

Technology for Quality ——

## **Mastering Distortion**

3D straightening for structural components

## Company | who we are



- A team of >120 employees for whom your solution is our focus.
- For **50 years** we have been developing special purpose machines...
- ...for areas where quality and precision are the highest premise.
- All components are planned, developed and implemented by us.
   We know why every screw has its place.
- We start where standard equipment ends. And do not stop before your process meets the requirements.



## Company | certifications



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- DIN EN ISO 9001:2015
- DIN EN ISO 45001:2018
- DIN EN ISO 3834-2
- DIN EN 1090
- §19 German Water Resources Act
- DIN EN ISO 9712
- DGZfP (German Society for NDT)

DIN NA 062-08-25 AA

**Quality Management System** 

Occupational Health & Safety

Welding Quality Assurance

Certification of the factory production control

**Specialized Company** 

Level 3 certified expert (PT/FPI)

Member of expert committees

- Automotive
- Surface Testing

Member of the Standardization Committee for PT / FPI



## Company | what we do



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03.11.2022

## Company | service Locations





## Company | who already trusts us



Automotive Aludyne, AUDI, BMW, Bharat Forge, CSA, Cosma/Magna, Daimler, FAW China, +GF+ Automotive, Hanomag, Heiche, KSM Castings, Leiber, Linamar, Nemak, NewAlu, Regensburger Druckgusswerke, Shiloh, VW, ZF Aerospace Industry Airbus, AGUSTA Westland, AVIC, Boeing, Bombardier, CFAN, COMAC, Dassault, Airbus Helicopters (former Eurocopter), Fokker, GKN, Korean Airline, Patria Aerostructures, Premium AEROTEC, SAAB, SABCA Space Engineering Airbus Defence and Space (former EADS Astrium), DLR, MT Aerospace Railway Deutsche Bahn, SBB, SIEMENS Aluminum & Steel Industry Alcoa, AMAG Rolling, ArcelorMittal, Butting, Deutsche Edelstahlwerke, Ellwood, Europipe, Franchini, Salzgitter Mannesmann, Thyssen Krupp, Vallourec Laboratories TÜV Nord, Dekra



# Straightening

**General Information** 

## Straightening | experience



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forming

(DO328)

1999:

3D straightening (Daimler C class)



2022:

>130 systems

## Straightening | customer statement



"The **self-learnin**g straightening software from L+R is unique on the market.

It **adapts** itself continuously **to varying distortions** and
material characteristics, **optimizes the cycle time** and **minimizes stress** for part and machine."

Magna BDW



# **Applications**

Straightening Machines for various part types

## Application | machines sorted by part type



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#### Structural parts

- Shock tower
- Longitudinal member
- Cross member
- Tail gates
- Suspension mountings
- Integral beam

#### Battery housing parts

(HPDC, LPDC, Extrusion)

- Battery trays / pans
- Battery frame
- Side plates / intermediate plates

#### Chassis parts

- Cross beam (gravity die casting)
- Cast side part (gravity die casting)
- Casting node (gravity die casting)
- Front axle beam (steel)

#### Engine parts

- Steering box housing
- Camshafts

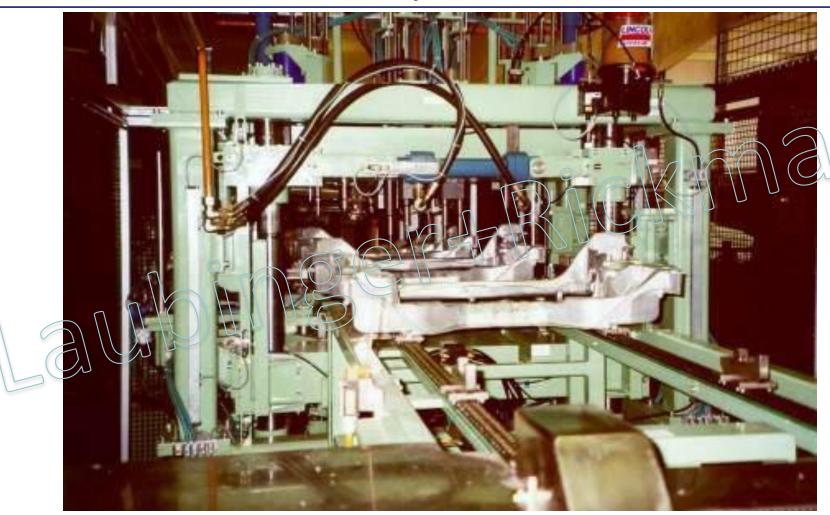
## Application | machines sorted by end-user



<b>OEM</b> BMW/RR	Type of machine Automatic Measuring	<b>Qty.</b> 2
BMW/RR	Automatic Straightening	31
BMW/RR	Semi-Automatic Straightening	14
Daimler	Automatic Straightening	40
Ford	Automatic Straightening	2
FCA	Automatic Straightening	2
GM	Automatic Straightening	1
Lucid	Automatic Straightening	2
VW/Audi	Automatic Measuring	8
VW/Audi	Automatic Straightening	12
VW/Audi	Semi-Automatic Straightening	2

# Application | first automatic straightening for automotive chassis components (1999)



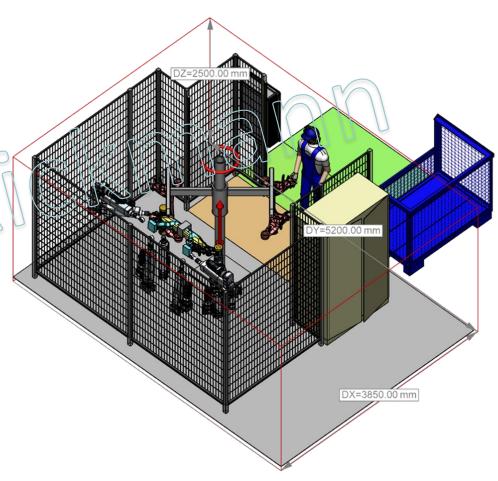


## Application | cross member









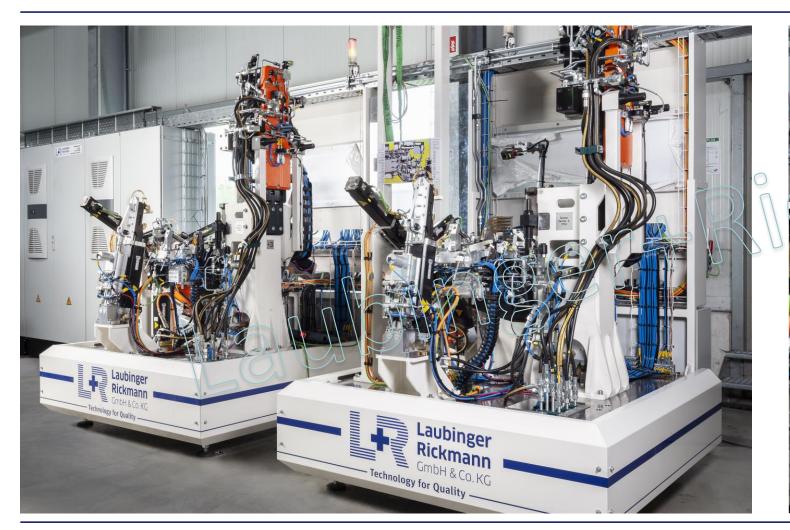
## Application | longitudinal member





## Application | shock tower (dome)









## Application | tail gate

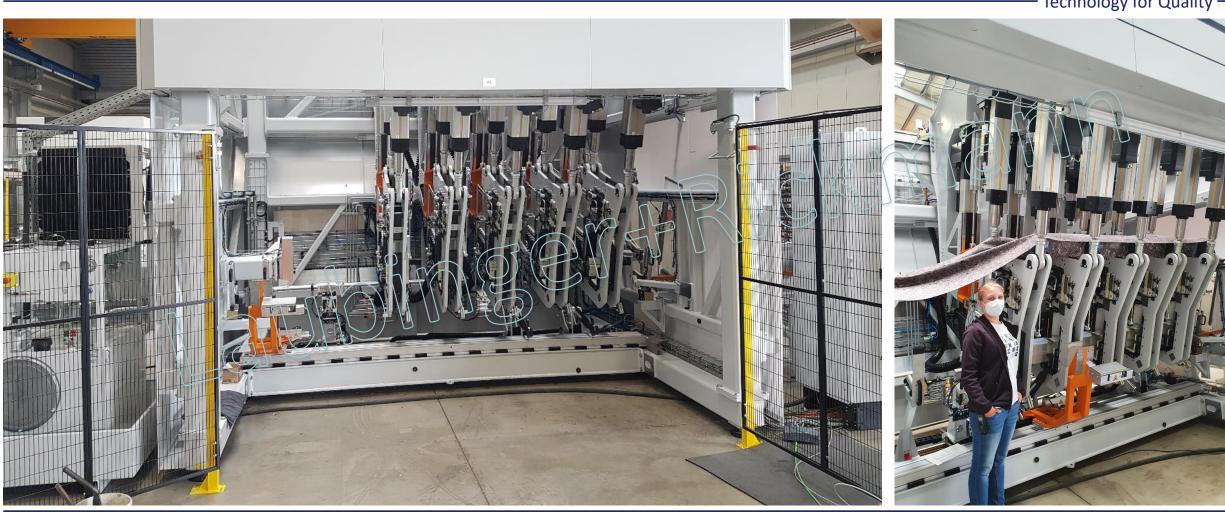






## Application | extruded profiles

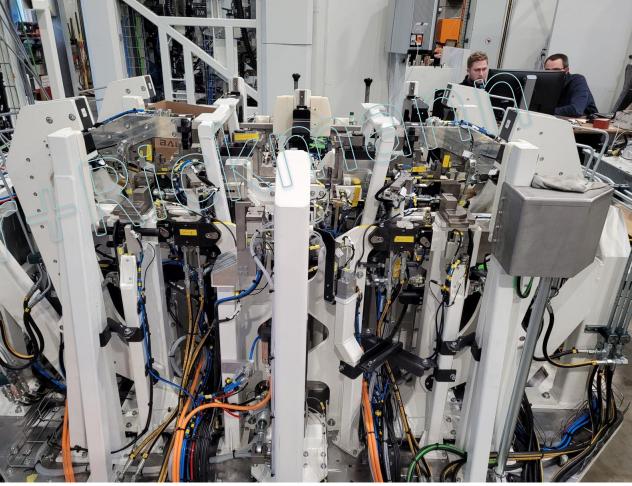




## Application | latest trend

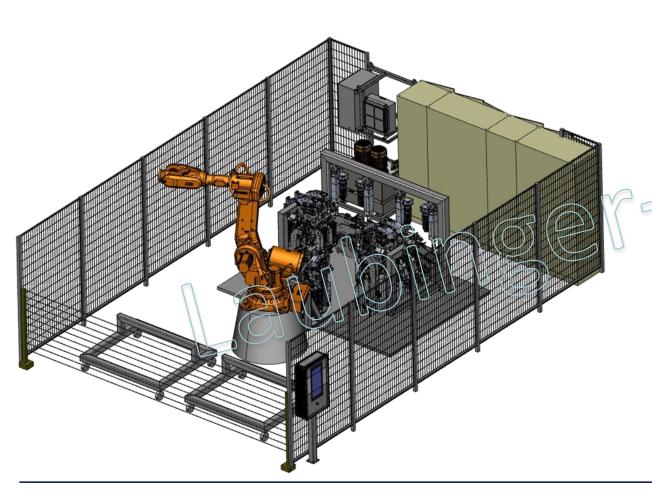


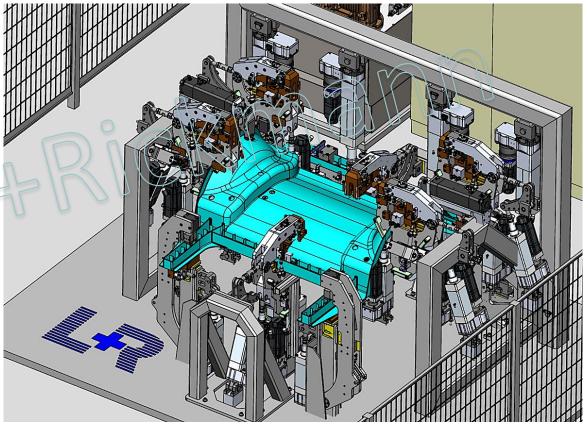




## Application | work in progress









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