



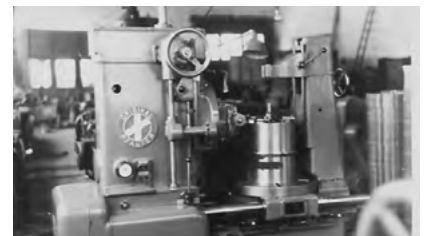
HAY GROUP



FIRST-CLASS
PRODUCTS FOR YOU

JOHANN HAY:

**"STEEL IS OUR RAW MATERIAL,
PRECISION IS OUR PASSION".**





CONTENTS

HAY PERFORMANCE – We provide success	4
HAY COMPETENCE – At a glance	5
HAY MACHINERY – Highest demands for our customers	6
HAY FORMING – Perfect in form	7
HAY-LIGHTS – Our key products & customers	8
HAY QUALITY & SUSTAINABILITY – Setting standards	9
HAY POTENTIALS – Brilliant career opportunities	10
HAY LIVE – We are here for you	11

HAY PERFORMANCE – WE PROVIDE SUCCESS

For us, our customers' success is the measure of all things. We are Europe's leading automotive supplier of forged parts for gearboxes, engines and axles and ensure that every day millions of vehicles are moved safely and reliably.



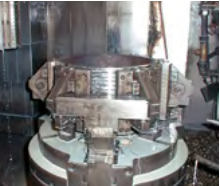


- The company HAY was founded in Bockenau in 1925 by Johann Hay. Opel was the first customer and the first products were ring blanks for starter ring gears
- In 1965, a plant for further processing of forging parts was built in Bad Sobernheim.
- The two sites in Bockenau (forge) and Bad Sobernheim (machining) trade under the name JOHANN HAY GmbH Co. KG Automobiltechnik.
- In 2007, the acquisition of a forge in Lüchow, HAY Speed Umformtechnik GmbH, where Hatebur forged parts and ring rolled parts for the automotive and roller bearing industry are produced, was effected.
- At its three locations in Germany – Bockenau, Bad Sobernheim and Lüchow – the HAY Group has a total of around 1,500 employees.
- The Hay Group has been delivering highest quality products to internationally renowned customers in the automotive and roller bearings industry since 1925.
- The product range runs from blanks to ready-to-install parts for engines, gearboxes and axles.
- HAY is the largest European manufacturer of seamless hot rolled rings, cross wedge rolled shafts, final drive gears and crown wheels for differential gearboxes as well as one of the largest producers of starter ring gears.
- Each year HAY produces over 100 million parts for the automotive industry, thereby processing approximately 250,000 tons of steel and cast iron.
- As a development supplier, HAY actively supports its customers in further developing part geometries and material substitution for weight reduction.
- By operating our own, state-of-the-art tool shop HAY is quickly and flexibly able to meet specific customer requirements.
- The certified Environmental and Quality Management System in place at HAY ensures consistent high quality and sustainability.



HAY COMPETENCE – AT A GLANCE

HAY parts are found in almost every vehicle. HAY produces components for engines, manual and automatic transmissions and differential gears, vertical integration is oriented to customer demand.

VALUE ADDED CHAIN

HAY PERFORMANCE	RAW MATERIAL PROCUREMENT	HOT FORMING	MACHINING	ASSEMBLY / QUALITY CONTROL	STORAGE / DELIVERY
	<ul style="list-style-type: none"> Purchasing Quality control Annually up to 250,000 tons of steel and cast iron obtained from leading suppliers world wide 	<ul style="list-style-type: none"> Forging (vertical press) Hatebur forging (horizontal press) Ring rolling Cross wedge rolled shafts Hot forming 	<ul style="list-style-type: none"> Turning Drilling Broaching Milling Hobbing Shot-blasting 	<ul style="list-style-type: none"> Assembly for ready-to-install product groups Laser welding Staking Shrinking Quality control 	<ul style="list-style-type: none"> Storage and delivery on customer demand Consignment stock Just-in-time delivery Delivery ranges from blanks to ready-to-install parts
					



HAY MACHINERY – HIGHEST DEMANDS FOR OUR CUSTOMERS

HAY places highest demands on itself in order to meet the demands of its customers. HAY is a fair partner to its customers and focuses on sustainability. We reliably supply high quality products worldwide to the locations of our customers.

MACHINE PARK PLANT BOCKENAU

- 18 forging lines (8 manual, 10 automatic)
1,000 tons to 5,000 tons →
NEW: 4,500 ton and 5,000 ton press
- Weight range from 0.5 kg to 50 kg
- 13 ring rolling mills
(max. outer Ø from 200 – 900 mm)
- Cross wedge rolling mill
(max. outer Ø 160 mm; max. length 800 mm)
- All conventional heat treatment processes



Operating weight	5,0 – 43,0 kg
Max. part diameter	350 mm
Max. part height	350 mm
Strokes per minute	55
Press force	4.500 – 5.000 t

MACHINE PARK PLANT BAD SOBERNHEIM

- Approx. 140 processing machines →
NEW: 10 Scherer machining centres
- CNC turning centres
- CNC drilling centres
- CNC gearing centres
- Induction hardening lines
- Flywheel assembly lines
- Welding equipment (Laser, MiG, MAG, WiG)



MACHINE PARK PLANT LÜCHOW

- Hatebur Horizontal Forging Press →
NEW: 1 HM 75 hot former SOP May 2012
- 1 AMP 30 hot former
- 2 AMP 50 hot former
- 1 AMP 70 hot former
- 1 AMP 70/L hot former
- 1 AMP 70 XL/HFE hot former
- Weight range from 0.05 kg to 7.5 kg
- Ring rolling mills
- 3 to max. Ø 200 mm →
NEW: 2 ring rolling mills up to Ø 200 mm
- 2 to max. Ø 230 mm
- All conventional heat treatment processes



Operating weight	950 – 7.500 g
Max. part diameter	ca. 180 mm
Bar diameter	45 – 90 mm
Strokes per minute	50 – 80
Press force	20.000 kN

HAY FORMING – PERFECT IN FORM

HAY offers its customers various levels of vertical integration from a single source, ranging from forged blanks to ready-to-install machined parts.



HOT FORMING

Forging

On vertical and horizontal forging presses, HAY processes steels of almost all alloys in a weight range of a few grams to 50 kg. With specific heat treatment processes, we achieve an advantageous structure and thus provide the basis for highly durable and long-lasting parts.

Ring rolling

HAY sets standards in quality and economic efficiency for the manufacturing of seamless rolled rings. On our automatic computer controlled radial and axial rolling mills we produce a variety of diameters and profiles with a minimized use of materials and high dimensional accuracy in a weight range of up to 50 kg and a diameter of up to 800 mm.

Cross wedge rolling

We supply cross wedge rolled shafts, which in comparison with horizontally or vertically forged shafts have a favourable grain orientation and no circumferential burr. The resulting shafts are near net shaped for subsequent machine processing.

MACHINING

Depending on the customer's requirements, HAY uses state-of-the-art technology, such as CNC lathes, drilling, milling and broaching systems to manufacture machined and ready to install parts from hot rolled and forged parts. Automations are realized by articulated-arm robots and gantry systems. 3-D measuring machines and automated measurement cells are used to ensure the series quality.

Heat treatment

HAY uses various methods of heat treatment. By inductive hardening processes, for example, the necessary toughness and hardness required by the customer can be achieved.

Module assembly

Using state-of-the-art technology such as MiG/MAG- and laser welding we combine parts to assemblies e.g. flywheels and driving plates.

HAY-LIGHTS – OUR KEY PRODUCTS & CUSTOMERS

Our product range includes parts of varying geometries from only a few grams to 50 kg and a maximum outer diameter of 800 mm. HAY consistently further develops the product spectrum in accordance with customer demand.

PRODUCT EXAMPLES

PRODUCTS	DESCRIPTION	SPECIFICATION	APPLICATIONS
	Drop forged parts made of alloyed and non-alloyed steel, ball bearing steel and stainless steel	Weight range from 0.5 kg to 40 kg; diameters up to 800 mm	Engines and gearboxes
	Forged parts for ring gears, crown wheels, synchronizing rings and final drive wheels	Semi-finished forging parts to ready-to-install components	Differential gearboxes
	Park locking gears for automatic transmissions	Internal gears and external gears; ready-to-install hardened	Gearboxes
	Cross wedge rolled shafts	Weight range from 7 kg to 35 kg	(Truck) Gearboxes
	Tapered roller bearings, ball bearings, angular cut bearings and deep groove ball bearings	Hatebur forging parts up to 180 mm outer diameter and maximum 7.5 kg	Wheel bearings and ball bearings
	Flexplates	Weight range from 2 kg to 20 kg	Engines (for automatic transmissions)

REFERENCES

Customer examples by segment

PASSENGER CARS	TRUCKS	BEARINGS	OTHERS
BMW Group Daimler Porsche Renault VW Konzern	Daimler MAN DAF Scania Volvo	Schaeffler SNR SKF	Bosch John Deere ZF SEW-EURODRIVE Voith Getrag

HAY QUALITY & SUSTAINABILITY – SETTING STANDARDS

Consistent quality has a long tradition at HAY – from purchasing to tool shop as well as production. It is something that has been lived by our employees for decades and is highly valued by our customers.

CERTIFIED QUALITY MANAGEMENT SYSTEM

HAY is ISO/TS 16949 certified in accordance with certification requirements of the automotive industry.

CERTIFIED ENVIRONMENT MANAGEMENT SYSTEM

HAY is ISO 14001 certified in accordance with certification requirements of the automotive industry.

HAY QUALITY PRINCIPLES

- Error prevention has priority over error correction
- Processes are continuously improved
- Employ and further develop qualified and responsible staff
- Ensure cost efficiency with product quality
- Promote external and internal customer satisfaction by adhering to assured qualities, schedules and quantities

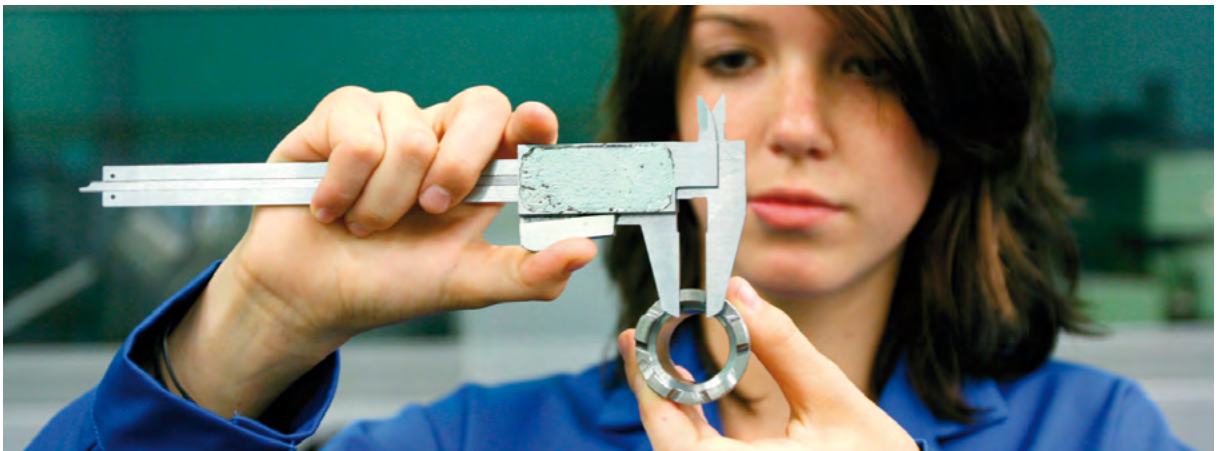
SUSTAINABLE ENVIRONMENTAL POLICIES

- Keeping to legal/governmental requirements
- Reduction/avoidance of negative environmental effects
- Continuous improvement
- Sparing of natural resources
- Reduction of waste
- Involvement of our contractual partners in our environmental targets
- Permanent supervision of our environmental management system



HAY POTENTIALS – BRILLIANT CAREER OPPORTUNITIES

HAY not only invests in technology but also in its employees. In attractive training programs, each employee acquires the first class competence that ensures the success of our company.



INVESTING IN COMPETENCE

At HAY, promoting new recruits/young staff is of great importance. Thus being, students and graduates in the fields of business administration, mechanical engineering and industrial engineering are always welcome here. Whether for an internship, a practical semester, a bachelor thesis, diploma thesis and/or master thesis or entry into the profession – HAY combines sophisticated tasks with tangible perspectives within the company.

TRAINING AT HAY

Each year approximately 35 young people find an interesting vocational training in technical/industrial and commercial occupations.

BA STUDIES WITH HAY

In cooperation with the Dual Academy Baden-Württemberg (DHBW) in Mannheim, we train students in mechanical engineering, industrial engineering and business administration specializing in industry. The dual concept of alternating theory and practice over a period of six semesters leads to a high practical relevance. At HAY, we not only emphasize technical skills, but also to the fact that the trainees and BA students fully identify themselves with the high quality standards.

RATED "EXTREMELY VALUABLE"

With their special skills, each of our approximately 1,500 employees secures our excellent market position. Therefore, we can honestly say that the success of the company Hay is the success of our employees who are dedicated to our customers and their targets.

HAY LIVE – WE ARE HERE FOR YOU



OUR PLANTS

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HOW MANY STEPS

DOES IT TAKE, TO TURN
THIS RAW MATERIAL INTO

THIS PRODUCT?



ONLY **ONE: YOUR STEP** TO HAY!

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