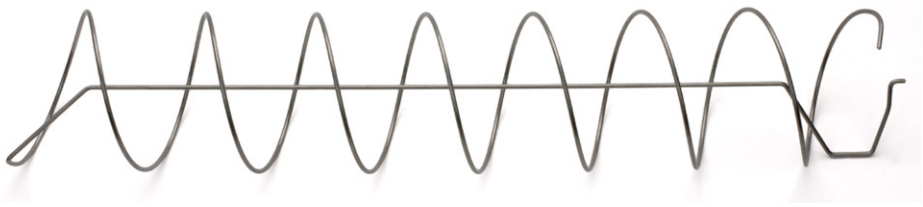
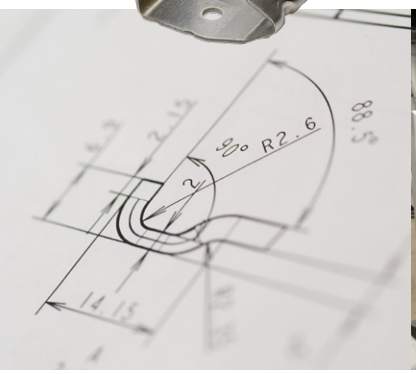
# Seven Business Areas – endless possibilities






Spring Systems
HAGENS SPRING GROUP



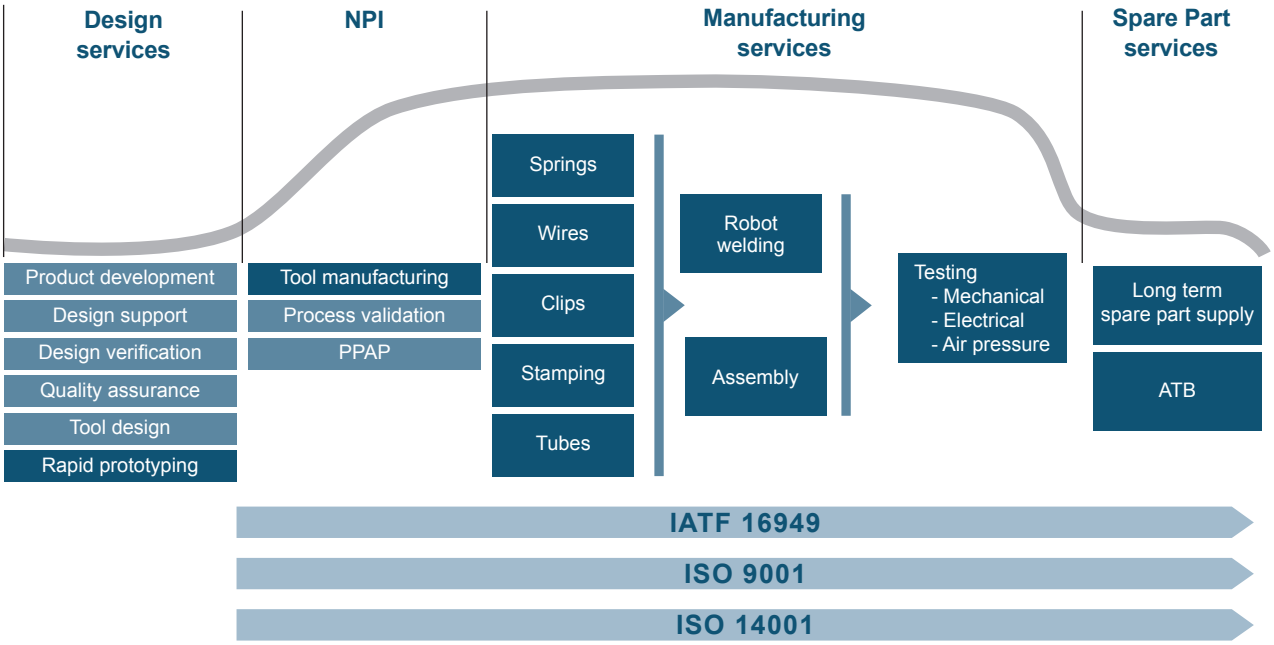


# Spring Systems

Spring Systems is one of Scandinavia's leading manufacturers of springs, wire products, clips and assemblies. Our customers are found in the automotive industry, forest and garden, construction, household appliances and many other industries. Our organization is based on everyone's involvement. We seek participation and creativity for quality results and good working environment. The customer is always in focus where a good relationship is the key word.

# Seven Business Areas – a source of solutions


# Our offer through product lifecycle



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# SPRINGS

Spring Systems has a long experience in manufacturing of all types of springs, whether you are in need of rings, torsion-, tension-, compression, plate- or leaf springs we can support you. Our main competitive advantage is our flexibility and ability to manufacture complex products with high quality.

We can assist you with product development, spring calculations and life cycle validation of your springs. We also offer shot peening and various surface treatments (e.g. electroplating, chromating, teflon treatment as well as coating of springs (KTL and/or powder painting)).

**Equipment:**
*25 spinning/bending machines.*

**Example of material:**
*Spring wire (EN 10270-1),*
*stainless spring wire (EN 10270-3),*
*special alloys spring wire, copper & silver.*

**Dimensions:**
*Torsion springs: 0,4-4 mm*
*Tension springs: 0,4-6 mm*
*Compression springs: 0,2-7 mm*
*Plate/leaf springs: Thickness 0,2-2 mm,*
*Width: 2,0-40 mm Rings: 0,4-7 mm*

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# CLIPS

We manufacture clips in different sizes for numerous applications. Often we are involved from prototype to finished product. Common to all of our clips is that they consist of spring steel material.

We offer various surface treatments (e.g. electro-plating, chromating, teflon treatment as well as coating of springs (KTL and/or powder painting)).

**Equipment:**
*9 presses–20 to 315 tones.*
*5 Multislide machines*

**Example of material:**
*Steel (EN 10025), stainless steel (EN, 1.4512)*
*Stainless spring steel (EN 10088, 1.4310)*
*Carbon spring steel, Coppar*

**Dimensions:**
*Width 0-600 mm*
*Thickness: 0-6,0 mm*

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TUBES

Bending machine that can bend both tubes and bars. Fully automatic with robot-handing for pick and place.

**Tubes**
*Max diameter of tube: 50 mm*
*Min diameter of tube: 5 mm*
*Max length of tube: 2 000 mm*
*Max bend radius: 150 mm right och left*
*Min bend radius: Standard 2 x Ø, min 1 x Ø*
*3 x Multi-radie per direction right / left = 6 different radius theorethical*
*Bend in bend = Bending withut straight distance possible*

**Bars / wires**
*Max diameter of wire: 28 mm steel*
*Min diameter of wire: 5 mm*
*Max length of wire: 2 000 mm*
*Max bend radius: 150 mm right and left*
*Min bend radius: Standard 2 x Ø, min 1 x Ø*
*3 x Multi-radie per direction right / left = 6 different radius theoretical*
*Bend in bend = Bending without straight distance possible*

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# WIRES

Actually, it's only your imagination that sets the limit for how a bended wire product might look like. Thanks to our extensive experience and skilled operators, we often solve even the impossible!

Besides flexible bending opportunities we can also do cold forming and integrated threads, and when needed we can assist with product development of your wire products. We also offer various surface treatments (e.g. electroplating, chromating, teflon treatment as well as coating of springs (KTL and/or powder painting)).

**Equipment:**
*6 bending machines*

**Example of material:**
*Steel wire (EN 10025–S235JRG2, 1.0038)*
*Spring wire (EN 10270-1)*
*Stainless spring wire (EN 10270-3, 1.4310)*

**Dimensions:**
*0,2–12 mm*

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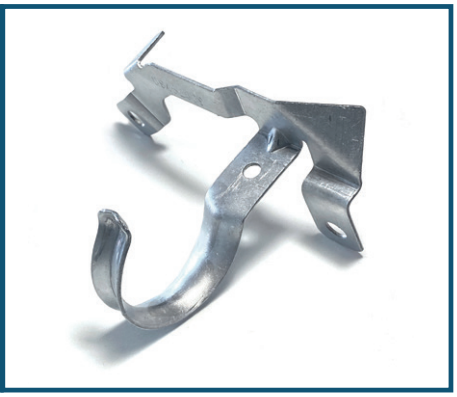
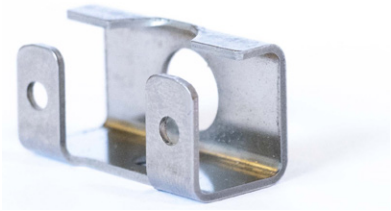
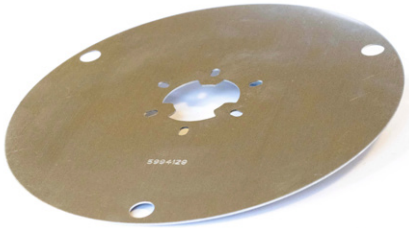
# STAMPING



With our 9 presses with capacity between 20 and 315 tones we make sure that your detail is pressed for success.





**Equipment:**
*9 presses–20 to 315 tones.*
*5 Multislide machines*

**Example of material:**
*Steel (EN 10025), stainless steel (EN, 1.4512)*
*Stainless spring steel (EN 10088, 1.4310)*
*Carbon spring steel, Coppar,*
*Aluminium*

**Dimensions:**
*Width 0-600 mm*
*Thickness: 0-6,0 mm*

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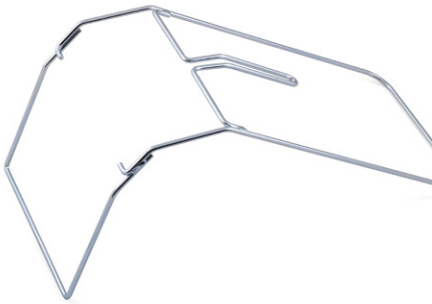
# WELDING

Our offer includes robot welding, MIG/MAG, TIG and resistance welding. 5 welding cells with robot welding/handling and automatic feeders.



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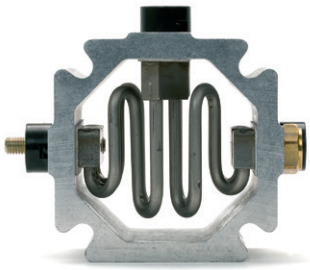
# ASSEMBLY

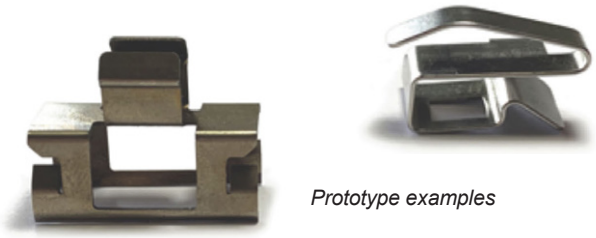


A component can be assembled using a number of different techniques, for us it's mainly through manual or robot welding and/or manual assembly. We either manufacture all included sub-components, combining our various processes (springs, wires, welding, punching) or buy some of the components and surface treatments externally, but at the end of the day supplying a finished product /component to you.

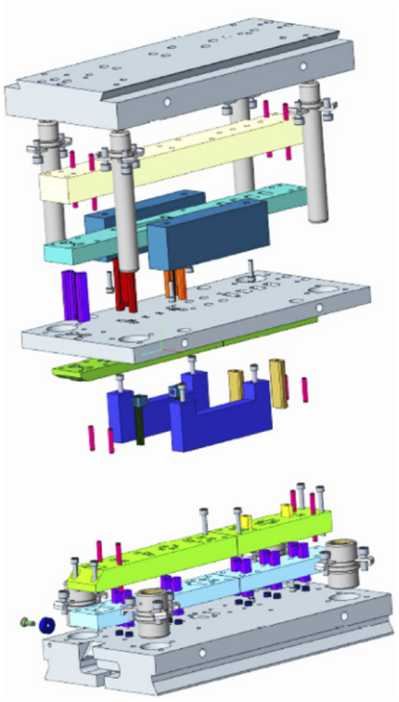
# Prototyping and Tooling

**Complete in house workshop**

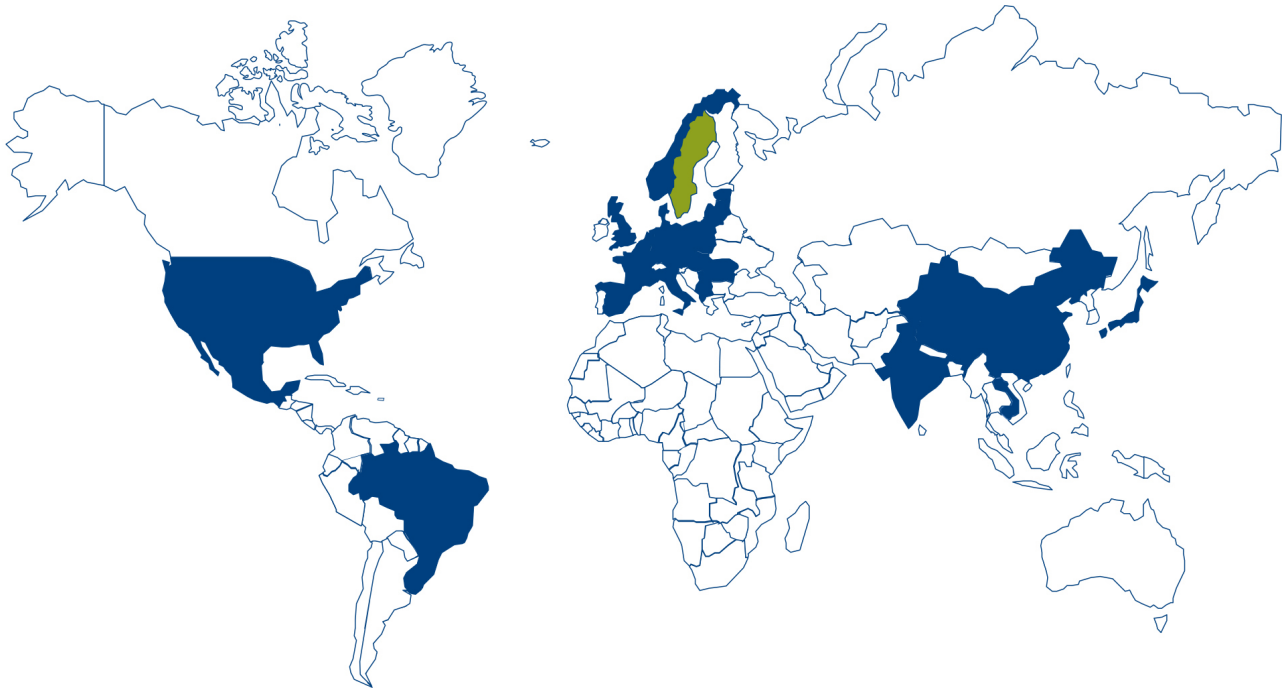
- Design engineers
- 3 x workshop staff
- 2 x CNC mill machines
- 2 x Wire cut machines
- Flat grinding
- Rapid product prototyping
- Production tool design and manufacturing
    - Customer specific tool design
    - Special production machines

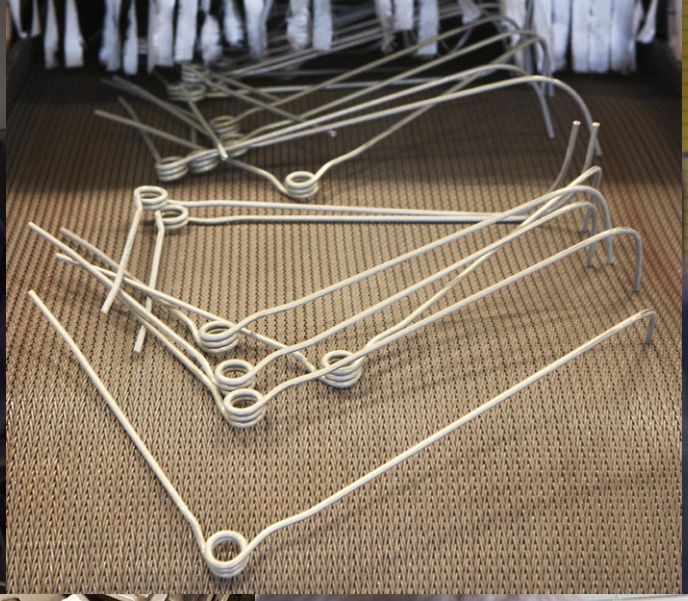
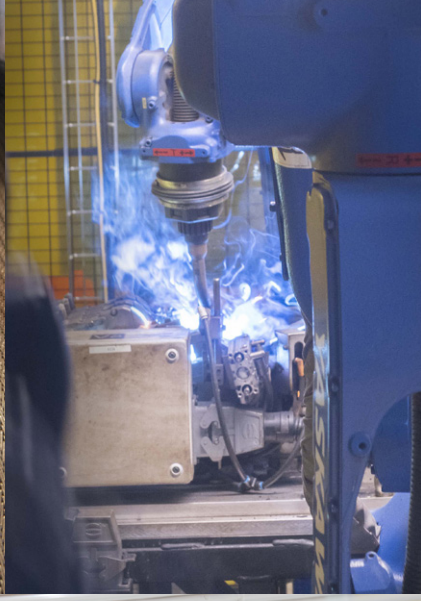


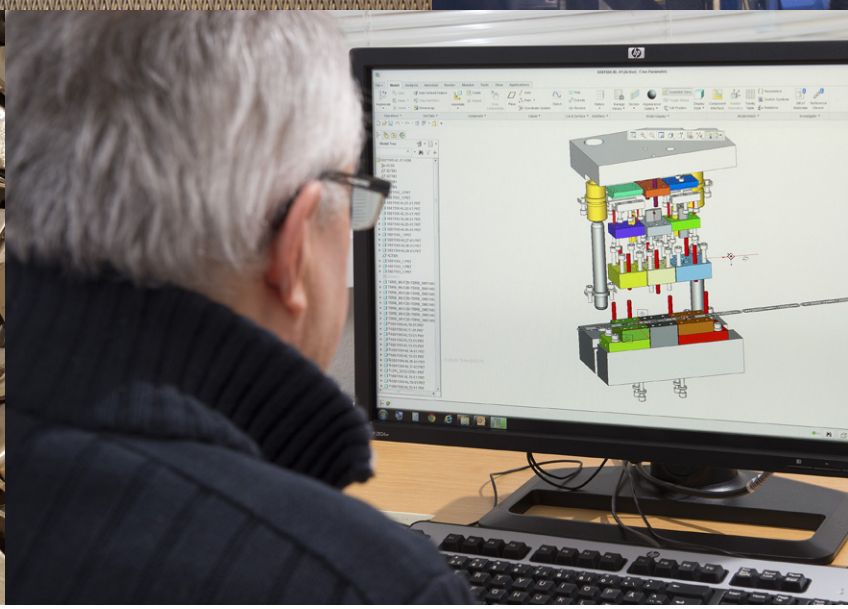
*Prototype examples*



# A local supplier with a Global market

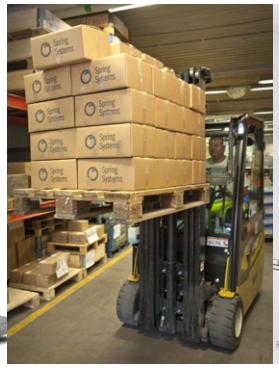
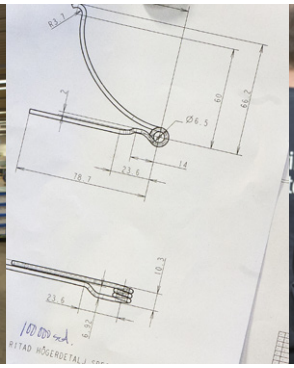




# Our history

| | |
|---|---|
| 1964 | Mekaniska Fjädrar AB is founded – pure Spring Manufacturing |
| 1967 | Stamping & Pressing parts included in product portfolio |
| 1987 | 10% Export of Total Turnover |
| 1994 | ISO 9002 Certified |
| 1997 | Wire bending >8 mm material included in product portfolio |
| 1998 | QS9000 Certified & ISO14001 Certified |
| 2000 | 35% Export of Total Turnover |
| 2001 | Company sold and became Kendrion Spring Systems AB |
| 2003 | Ford Q1 certified + ISO/TS16949 Certified |
| 2005 | Company sold to previous owner – Privately held, became Spring Systems |
| 2007 | 50% Export of Total Turnover |
| 2011 | Lena Ovesson becomes the owner of the company |
| 2016 | 67% Export of Total Turnover |
| 2017 | Hagens Spring Group acquires Spring Systems |
| 2018 | IATF 16949 Certified |
| 2021 | 7th business area – TUBES |


## Spring Systems – a part of Hagens Spring group

HAGENS SPRING GROUP

Hagens Spring Manufacturing (Ningbo) Co. Ltd.

- 55 employees
- IATF 16949
- ISO 9001

Hagens Fjedre A/S

- 80 employees
- ISO 9001
- ISO 14001

Spring Systems i Torsås AB

- 63 employees
- IATF 16949
- ISO 9001
- ISO 14001

Spring Systems
HAGENS SPRING GROUP

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