



TSUBAKI NAKASHIMA

Global reach, Local depth



**Precision
Stampings**

Tsubaki Nakashima Netherlands B.V. (TNN)

TN Netherlands B.V. (TNN) is a supplier of sheet metal components to two main market segments, industrial and automotive. For more than 45 years the production of sheet metal parts has been a valued and integral part of the manufacturing output of TNN, complementing the established global roller business. It remains a high priority. Our worldwide experience from technology partnerships and strategic alliances forms the way we prioritise our business today. We view our customers as partners – our customer is our prime focus. Emphasising quality and the ability to handle complex products with

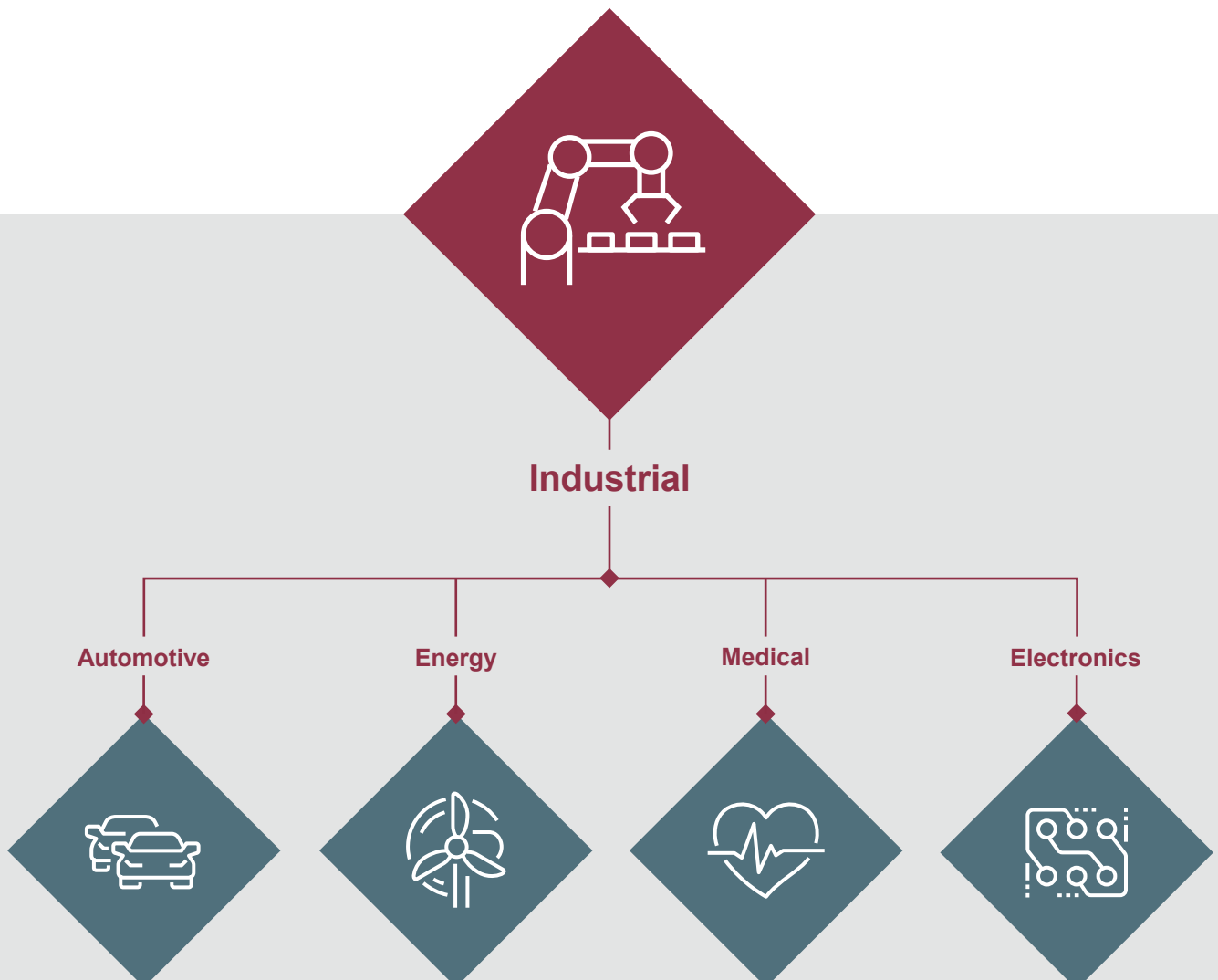
large volumes gives TNN the edge. We are fully invested in continuous quality improvement and most importantly meeting and exceeding our customer's expectations. To provide you with the best possible return on your investment in TNN, our team of engineers are constantly working on product and manufacturing innovation to be "best in class".

Our value added approach is "full service" - providing the engineering, design and tooling. Production is then configured to deliver the highest quality product at the most cost effective price.

✓ +/- 50 Micron

✓ Superior Process Capabilities

Markets



Why are we contacting you now?

- ◆ Re-introduce the TNN Sheet Metal Parts capabilities to an ever changing market
- ◆ Emerging global trend for precision engineering returning to Europe
- ◆ What could we do for you to-day?
- ◆ New laser welding capability
- ◆ Lower tooling costs
- ◆ Celebrating 60 years of precision engineering in The Netherlands

◆ Global Customer Base

◆ Flexibility – Hi to Lo Volumes

◆ Customer as Partner

Capabilities

Automated deep drawn transfer and progressive die pressing technology for the production of precision sheet metal parts.

- ◆ Samples within 3 weeks after tooling availability, precision to 50 μ tolerances
- ◆ Material width up to 450mm and 4mm thickness
- ◆ Max press force 600 tons for transfer and 150 tons for progressive presses
- ◆ Treatments: vibro polishing, shot blasting, corrosion protection, manganese and zinc phosphating, nitro carburizing, electro plating and ultrasonic cleaning
- ◆ Various materials available
- ◆ Assemblies
- ◆ Customer supply chain possible
- ◆ Flexible laser welding production cell

TN Netherlands	Transfer 600 T	Transfer 250 T	Progressive 150 T	Transfer 125 T
Total no. of presses	1	4	2	1
Max. no. of stations (excl. blanking)	8	7	1	11
Max. press force (tons)	600	250	150	125
Max. press force per station (tons)	220	80	N.A.	32
Max. press force blanking (tons)	100	90	N.A.	100
Max. press force for all stations(tons) excl. blanking	500	160	N.A.	100
Max. blank diameter (mm)	250	130	N.A.	215
Min. blank diameter (mm)	100	30	N.A.	N.A.
Max. sheet thickness (mm)	4	3	N.A.	2
Max. sheet width (mm)	450	300	300	415
Max. product height (mm)*	80	75	N.A.	85
Max. product diameter (mm)*	250	130	N.A.	215

Max. product diameter and max. product height are dependent on product dimensions

Products

Spherical Roller Cages



Welded Cages



Various



Production



Quality



Why choose TNN Sheet Metal Parts?

- ◆ Zero Defects
- ◆ Higher OEM customer satisfaction
- ◆ Green Manufacturing
- ◆ Engineered In The Netherlands
- ◆ Lower costs – efficient production and material use
- ◆ High and Low volume batches possible
- ◆ Improved Shareholder value – lower costs, zero defects
- ◆ Customer focussed
- ◆ Customer as Partner - R&D and manufacturing process excellence
- ◆ Willing to invest in customer growth opportunities

What's new?

- ◆ Welded Products
 - ◇ Customer specified designs
 - ◇ Smaller batches
 - ◇ Material width up to 400mm and 6mm thickness
 - ◇ Very low waste production process versus stamping
 - ◇ Small carbon footprint
 - ◇ Low tooling cost
 - ◇ Laser welding accuracy
 - ◇ Precision products manufactured in a clean environment
- ◆ Expansion Plans
 - ◇ Today, 8 stamping presses 125-600 tons
 - ◇ Tomorrow, expanded capacity:
 - High speed presses
 - Press range to 800 tons or higher
 - Low cost production option

Certified

- ◆ ISO 9001:2015
- ◆ IATF 16949:2016
- ◆ ISO 14001:2015

- ◆ Zero Defect Culture
- ◆ Full end to end Service





TSUBAKI NAKASHIMA

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Always innovating and evolving to meet changing market needs, Tsubaki Nakashima group has grown from a Japanese-based ball maker into a truly diversified, global company with a wide range of precision component solutions and assemblies.

Customers value us for our consistent quality and service on both a local and a global level. Our customers are always moving toward the next level of technology, better performance, and higher durability.

They rely on us for precision component solutions that make their product last longer, with less noise, and greater durability.

Our products have a wide range of applications and are used in products directly connected to your daily lives; automotive passenger cars and trucks, home appliances, machine tools, robots, drone, automation equipment, ballpoint pens, cosmetic sprays, and more.

- ✓ Founded in 1934
- ✓ Diversified industrial manufacturer
- ✓ Operations on four continents
3000+ employees
- ✓ Serving a global customer base
- ✓ Headquarters in Nara, Japan
- ✓ Traded on the Tokyo Stock exchange

TN Netherlands B.V.

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