

TOOLING ALLOYS

Shaping the future since 1701
Zapp Precision Metals GmbH

ZAPP



The illustrations, drawings, dimensional and weight data and other information included in this brochure are intended only for the purposes of describing our products and represent non-binding average values. They do not constitute quality data, nor can they be used as the basis for any guarantee of quality or durability. The applications presented serve only as illustrations and can be construed neither as quality data nor as a guarantee in relation to the suitability of the material. This cannot substitute for comprehensive consultation on the selection of our products and on their use in a specific application. The brochure is not subject to change control.


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EVERYTHING FROM A SINGLE SOURCE –
THE ZAPP ADVANTAGE

Our materials


What materials do we offer, and what do our designations – **cold, speed, and resist** – mean? This quick guide will help you get up to speed. Still have questions? No problem – just give us a call!




Powder Metallurgical Steel




Special Tool Steel




Standard Tool Steel




Carbide




Cold
Cold-Work Steel



Speed
High-Speed Steel



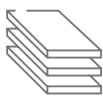
Warm
Hot-Work Steel




Resist
Corrosion-Resistant Tool Steel

The semi-finished products and their dimensions


We offer these semi-finished products in a wide range of dimensions. Your required size isn't listed? Let's talk – we'd love to hear from you.




Flat Steel
from ~12 x 500
to ~500 x 400 mm




Round Steel
from 1.3 to ~500 mm




Sheet
from 1.3 to ~12 mm



Mechanical Machining












EDM Block
e.g., FL 100 x 150 mm,
hardened or annealed












Special Profiles
Stepless rolling from
Width 25 – 160 mm
Thickness 8 – 100 mm

ZAPP PRODUCT RANGE

Product and Stock Program

Material Number/ Brand Name	Round bars	Flat bars	Sheets/ Plates
 Z-Series PM Tool Steel			
 Z-1 PM ^{cold}	●	●	
Z-3 PM ^{cold}	●	●	
Z-9 PM ^{cold}	●	●	
Z-10 PM ^{cold}	●	●	●
Z-Wear5 PM ^{cold}	●	●	
 Z-23 PM ^{speed}	●	●	
Z-30 PM ^{speed}	●	●	
Z-M4 PM ^{speed}	●	●	
Z-M48 PM ^{speed}	●	●	
Z-M62 PM ^{speed}	●	●	
Z-T15 PM ^{speed}	●	●	
 Z-420 PM ^{resist}	●	●	●
 ASP®/PM High-Speed Steel			
ASP® 2053	●	●	●
ASP® 2060	●	●	
 Zapp Special Tool Steel			
 US 2000 ^{cold}	●	●	
Vaco 180T ^{cold}	●	●	
 LC 200 N ^{resist}	●	●	●
 Zapp Carbide			
Z-G200K-HM		●	
Z-G300F-HM	●		
Z-G500F-HM	●		

Product and Stock Program available upon request

Material Number/Brand Name
 Z-Series PM Tool Steel Z-Max PM, Z-Tuff PM, Z-Wear PM, Z-12Ultra PM
 ASP®/PM High-Speed Steel ASP® 2005, ASP® 2012, ASP® 2023, ASP® 2030 ASP® 2062
 Zapp Special Tool Steel  VC 800 ^{cold}
  Cold-Work Steel 1.1730, 1.2311, 1.2312, 1.2316 1.2358, 1.2363, 1.2379, 1.2436 1.2709, 1.2738, 1.2767, 1.2842
 Stainless Tool Steel 1.2083, 1.2085
 Hot-Work Steel 1.2343, 1.2344, 1.2714
 High-Speed Steel 1.3243, 1.3243, 1.3247

ASP® is a registered trademark of our partner Erasteel, France.



SERVICES AND SPECIAL DESIGNS

Our products get to you as fast as possible...

- 1. thanks to our large, well-stocked warehouse
- 2. and a full range of machining equipment.

Our service center maintains around **1,000 tons** of powder metallurgy **high-performance steels, specialty materials, and carbides ready for delivery** – including hardened EDM blocks.

With our modern machinery, we can process your materials in a wide range of **flat and round dimensions**. Our **worldwide sales network** and **service centers** in Unna/ Germany, Pleasant Prairie/USA, Sheffield/UK, and Taicang/ China ensure quick and efficient distribution.

Processing Options

With our grinding, hardening, and milling technologies, we **provide machined** and **ground** semi-finished products or custom parts according to your specifications.

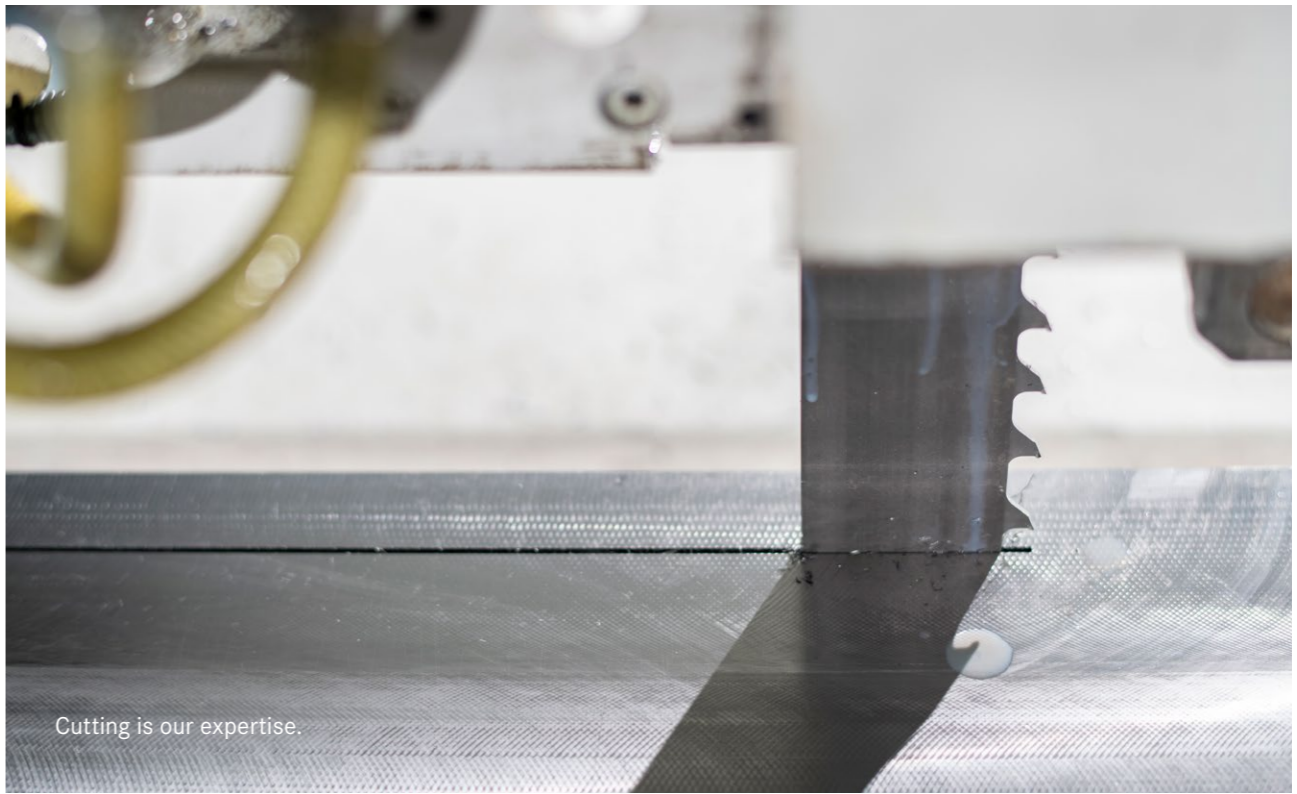


We cut PM steels within **60 minutes** to:

↔ **1.000** mm Length

↓↑ **200** mm Thickness

🔍 **1** mm Width tolerance



Cutting is our expertise.

»We are a really good team.«

»In the inside sales department of the Tooling Alloys division, I have been looking after the wishes and needs of our customers for many years.

In order to provide the best possible service here, a close and trusting cooperation with colleagues from other departments such as purchasing, technology, and the service center is necessary. I enjoy this teamwork a lot.«

Angela Schulze, Inside Sales
Tooling Alloys
Ratingen location, Germany



DISCOVER THE ADVANTAGES



Conventional tooling steels group with working hardness up to ~63 HRC

_ In this group, US2000^{cold} special tool steel offers higher performance and better dimensional stability in heat treatment than the standard.

Brand/Steel designation	US 2000 ^{cold}	1.2379/D2
Melting	conventional/ESU	conventional
Tribology*	A	C
Toughness*	A	C
Compressive strength*	A	C
Typ. working hardness HRC	57 – 63	57 – 61



PM Tooling and high-speed steels group with working hardness up to ~64 HRC

Tool steels must be suitable for a wide range of applications. With powder metallurgical steels (PM), property characteristics can be achieved that are perfectly suited to your application!

_ Z-1 PM^{cold} and Z-3 PM^{cold} stand for maximum breakage resistance with good resistance to plastic deformation.
_ Z-M4 PM^{speed} and Z-Wear5 PM^{cold} are a good choice for safe and stable tools under tough production conditions.
_ The Z-10 PM^{cold} offers the highest wear resistance.

Brand/Steel designation	Z-1 PM ^{cold}	Z-3 PM ^{cold}	Z-Wear5 PM ^{cold}	Z-23 PM ^{speed}	Z-M4 PM ^{speed}	Z-9 PM ^{cold}	Z-10 PM ^{cold}	1.3343/M2
Melting	powder metallurgical							conventional
Tribology*	C–	C	A	B	A	A+	A++	C
Toughness*	A++	A+	A	C	B	B	C	C
Compressive strength*	B	B	A	A	A	C	A	C
Typ. working hardness HRC	54 – 62	54 – 60	58 – 63	60 – 64	60 – 65	50 – 57	58 – 63	61 – 64



Precipitation-hardening special alloys group

Brand/Steel designation	VACO 180T ^{cold}
Special features	Special analysis for highest toughness requirements
Typ. working hardness HRC	~ 54

Effectiveness classes

- A++ outstanding
- A+ excellent
- A very good
- B good
- C satisfactory, corresponds to average performance within the application group

Tooling steel categories



PM TOOLING STEEL, PM HIGH-SPEED STEEL, SPECIAL TOOL STEEL AND SOLID CARBIDE



Group of high-alloy PM high-speed steels with working hardnesses up to ~69 HRC

Conventional HSS-Co steels are hard to find in toolmaking. High-alloy PM steels dominate the scene.

_ Z-M48 PM^{speed} achieves excellent results whenever forming applications require high working hardness or high-strength spring steel strips are processed.

Brand/Steel designation	Z-30 PM ^{speed}	Z-M48 PM ^{speed}	Z-T15 PM ^{speed}
Melting	powder metallurgical		
Tribology*	C	A++	A
Toughness*	B	A++	B
Compressive strength*	B	A++	B
Typ. working hardness HRC	62 – 66	64 – 69	62 – 66



Corrosion-resistant tooling steels

For machine and plant engineering, as well as for mold construction, we offer solutions that are a perfect fit.

_ As an upgrade to the known corrosion-resistant steels, we recommend Z-420 PM^{resist} with the highest resistance to wear and tear.

_ The LC200N^{resist} sets new standards in toughness, strength, and corrosion inertia.

Brand/Steel designation	Z-420 PM ^{resist}	LC 200 N ^{resist}	1.4112/1.2083
Melting	powder metallurgical	DESU	conventional
Tribology*	A++	B	C
Toughness*	B	A++	C
PREN index*	B	A++	C
Typ. working hardness HRC	56 – 60	50 – 60	50 – 54



Solid carbides

Starting in 1926, Zapp established the Solid Carbide brand »WIDA« in the market exclusively with the company Krupp.

Committed to this tradition, we are starting a new with the Z-HM family into the world of solid carbides.

EDM blocks for toolmaking and mechanical engineering

Brand/Steel designation	Z-G200K-HM
Manufacture	Sintered, all-around ground
Special feature	Optimized for the requirements of spark erosion in toolmaking
Grain Size	medium – fine
Hardness (HV30)	1.400
Co content	10,5 %

Blanks for forming applications

Brand/Steel designation	Z-G300F-HM	G-500F-HM
Production	sintered	
Typ. designation	G30	G50/G55
Grain size	fine	fine
Hardness (HV10)	1.080	920
Co content	15 %	25 %
Crack toughness*	A+	A++

* Relative rating of the respective group

»Speed, through safe production processes.«

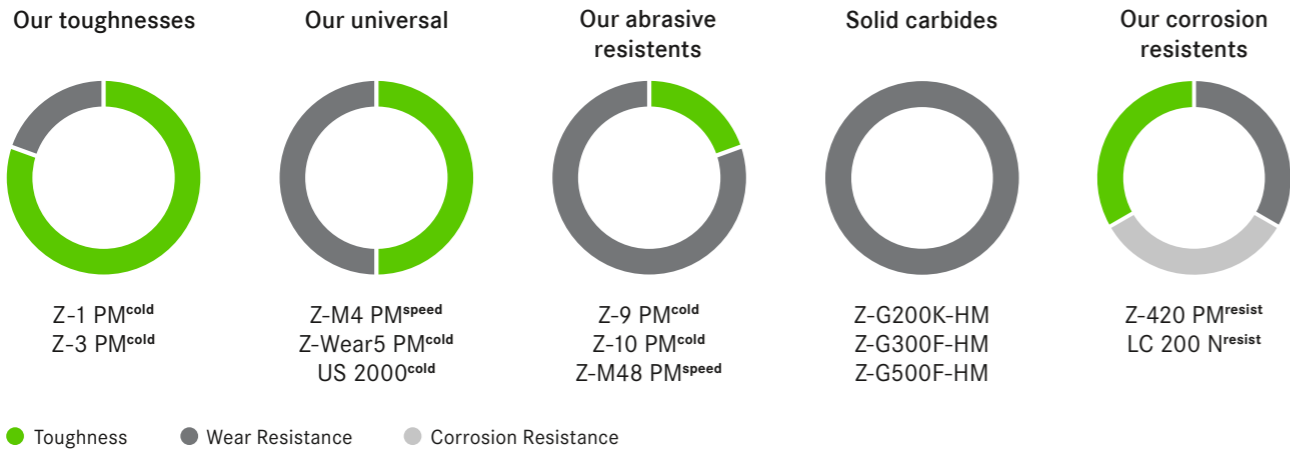
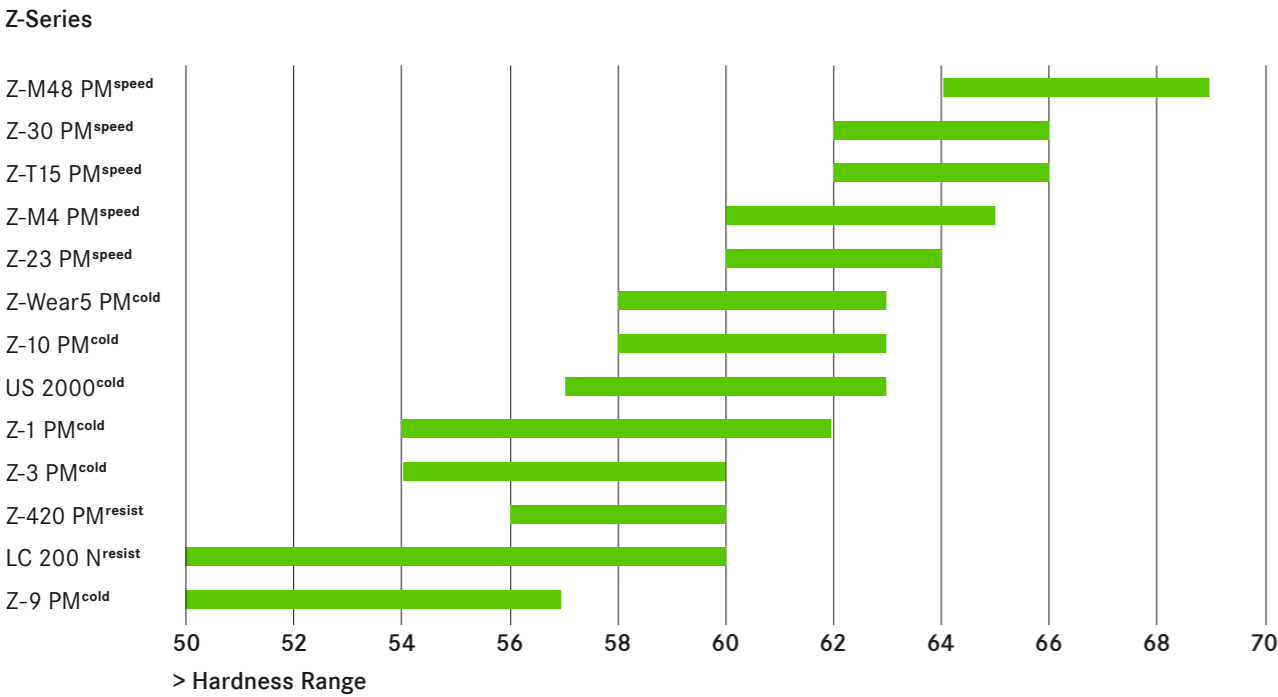
»I have been working at Zapp since 2013 and at the Unna Service Center since 2021. The core of our service center business is to process many short-term orders with different customer requirements on schedule and with the shortest possible lead times, especially with regard to our 24-hour Service. That's where all my attention is focused, and that's what I always work towards with my team: fast and reliable processes, secure jobs and good teamwork. Because safe production processes and a strong team enable us to accept and master the challenges we face.«

Frederik Steinwender
Production Line Manager Service Center,
Unna location



Z-SERIES PM TOOL STEEL FAMILY

Typical Work Hardenings



OUR EDM BLOCKS
PM TOOL STEEL AND CARBIDES





»My experience leads to optimal results in production...«

» ... to our customers. I now have 20 years of work experience in sawing and milling technology, which is advantageous. This is to the benefit of our customers in order to optimally organize the production process.«

Stefan Kirchner, Foreman
Service Center Tooling Alloys
Unna location, Germany

PM TOOL AND HIGH-SPEED STEELS

Zapp specializes in the supply of highly alloyed **powder metallurgical cold and high-speed steels**. These steels are engineered to meet the most demanding requirements for **wear resistance, compressive strength, and toughness**.

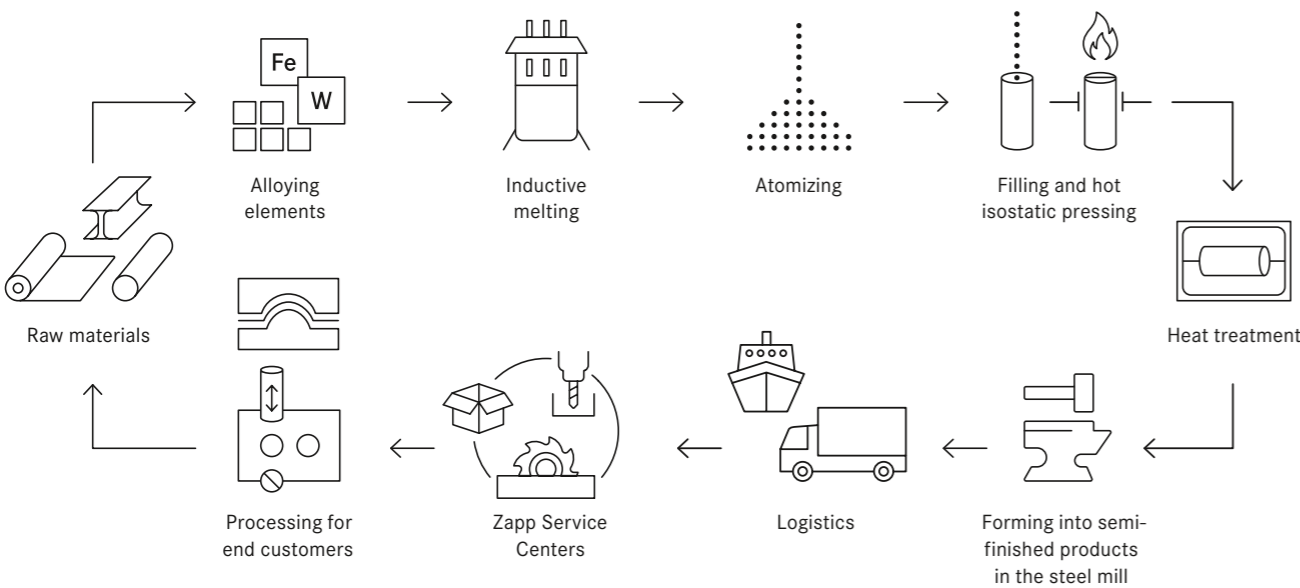
Zapp specializes in the supply of highly alloyed powder metallurgical cold and high-speed steels. These steels are engineered to meet the most demanding requirements for wear resistance, compressive strength, and toughness.

While we source the majority of our powder metallurgical tool steels from reputable suppliers, we also offer them under our own brand – Z-PM tool and high-speed steels.

All materials are available to suit your specific needs. Our large service centers in **Germany, the USA, the UK, and China** provide fast and seamless service.

Our Motto
cost-efficient, fast, reliable

The Zapp Supply Chain



ZAPP MILESTONES IN TOOLING ALLOYS

Sales of English specialty steels

1871

Launch of trading operations in Düsseldorf

Sales of German tool steels, stainless steel, and carbide

1887

Exclusive distribution rights for Krupp's tool steels

1920_{er}

Introduction of stainless V2A and V4A steels (Nirosta, such as 1.4301, 1.4401) and carbide »Krupp WIDIA«

Sales of American and European specialty steels

1955

Introduction of high-tech, nickel, and cobalt-based materials

1957

Distribution rights for Hastelloy/Haynes materials from Haynes Int./USA

1982

Zapp acquires distribution rights for powder metallurgically produced CPM high-performance steels

1990_{er}

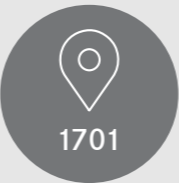
Sales of powder metallurgically produced ASP high-speed steels

2020

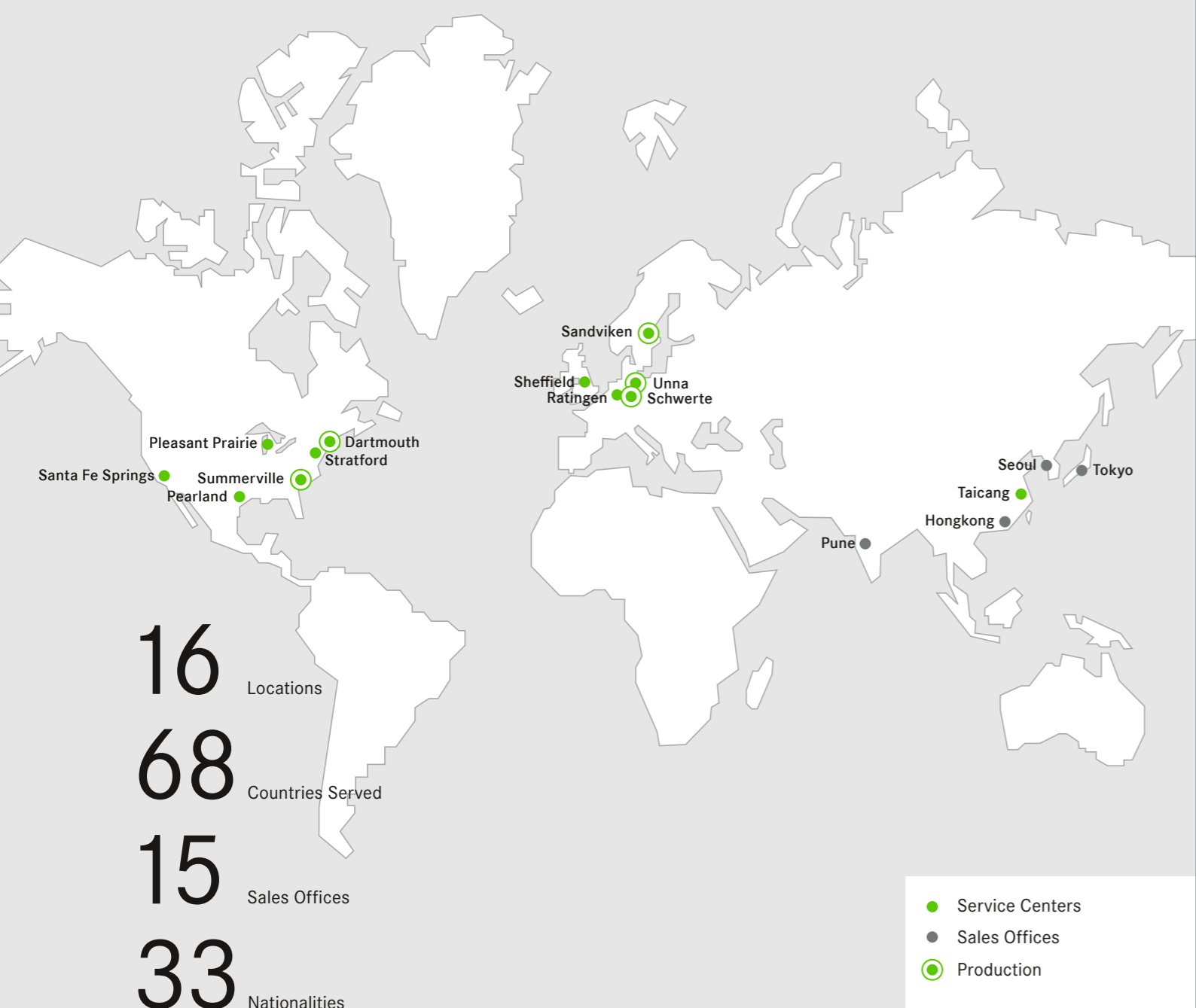
Proven materials under new names — »Z-PM«, the global brand for tool steels

2021

Restart of carbide activities for cold working and realignment of logistics operations in Unna.



GLOBAL LOCATIONS



GET MORE THAN STEEL.

Bring your ideas to life with Zapp by your side. Benefit from our experience and expertise. We provide the perfect **product form** tailored to your application.

In addition to tool steels and carbides from Tooling Alloys, you can also choose from other **Zapp** products such as wire, bars, profiles, strips, and more, made from stainless steels, titanium materials, and nickel and CoCr-based alloys.

We are always searching for new solutions for you. Solving complex technical challenges drives us. Rely on our rigorous quality assurance to strengthen your **production-guaranteed**.

We're happy to take care of initial **manufacturing steps** like sawing and polishing.

With a strong network of selected distribution partners and our own locations in Europe, Asia, and the U.S., we ensure reliable service with short delivery times, also offering **technical expertise**.

Three hundred years of curiosity. Hermann Zapp founded the company in 1701 in Ründeroth, Germany. It quickly became a specialist in **high-performance** and **specialty steels**.

We move with you. Movement that, for 300 years, has helped build a piece of the future for generations to come.

»Whether air/sea freight,
truck or parcel service –
we ship according to your needs.«

»In the shipping department of our service center we arrange
fast and flexible processing of our customer orders and bring
them safely to you by different shipping methods, individually
adapted to the products and quantities ordered by you.

We prepare transports domestically and abroad, and thus
ensure a smooth process from shipping to delivery.«

Sonja Landwehr, Logistics
Service Center Tooling alloys
Unna location, Germany



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TOOLING ALLOYS

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