- Tents
- Scaffolding
- Shutters
- Medical Applications



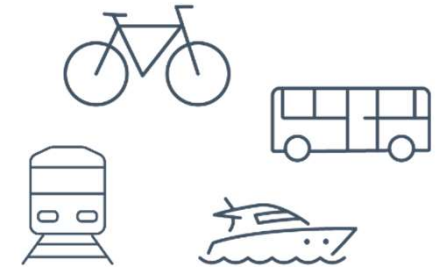
## In your car

- Interior
- Exterior
- Chassis
- E-mobility
- Loading stations
- Powertrain
- Battery Packs
- Crash Management
- Bumpers
- Body in white



## At the office

- Facades
- Windows
- Walls
- Electronics
- Office furniture
- Heating / Cooling
- Coffee Machines



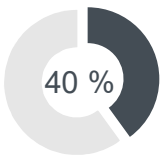
## When traveling

- Train and subway sides
- Flooring
- Handrails
- Luggage compartments
- Scuffs
- Corner Posts
- Curtain Sider
- Marine & Offshore Applications

# Extrusion Europe serves a broad range of markets



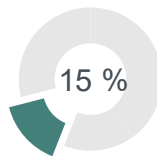
Building & construction



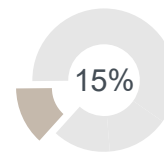
Transportation



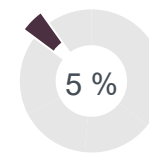
Engineering



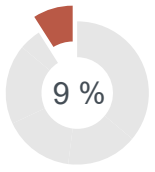
Automotive



Trading



Other



Based on 2018 volumes





# Extrusion Denmark

December 5, 2019

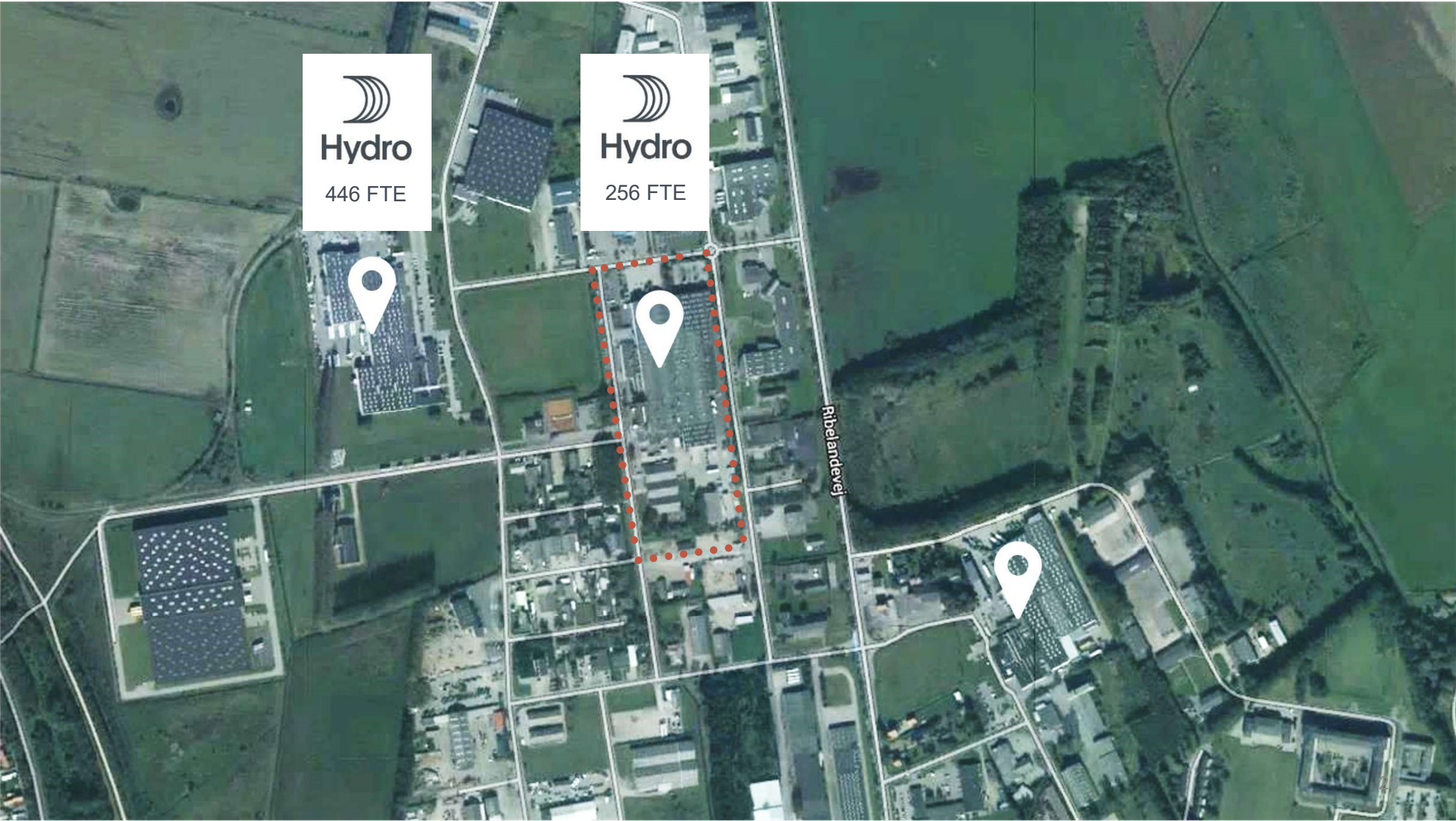


**Hydro**  
446 FTE



**Hydro**  
256 FTE

Ribbelandveej



# Now meet Hydro Extrusion Denmark



Established in 1975



256 people

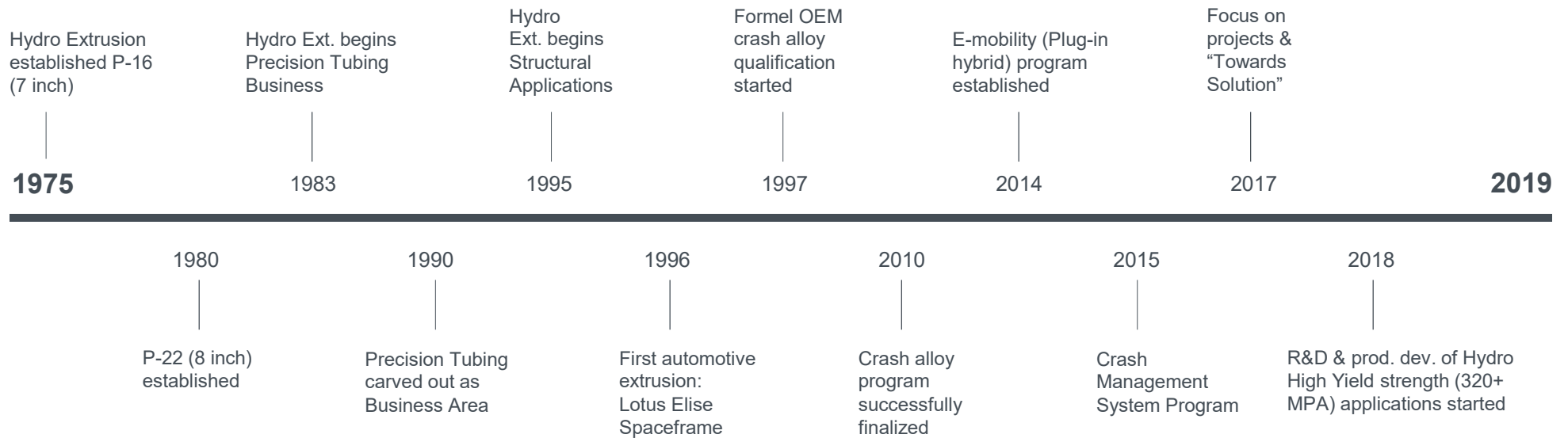


28.000 tones delivered  
25.000 tones produced



2 locations

# Our history





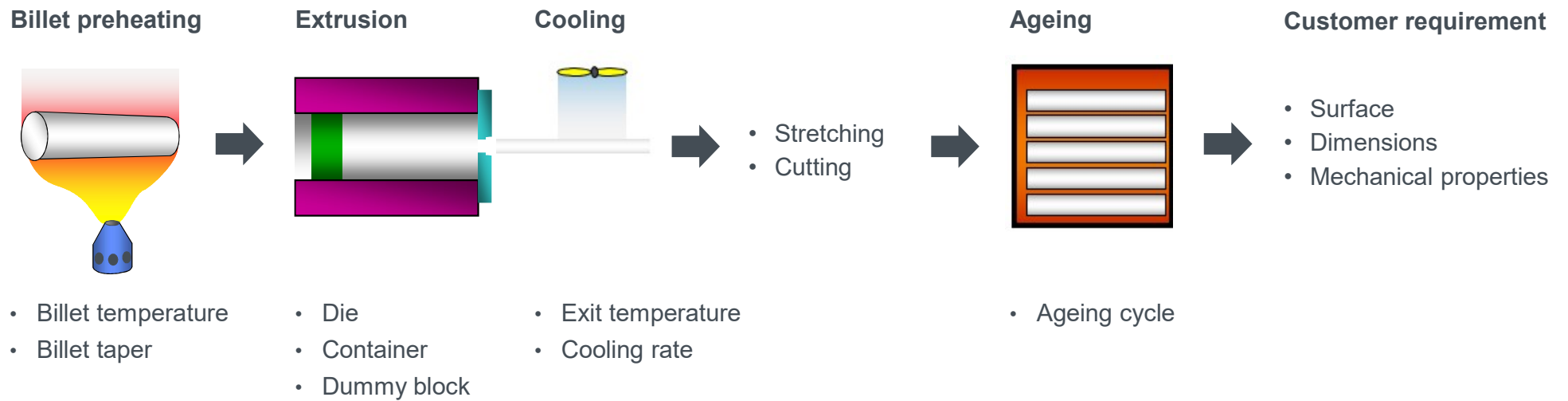
# Extrusion presses in Denmark



- P16 (1,600 tonnes, 7 inch)
- P22 (2,400 tonnes, 8 inch)

# The extrusion process

It is all about temperature



# The extrusion process



# Main geographical markets (volume)



45%



41% (incl. automotive)



11%



3%

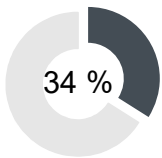




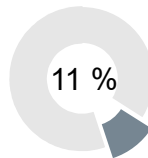
# Extrusion Denmark markets



Building & construction



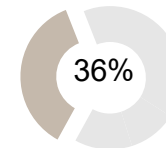
Transportation



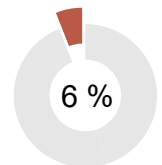
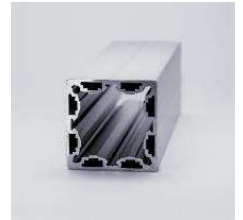
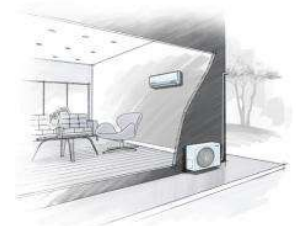
Engineering



Automotive

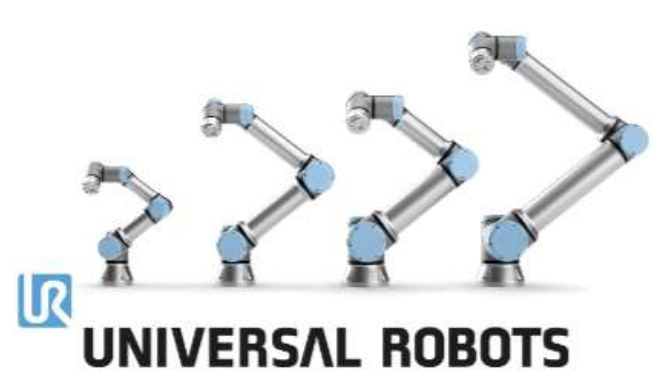


Other

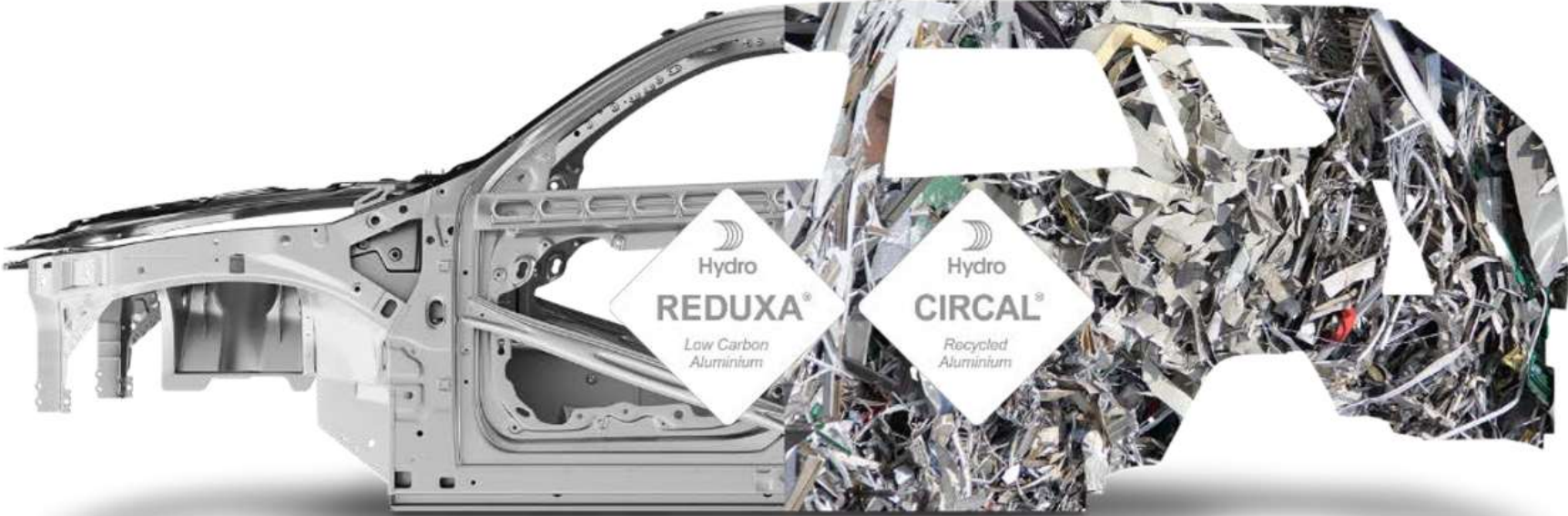


Based on 2018 volumes

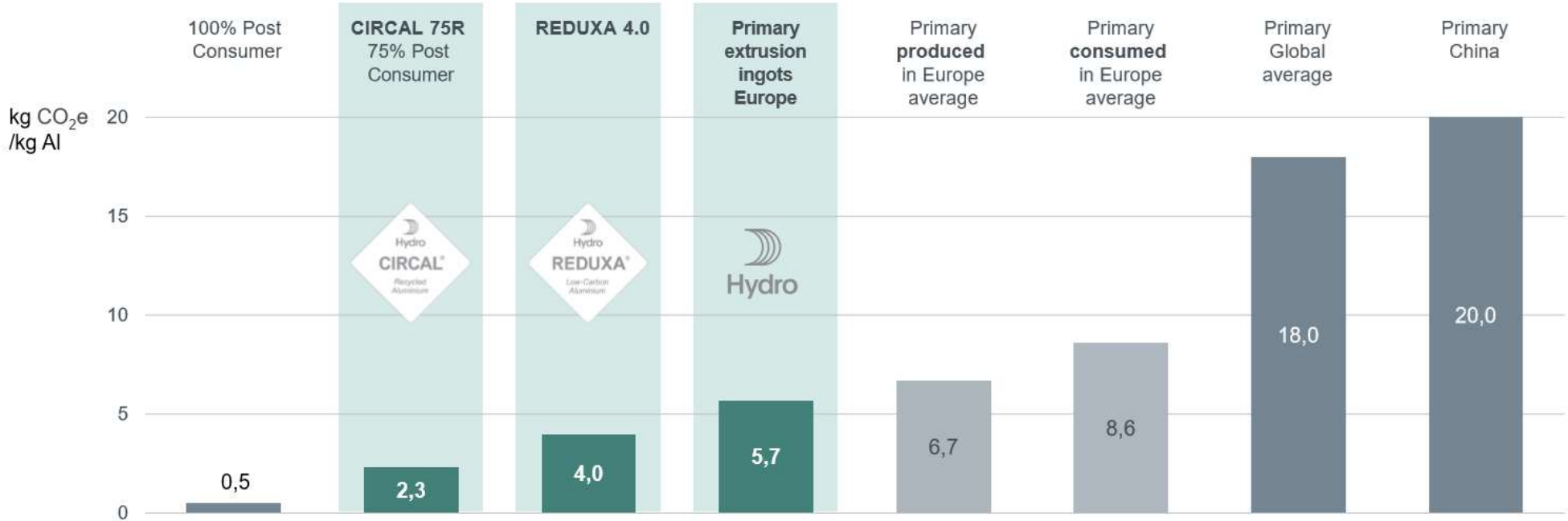
# Main customers



# Sustainability as lever for further growth



# Sustainability as lever for further growth cont.



# Sustainability toolbox





# Sustainability as lever for further growth cont.



## Hydro Circal 75R



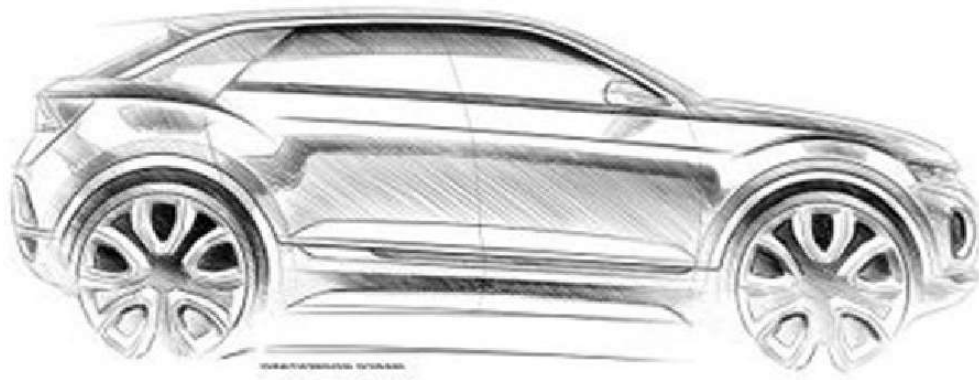
## Hydro Reduxa 4.0



# More on Hydro Circal 75R



## More on Hydro Reduxa 4,0



**8000 kg CO<sub>2</sub>  
equivalent**



# E-mobility as lever for growth



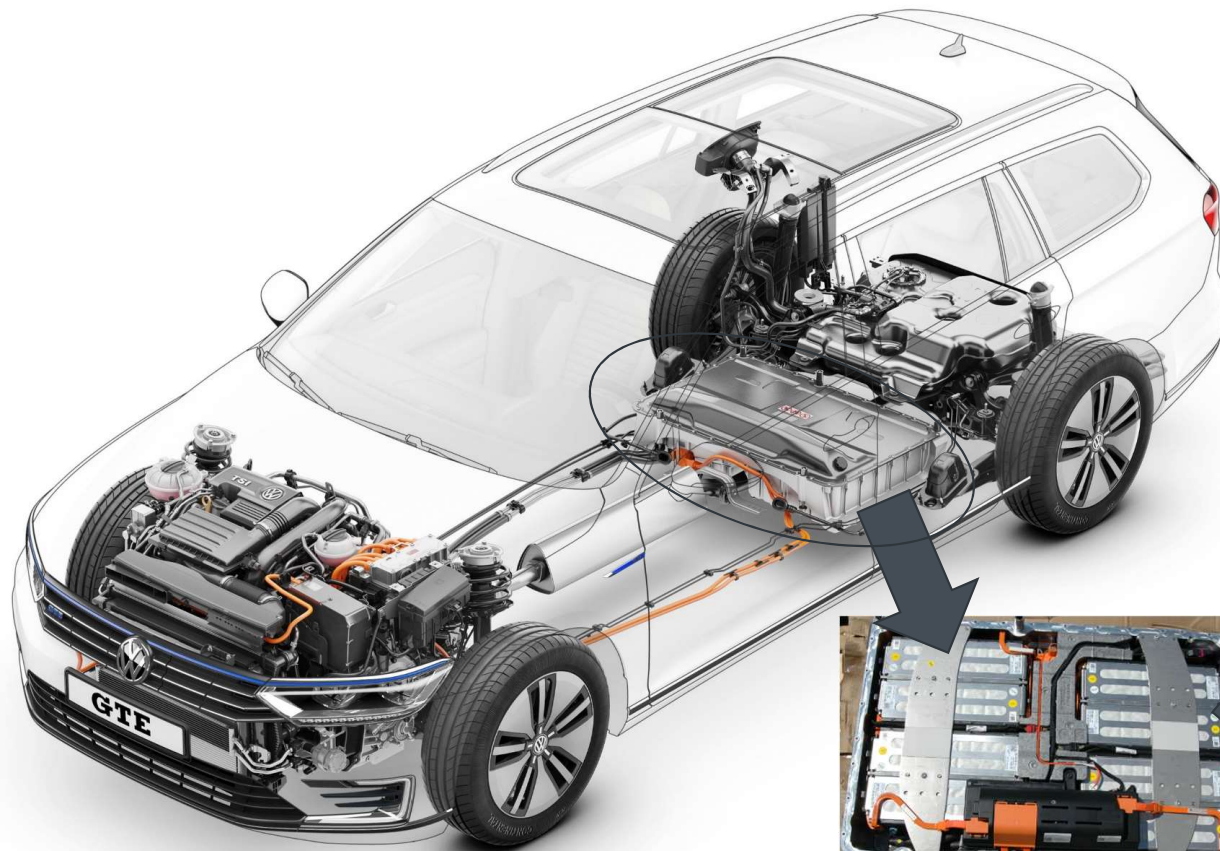
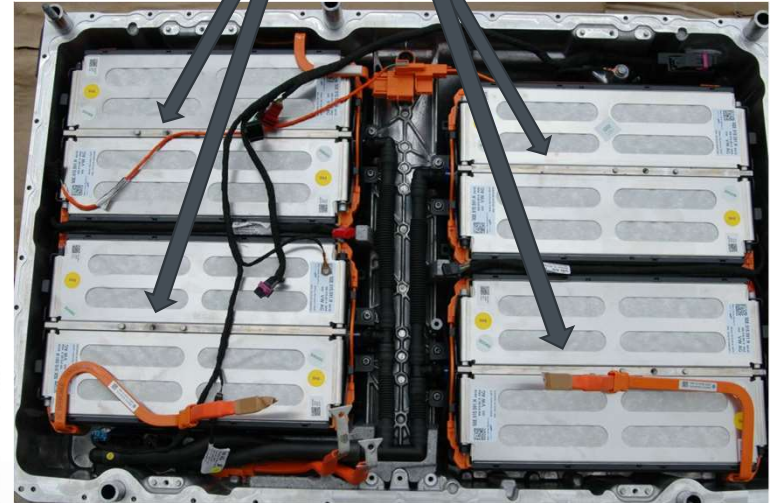
Source: Ducker and European Aluminium  
Extrusion content as net value

# E-mobility as lever for growth

VW Kühlplatte



4 x





# From Bull to Bear

- CASH Improvement (Net Operating Capital)
- Organizational restructuring
- Cost cutting





# Values and People



Care. Courage. Collaboration.  
These are the values we build on.





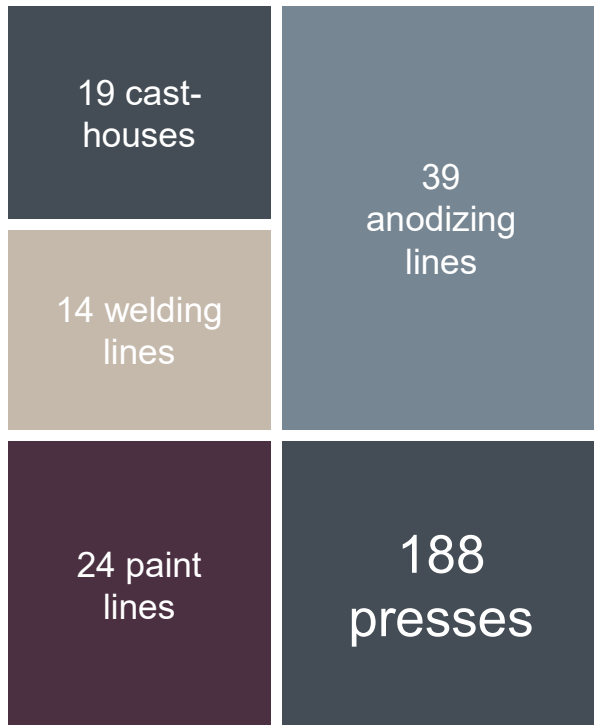


# Hydro Precision Tubing Tønder

Tommy Seeberg, MD Precision Tubing Tønder

December 5, 2019

## Meeting customer needs – Globally and locally



With more than  
**150**  
production units

With presence  
in more than  
**40**  
countries

**35,000** employees

# Precision Tubing business unit



## TØNDER:

7 High speed cutters	12 træk- maskiner
28 alm cut lines	3 presses
400 employees	4 plants

With

**35%**

markets share

With more than

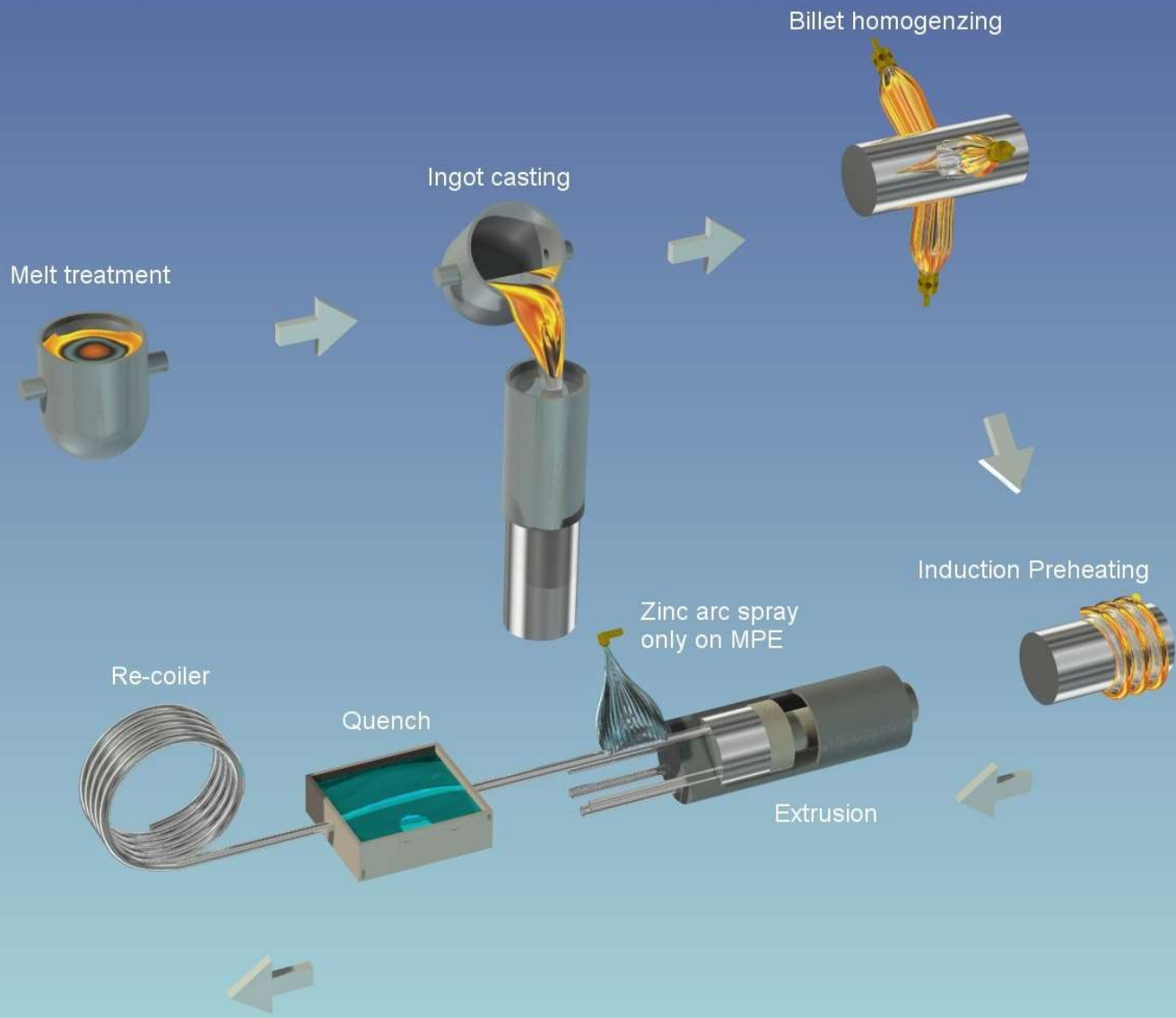
**17**

production units

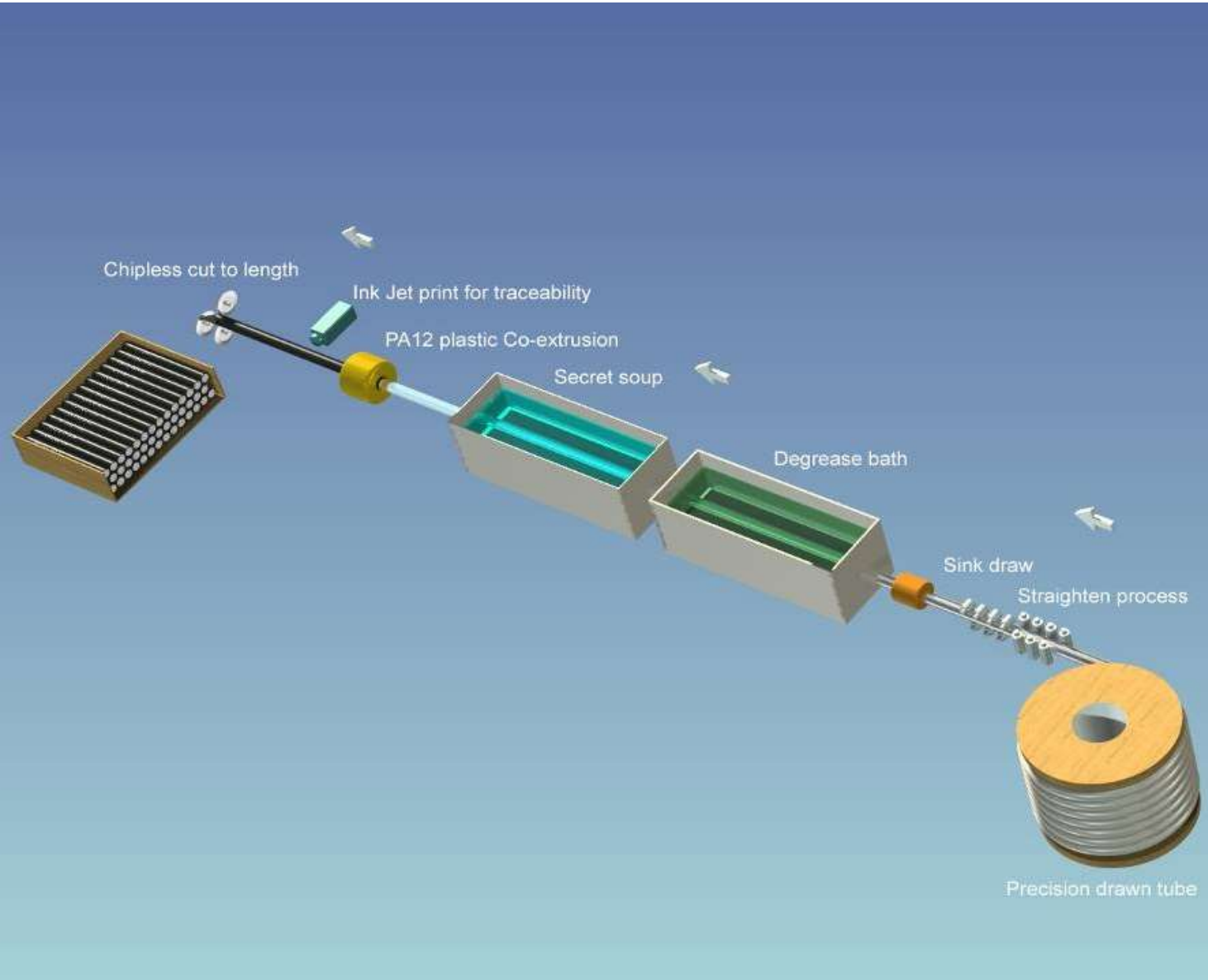
**3,400** employees

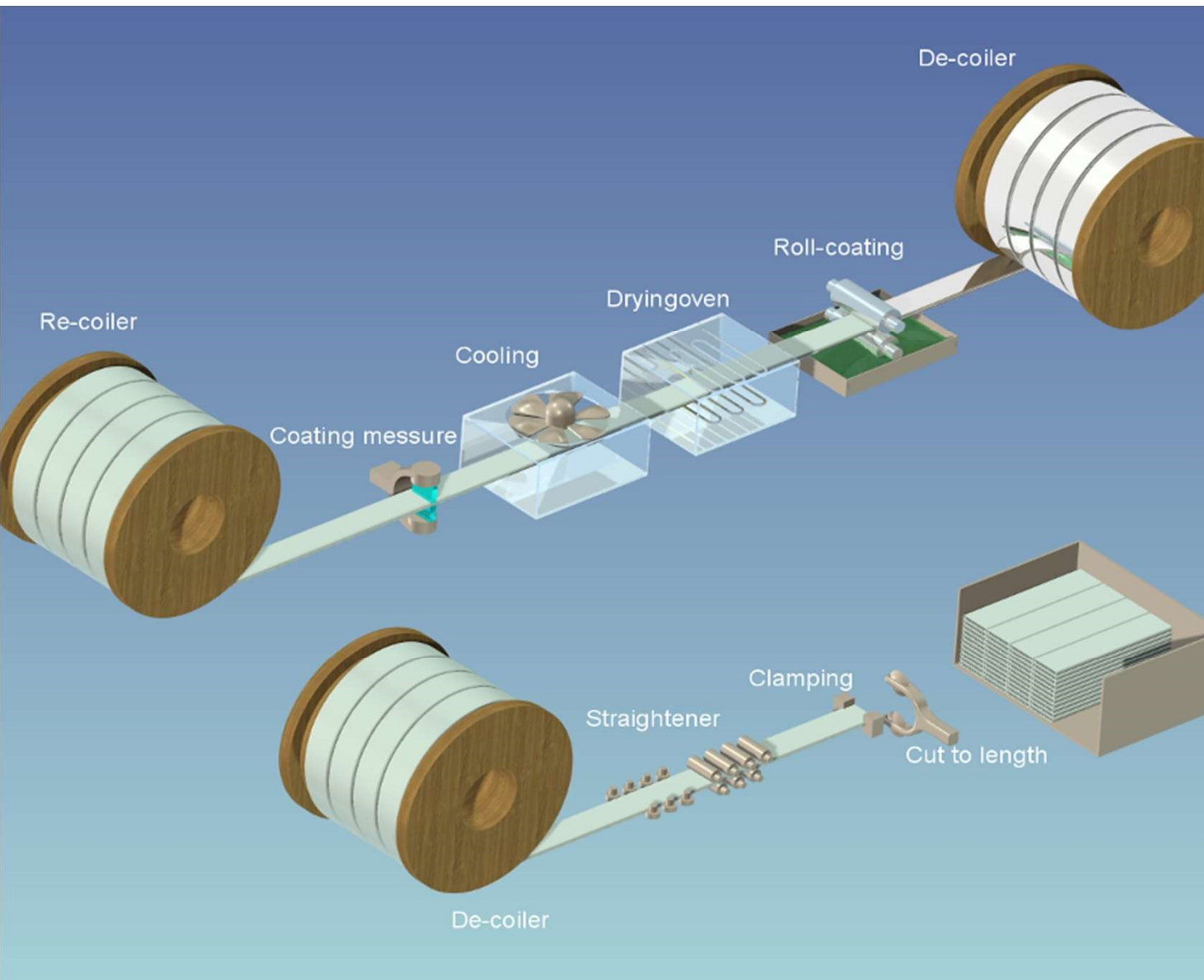


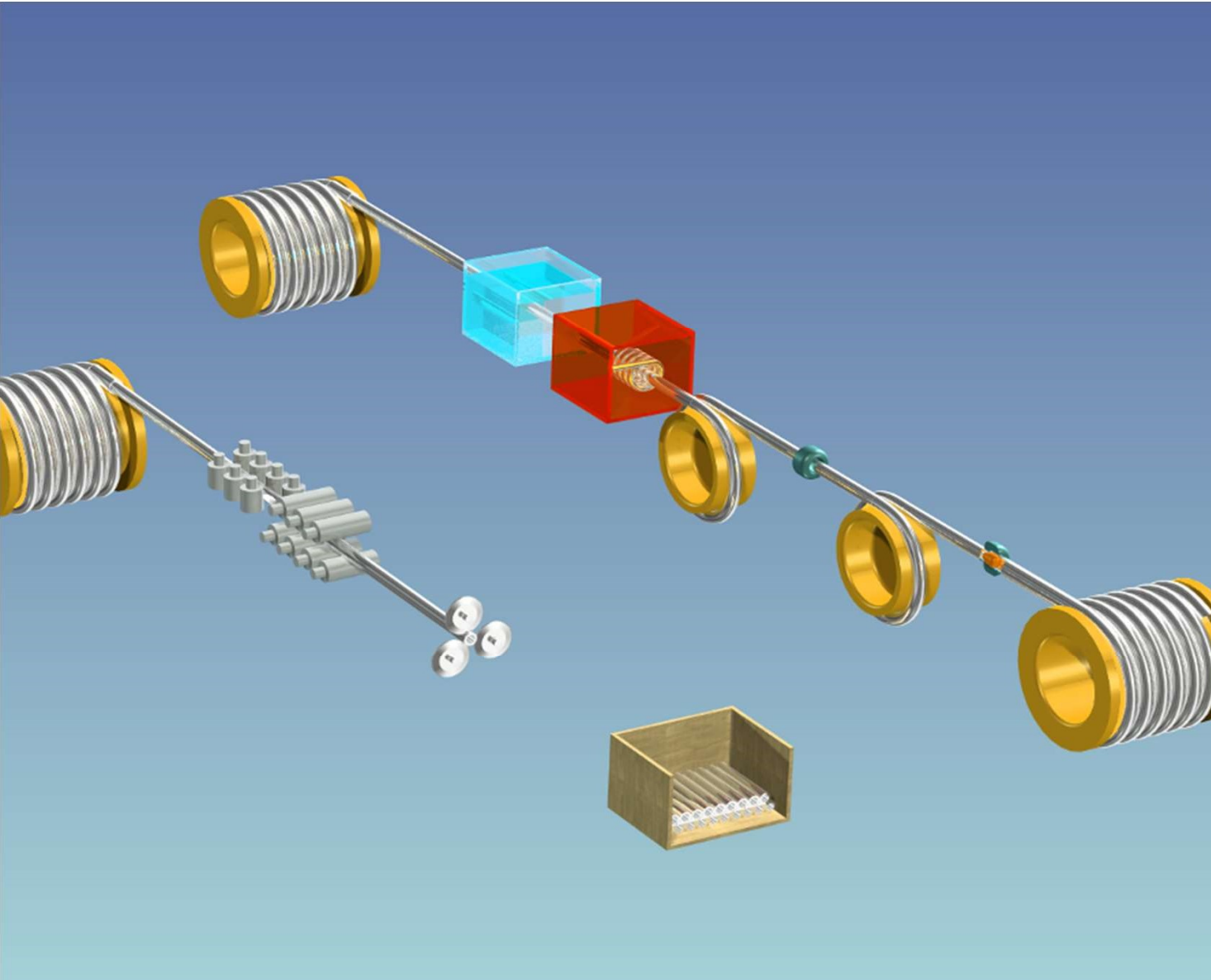
## Manufacturing on Coil











# Precision Tubing overview

## North America



Rockledge



Reynosa



Monterrey

- Multi-port extrusions (MPE)
  - Extruded tubes
  - Precision shapes
  - Internally enhanced tubes
  - Zinc Coated Round Tube
  - Precision drawn tubes
  - Internal heat exchangers
- 
- 33,000 tons
  - 550 employees

## South America



Acro



Buenos Aires

- Multi-port extrusions (MPE)
  - Precision drawn tubes (PDT)
  - Extruded tubes
  - PE coated tubes (HyPlus)
  - Line sets (air-conditioning)
  - Precision shapes
  - Profiles
- 
- 8,000 tons
  - 120 employees

## Welded tubes



Lichtervelde



Pune



Remscheid



Shanghai

- Round, rectangular, oval and profiled welded tubes
  - Tubes with inner fins
  - Welded drawn tubes
  - Strip embossing
  - Punched Manifolds
- 
- 33,000 tons
  - 425 employees

## Europe



Tønder

- 30,000 tons
- 480 employees

- Multi-port extrusions (MPE)
- Internally enhanced tubes
- Precision drawn tubes
- Extruded tubes
- PA and PE coated tubes
- Line sets (air-conditioning)
- Fuel coolers
- Spacer bars
- Forging material
- Cables and wires
- Internal heat exchangers

# Precision Tubing overview cont.

## China



Suzhou

- Multi-port extrusions (MPE)
- Helical Grooved Tubes
- Straight Grooved Tubes
- Extruded tubes
- Zinc Coated Round Tube
- Profiles
- Anodizing
  
- 30,000 tons
- 550 employees

## Vietnam



Ho Chi Minh City

- General Extrusion
- Anodizing
- Powder Coating
- CNC Fabricating
  
- 6,000 tons
- 250 employees

## India



Kuppam

- Round, rectangular, oval and profiled welded tubes
- Tubes with inner fins
- Welded drawn tubes
- Strip embossing
- Punched Manifolds
  
- 33,000 tons
- 425 employees

## China



- Fabrication
- CNC Machining
- Friction Stir Welding
  
- 370 employees



# Precision Tubing Europe



## Precision Tubing Tønder a.s HQ



**Mother company founded in 1990**  
**Total 400 employees (260 local)**

- Precision drawn tubes
- Extruded MPE tubes
- Extruded coolers
- HYCOT™ coated tubes
- HyLife™ products
- 3 presses & drawing facilities
- 30,000 tons

## MPE cutting facilities



**Bedsted, Denmark**

- 14,000 tons
- 90 employees

## PDT cutting and FC facilities



**Bredebro, Denmark**

- 6,000 tons
- 60 employees

## Added value & coating facilities



**Løgumkloster, Denmark**

- HYCOT™ coated tubes
- HYBRAZ™ coated MPE
- 10,000 tons
- 70 employees

# Precision Tubing: Global Leading Position



# Main Segments We Serve



Automotive



HVAC&R



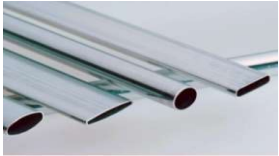
Solar thermal



Other industries

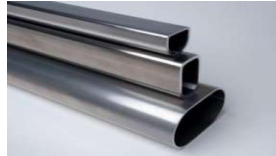


# Automotive



**Precision drawn tubes (PDT)**

For heaters, radiators, condensers, evaporators, coolant lines, oil coolant lines



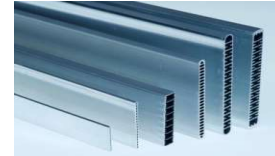
**Welded tubes**

For structural components, radiators, heaters, charge air coolers, manifolds



**Welded tubes with inner fins**

For oil coolers



**Multi-port extrusions (MPE)**

For condensers, evaporators, oil coolers, charge air coolers, radiators and heaters – and can be supplied with HYBRAZ™ coating for direct CAB brazing



**HYCOT™ coated tubes**

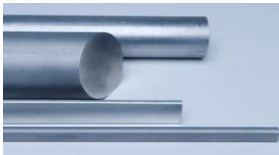
For fuel lines, air-conditioning lines, power steering lines, coolant lines, oil cooling lines



**Aluminium cables**



**Fuel cooler**



**Forging stock (FOBS™)**

For extruded cold-drawn coiled rod for automotive components, such as screws and nuts



**Internal HX**



# HVAC&R

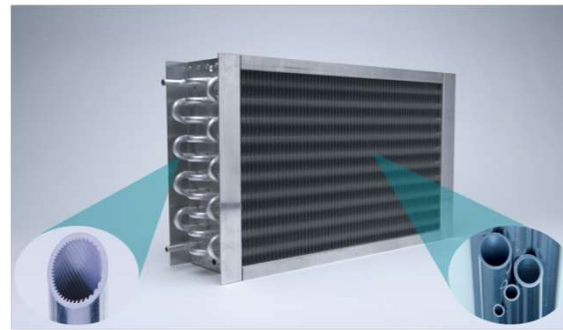


## **Welded tubes**

Used as headers, condensers, evaporators (cladded tubes)

## **Multi-port extrusions (MPE)**

Used for condensers, evaporators, and can be supplied with HYBRAZ™/® coating for direct CAB brazing



## **Internally enhanced tubes (straight and helical)**

Used for condensers, evaporators

## **Precision drawn tubes (PDT)**

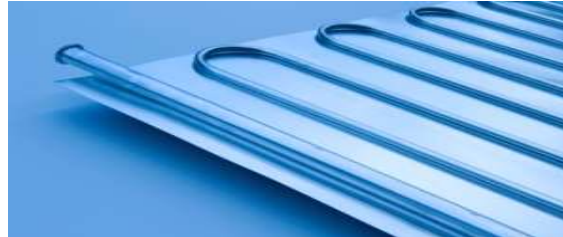
Used for condensers, evaporators and

## **+ Line sets**





# Solar thermal



**Inner grooved tubes**  
Used for harp and meander absorbers



**Multi-port extrusions (MPE)**  
Used for MPE solar absorbers



**Precision drawn tubes (PDT)**  
Used for connecting lines, heat transfer tubes. Can be punched to be used as manifolds

# Other industries

## Heavy Vehicles/Off-road



**PDP spacer bars**  
Used for plate and bar heat exchangers



## Industrial Products



**Welded tubes**  
Used for safety, health care, leisure/outdoor, child care and gardening equipment



# Automotive



# HVAC





Struts



Tank strap for  
Gasoline tanks



Tailor Extruded  
Blanks (TEB)



E-mobility

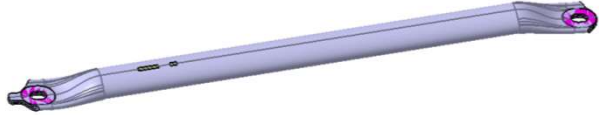
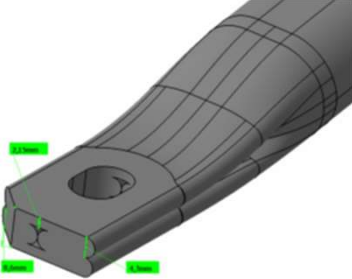
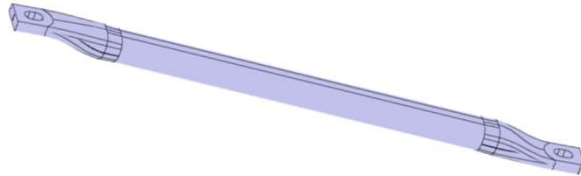


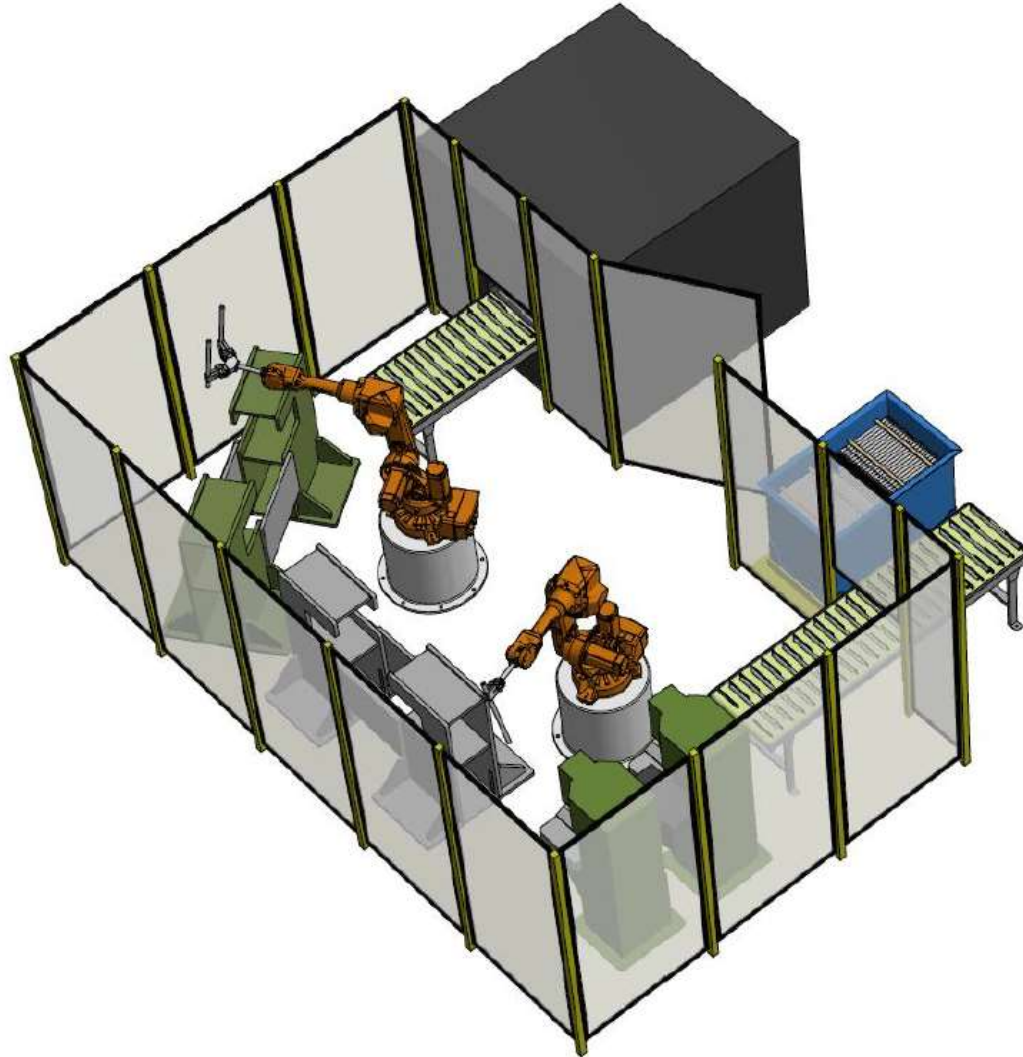


Struts

# Struts

Project overview





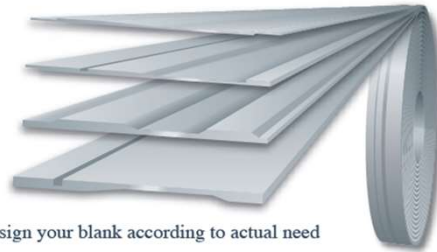




Tank strap for gasolinetanks



Tailored Extruded Blank directly from coil

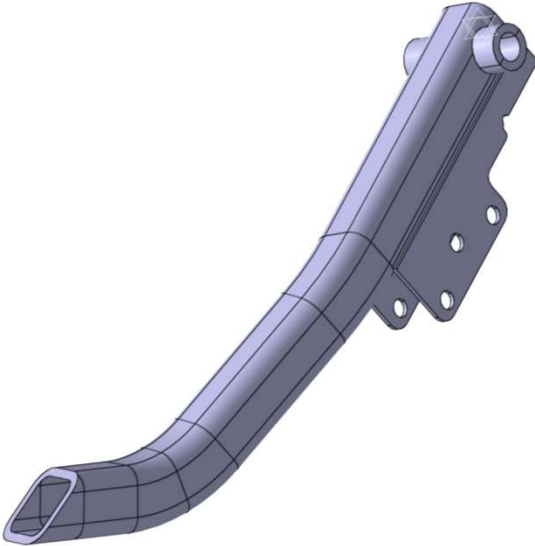


Design your blank according to actual need

TEB

# Tailored Extruded Blanks

Chassis parts



Structural parts for doors

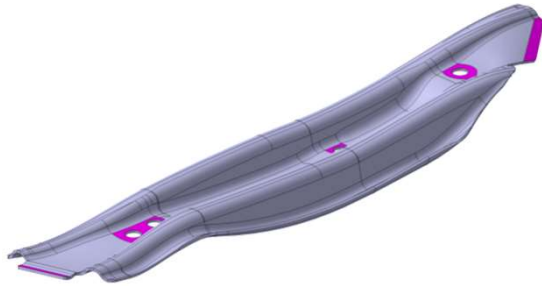


# Door Beam

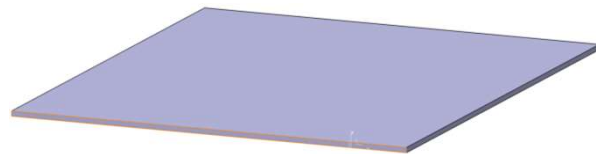
Concept Phase



## Current customer design

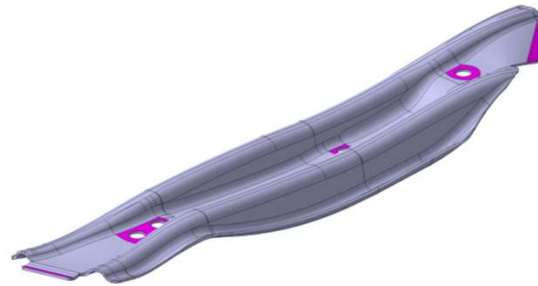


Vægt: 0,342 Kg

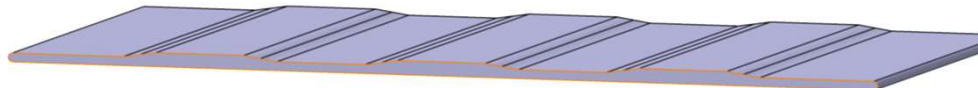


Material: 2mm Plade (5000 alloy)

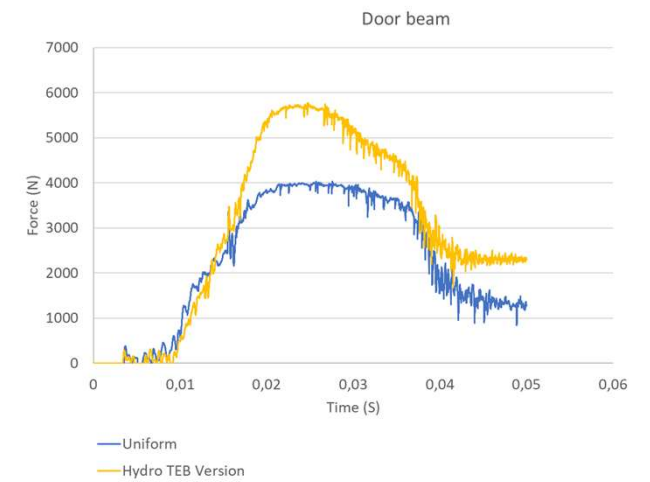
## Hydro design

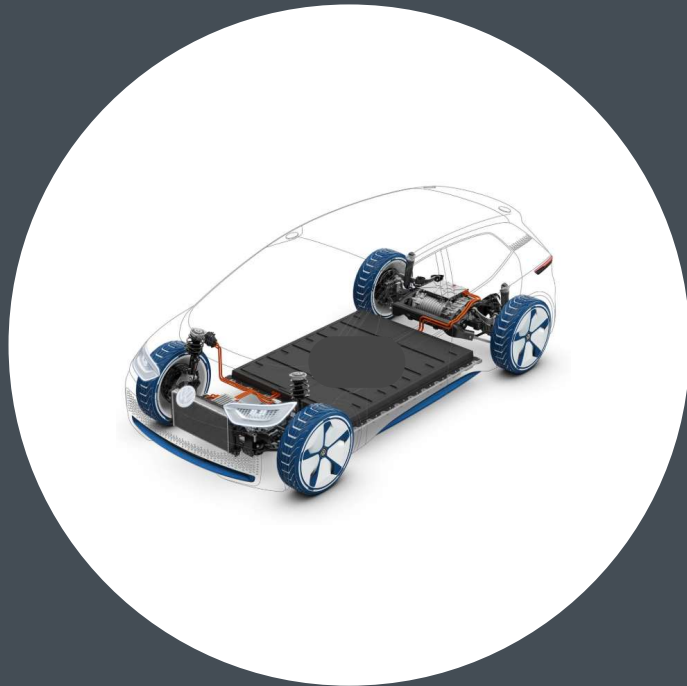


Vægt: 0,267 Kg ( -22% )



Material: 2,2 – 1,2mm - TEB Profil (6000 alloy)





E-mobility

# Battery Cable - Flat

Project





# Solid aluminium Cable for important big customer in collaboration with PT-NA





# Hydro

*We are aluminium*

