

# Our Product Scope

Miba develops and produces polewheels that are tailored to your specific requirements, whether you are an OEM, Tier 1 integrator or control system supplier.

## Flexible solutions:

- In cooperation with sensor supplier of your choice or with our partners.
- Future ready interfacing of your I/O requirements to minimize the system level costs and enhance the technical functionality

## Automotive applications:

- In principle, all rotation measurement requirements can draw benefits from the pole wheel
- Main functions for added value: ABS, ESP, torque vectoring, steering by wire, electric & hybrid motor control
- Applications: wheel speed sensor, steer by wire, eMotors

## Industrial applications:

- Polewheels provide highest value proposition in cobots, robots, process machines for steel, paper & semiconductor industry
- CNC & high-speed spindles can benefit from high-speed durability
- Wind turbines or automotive test equipment can reduce the total costs of ownership due to lifelong durability

# Miba Polewheel advantages



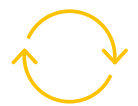
Pitch accuracy  $\pm 0,05^\circ$  from low speeds to over 100.000 RPM



Stable against stray magnetic fields & temperatures  $< -40^\circ\text{C}$  till  $320^\circ\text{C}$



Installable in broad areas of available space, saving your system size



Lifelong solution due to robustness against oils, solvents and abrasive metal particles



Universal measurement uses like speed, angular position, encoding, indexing etc.

# CoSm based Polewheels

High accuracy, space saving and lifelong solution for magnetic encoders in demanding automotive and industrial application.

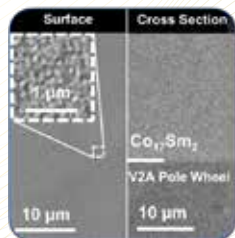


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# Based Polewheels

Product details	
Substrate	1.4305, 1.4057 others on demand
Magnetic material	Co <sub>5</sub> Sm, Co <sub>17</sub> Sm <sub>2</sub>
Inner diameter range	20 - 150 mm
Pole length	0,5 mm, 1 mm, 2 mm
Pole length deviation	+/- 0,008°
Pole angle error	+/- 0,05°
Local flux density fluctuation	+/- 0,1 mT



# Existing Solutions



Polymer based polewheel

- + Higher accuracy
- + Higher speed
- + Higher operating temperature
- + Robust against oil and dust



Gear wheel

- + Higher accuracy
- + Robust against air gap variations
- ▶ Equal speed
- ▶ Equal operating temperature
- ▶ Equal robustness against oil and dust



Optical encoder

- + Less sensitive to handling
- + Robust against oil and dirt
- + Higher speed
- + Higher operating temperature
- Lower accuracy



Resolver

- + Installation flexibility
- + Higher accuracy
- + Independent from number of motor pole pairs
- + Robust against oil and dust
- ▶ Possibility to use digital output signal
- ▶ Possible higher speeds
- ▶ Equal operating temperatures

# Relative comparison

Polewheel vs. existing solution