

The background features a blue grid with a perspective effect. A white line graph with a curve is overlaid on the grid. A vertical dashed line is labeled x_0 . The TECNOTION logo is centered in the upper half of the image.

TECNOTION
THE LINEAR MOTOR COMPANY

Advantages of direct drives in positioning systems



1. About us
2. Linear motor: Basics
3. Why choose a linear motor?
4. Applications



TECNOTION

Mity – napędy
bezpośrednie





- Specialized in linear motors
- Former part of Philips
- More than 25 years of experience
- Worldwide 210 employees
- Turnover approx. 45,000,000 Euro
- Headquarters in Almelo/The Netherlands
- Branches in Germany, Poland, USA & Korea
- Production facilities in The Netherlands & China

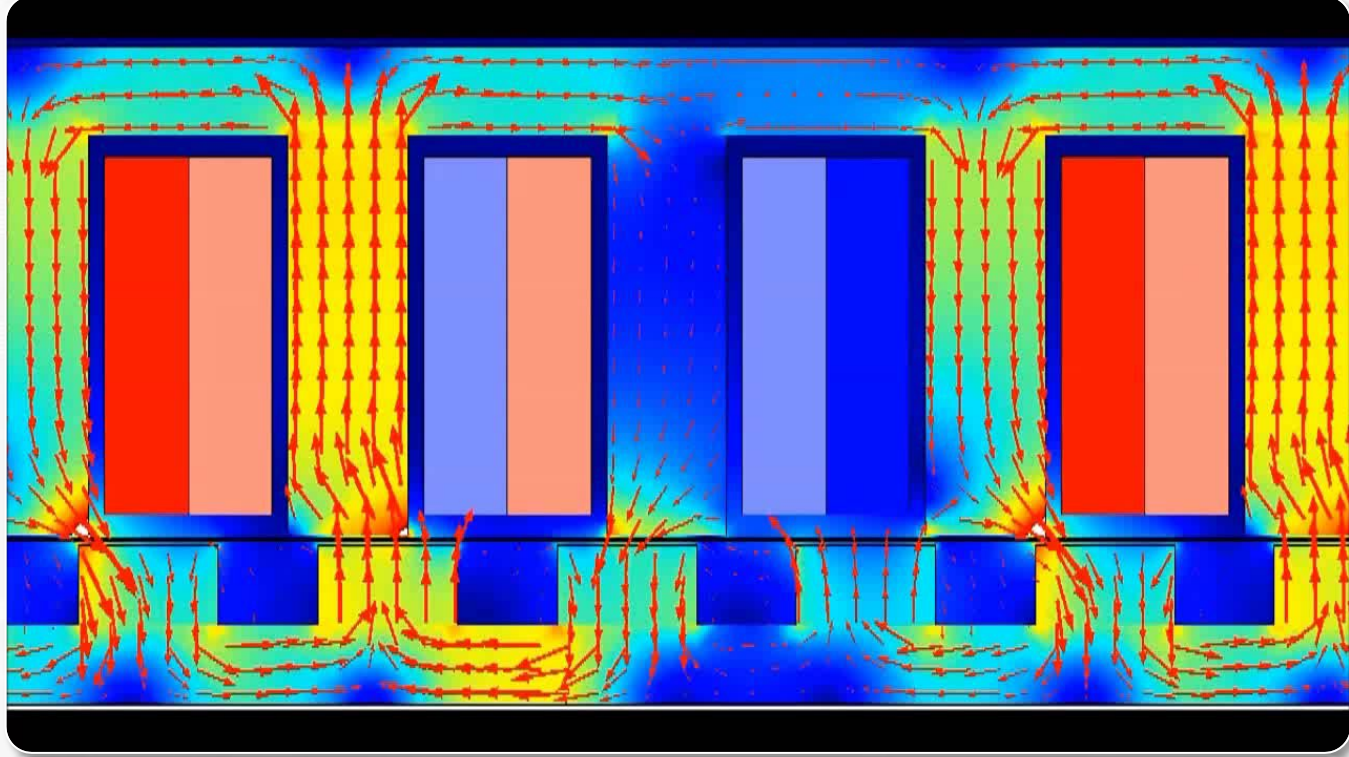


Linear motor: Basics

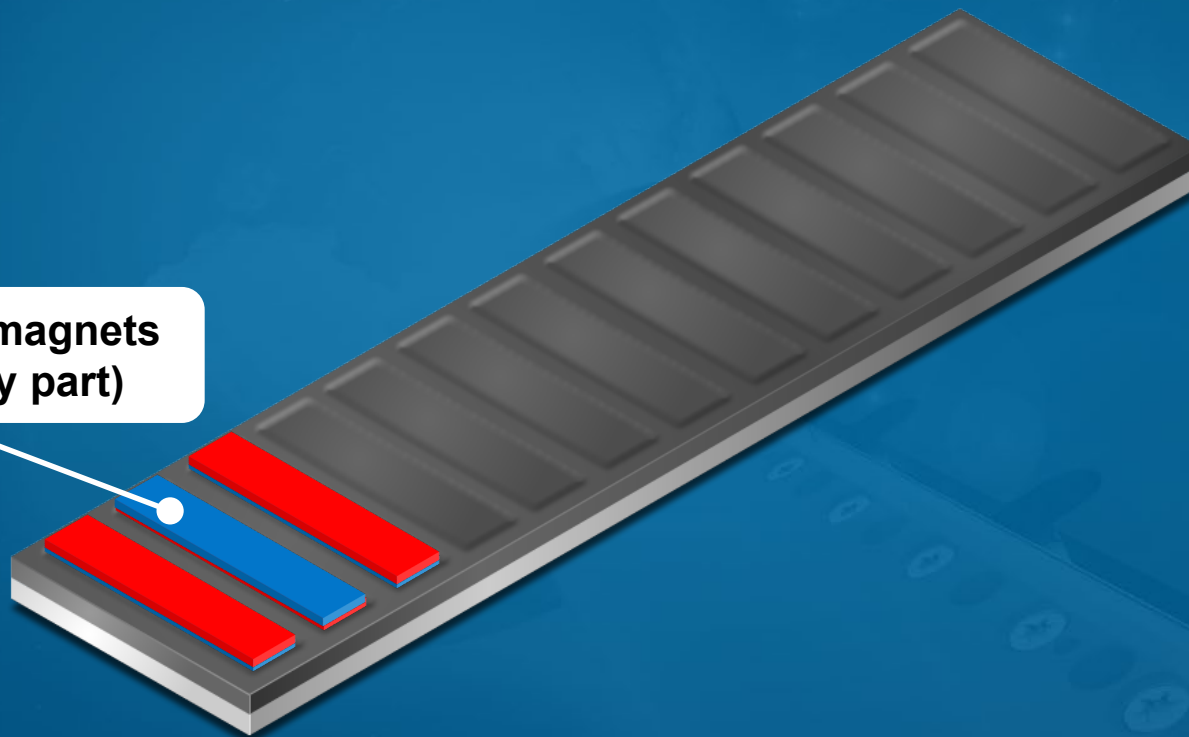


Quelle: Wikipedia

Linear motor

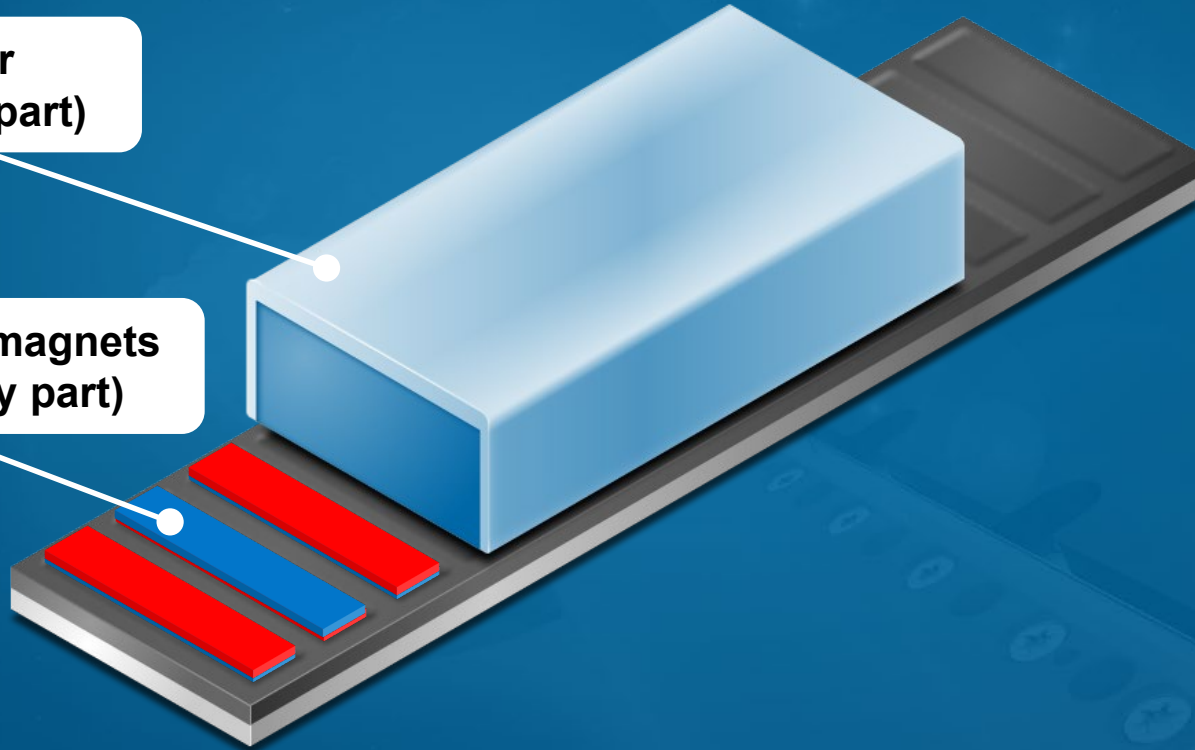


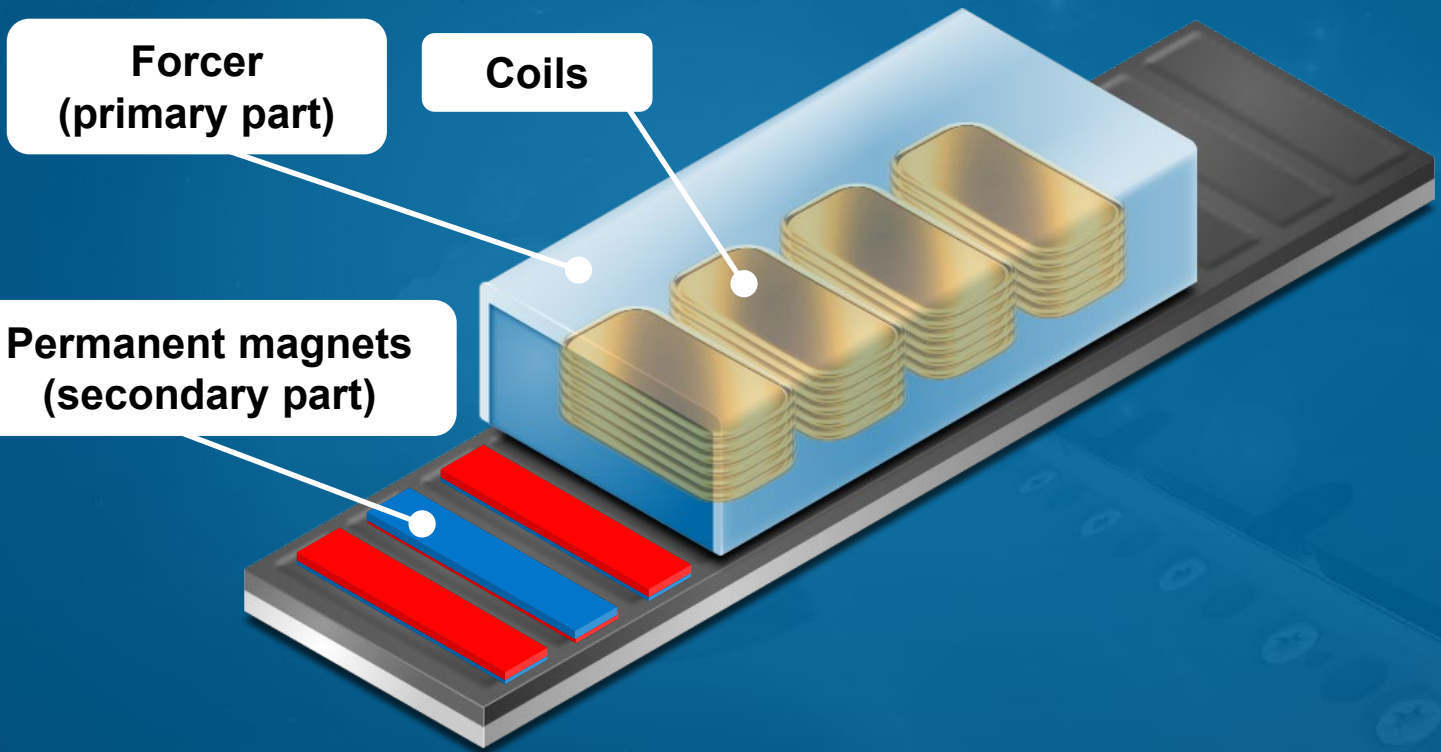
Permanent magnets
(secondary part)

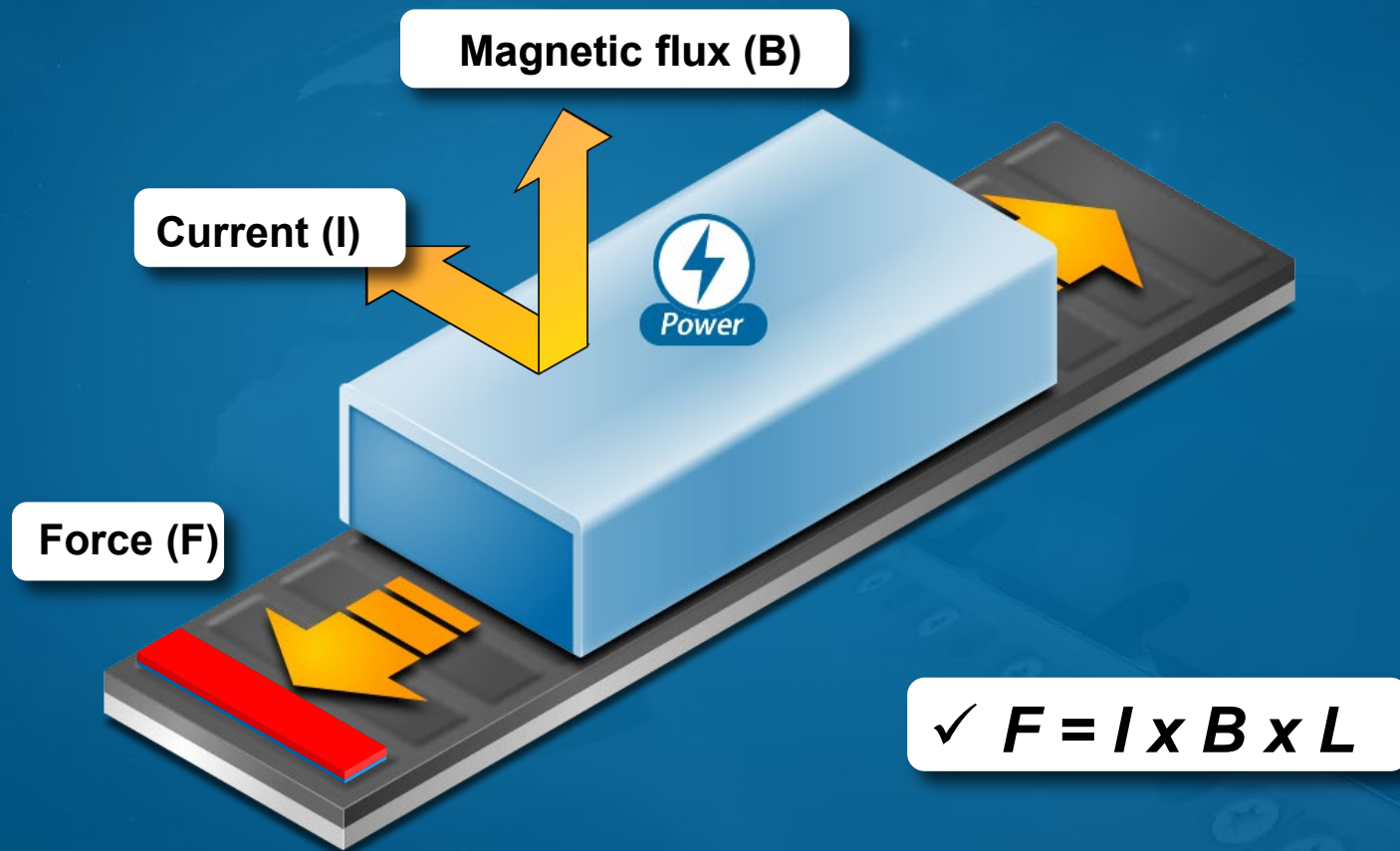


**Forcer
(primary part)**

**Permanent magnets
(secondary part)**





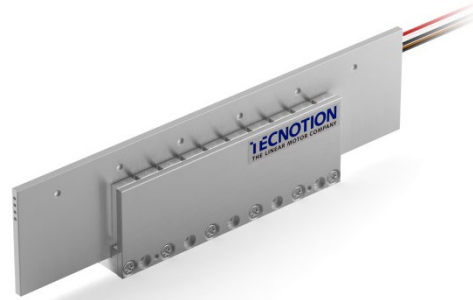




**Iron core
linear motors**



**Ironless
linear motors**



**Vacuum
linear motors**

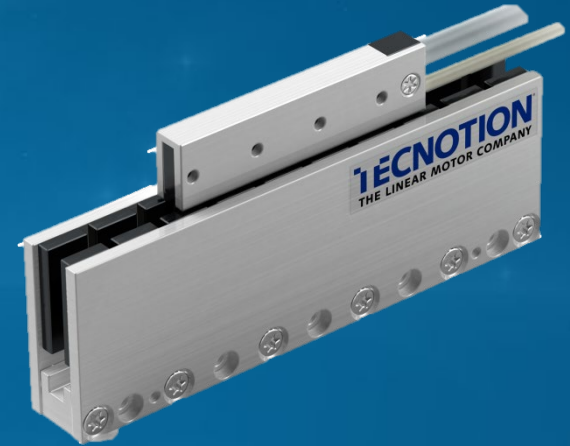


Torque Motors



Iron core linear motors

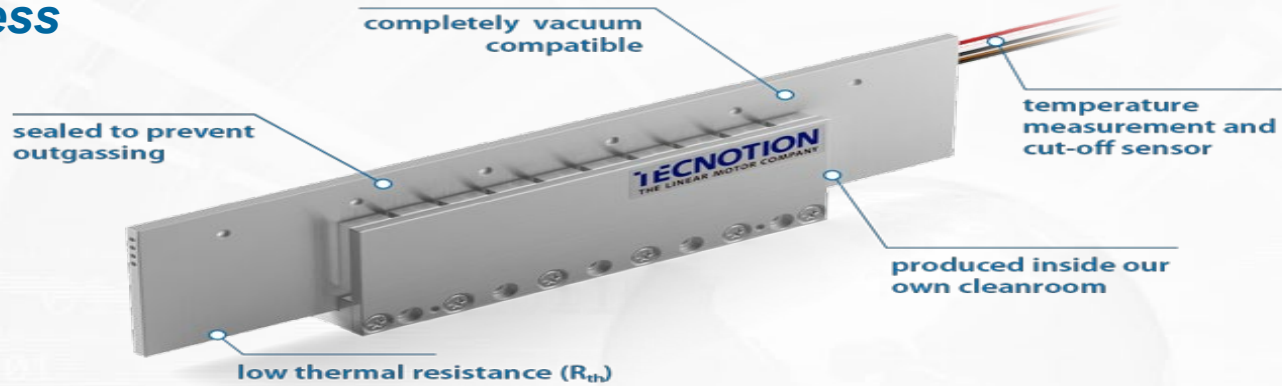
- ✓ High Forces / Masses
- ✓ Velocity up to 12 m/s
- ✓ Costs



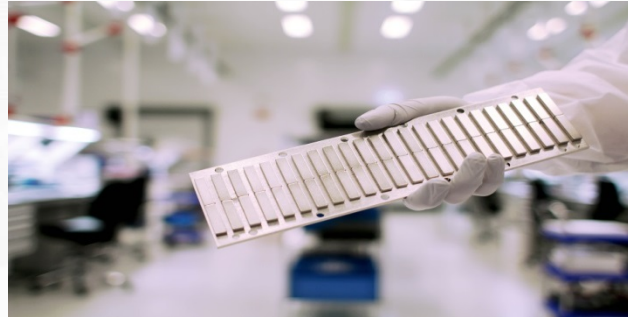
Ironless linear motor

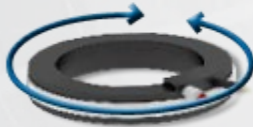
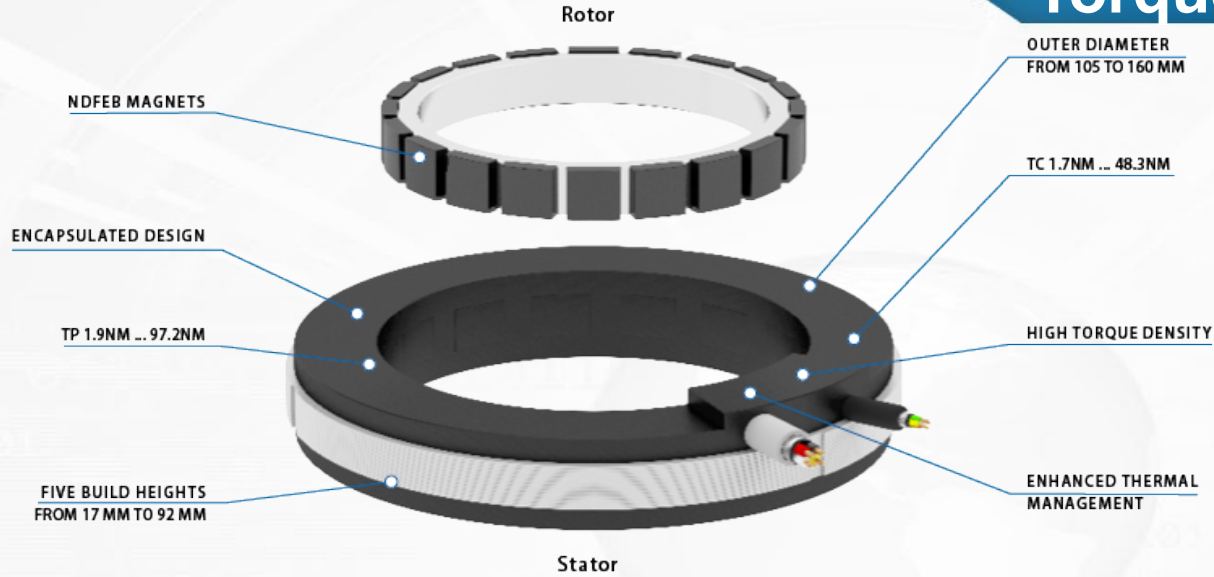
- ✓ Dynamics
- ✓ Velocity up to 18 m/s
- ✓ No cogging

Iron less



Iron core





DIRECT DRIVE



HIGHEST TORQUE DENSITY
IN THE MARKET



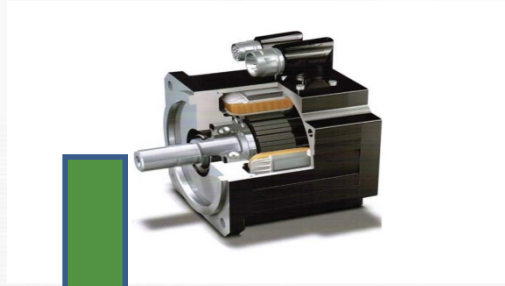
LOW COGGING VALUE,
LOW THD



LOW STATOR AND
ROTOR MASS

Torque motors

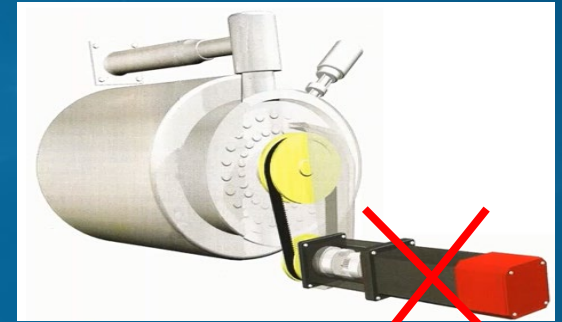
What is a torque motor?



Torque motors

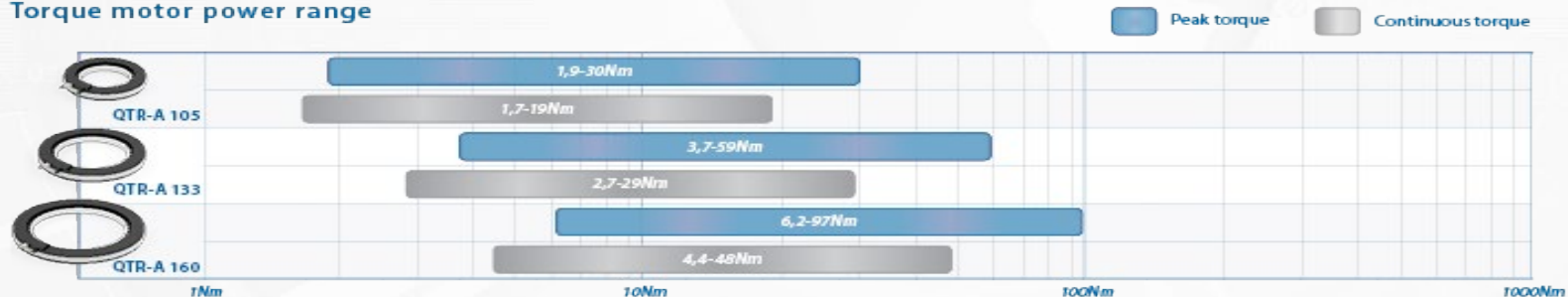
Price ↑

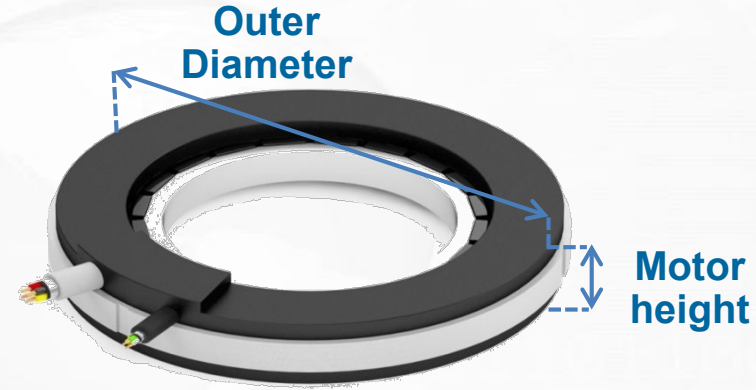
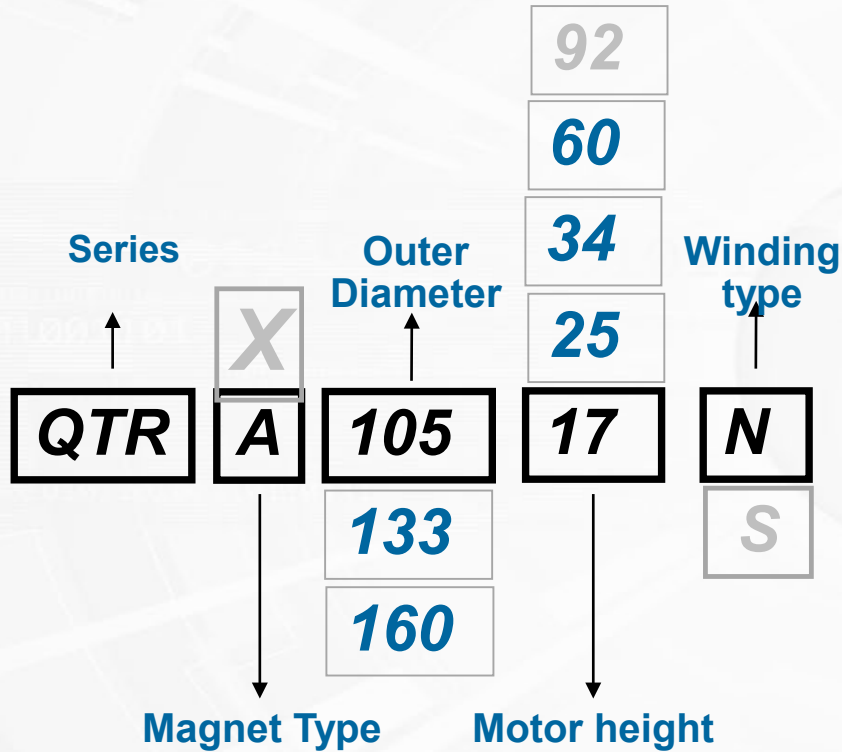
Foot print	Foot print
Labour time	Labour time
Mechanics	Mechanics
Encoder	Encoder
Coupling	
Gear box	
Servo	Torque motor



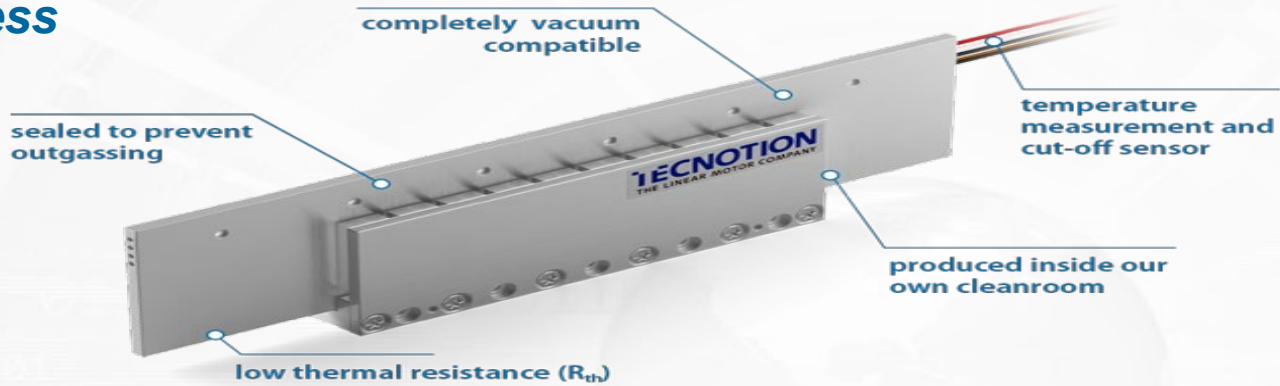


Torque motor power range





Iron less



Iron core



Customization guidelines

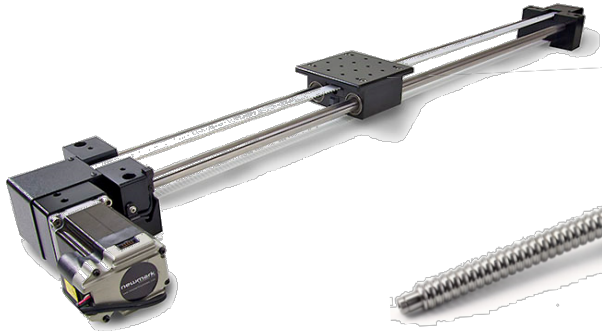


Degrees of customization:

1. Connector addition
2. Cable length / special winding
3. Custom tooling (different geometry / cable, cable exit)
4. Complete custom



Why choose a linear motor?



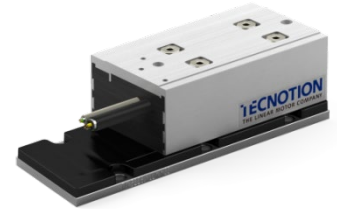
Belt



Screw



Rack & Pinion



Linear motor

Acc. 50 m/s²

10 m/s²

40 m/s²

100 m/s²

Precision ~50μm

5μm

~40μm

< 1μm

Why choose a linear motor

- High dynamics (acceleration) / Высокая динамика/ускорение
- High velocity / высокая скорость
- Position accuracy / точность позиционирования
- Flexibility / modular system / гибкость
- Compact design / компактность
- Simple procurement / простота заказа
- Maintenance free / не требует обслуживания (смазка, обслуживание)
- Low-noise / низкий шум
- Suitable for vacuum / решения для вакуума
- Cleanroom / стерильное помещение на производстве

✓ Acceleration up to 100 m/s²

Why choose a linear motor

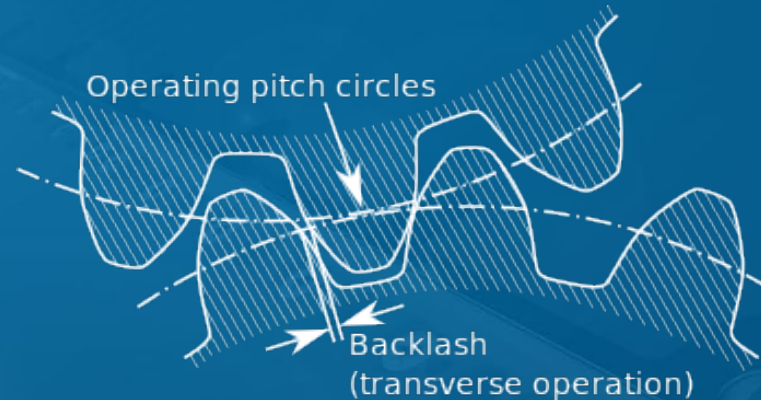
- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

✓ Velocity up to 18 m/s

Why choose a linear motor

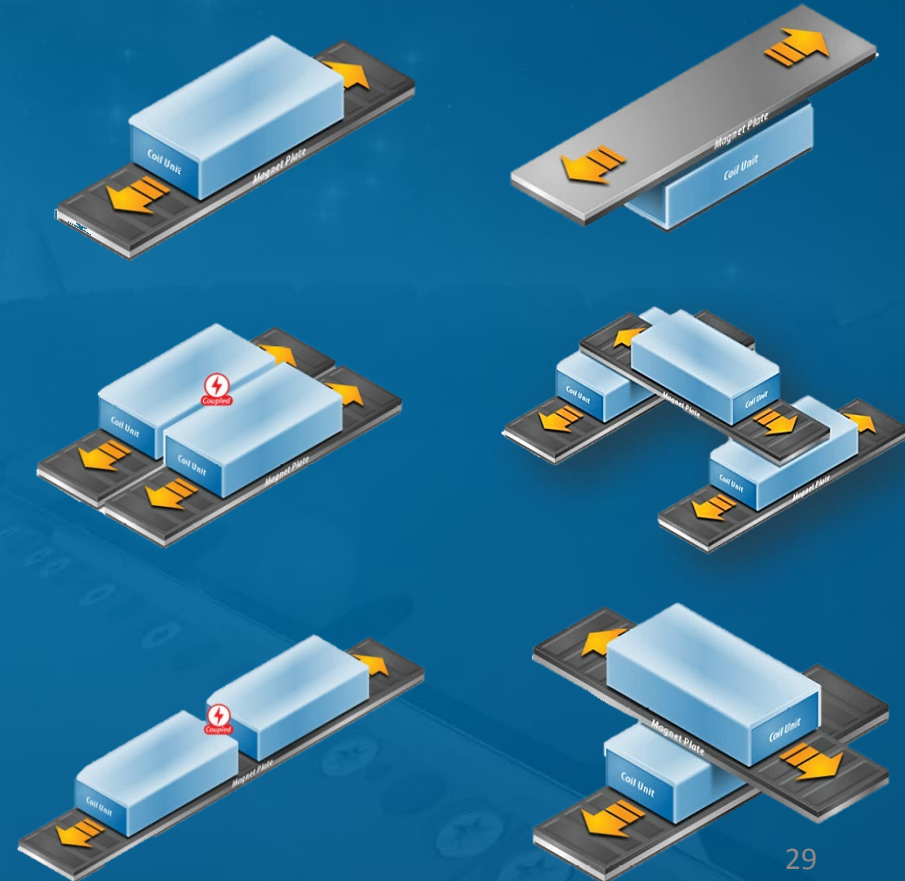
- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

✓ Possible accuracy < 1 μm



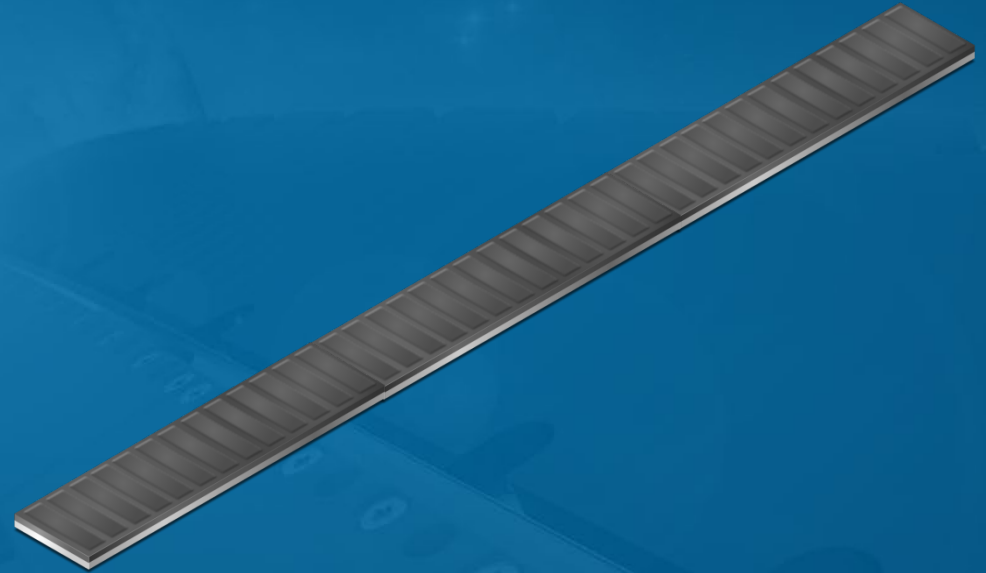
Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom



Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom



Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

- ✓ No Gearboxes needed
- ✓ No bearings (screw & belt)
- ✓ No couplings

Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

✓ Small number of parts

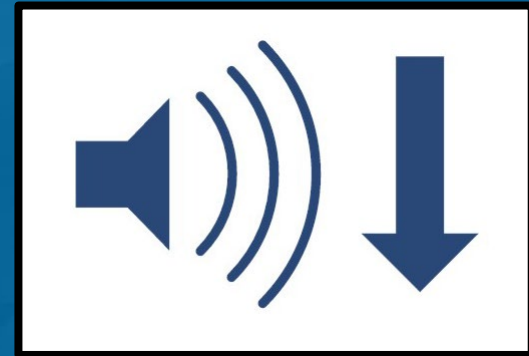
Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

- ✓ No wear and tear
- ✓ No lubrication

Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom



Why choose a linear motor

TECNOTION

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

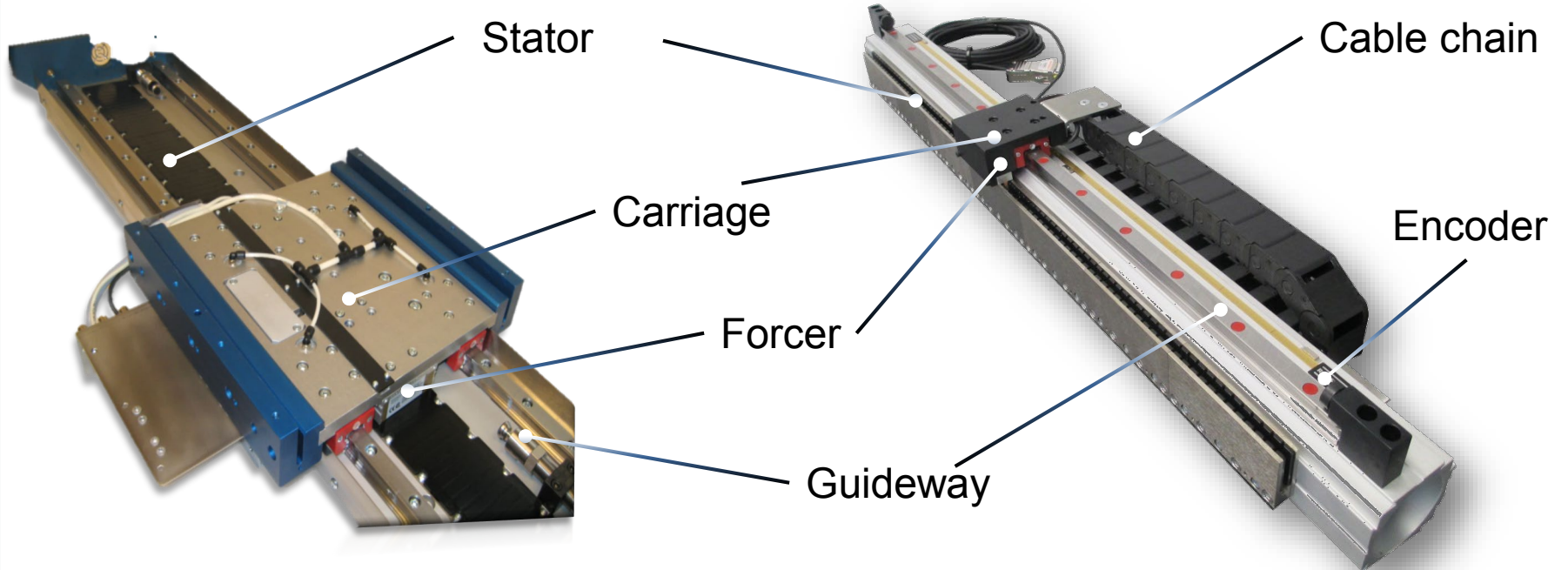
✓ Rated outgassing values up to 10^{-8} mBar



Why choose a linear motor

- High dynamics (acceleration)
- High velocity
- Position accuracy
- Flexibility / modular system
- Compact design
- Simple procurement
- Maintenance free
- Low-noise
- Suitable for vacuum
- Cleanroom

✓ Up to ISO cleanroom class 1

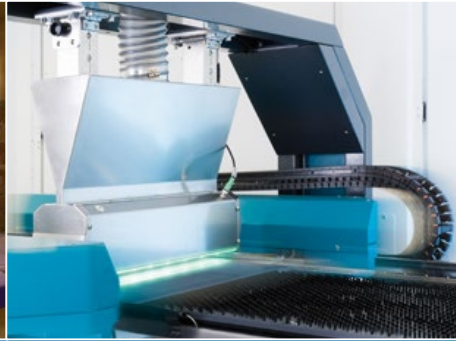


Ironcore motor

Ironless Motor



Semiconductor



Solar



F.P.D.



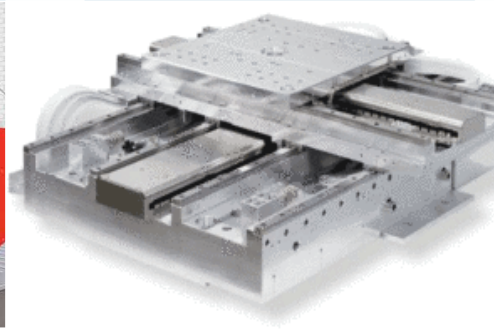
Electronics



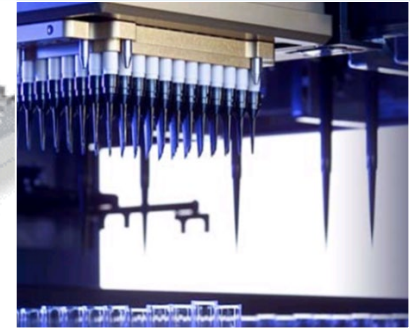
Digital
Printing



Machine
Tooling



Vacuum Inspection



Biomedical

TÉCNOTION[®]

THE LINEAR MOTOR COMPANY

**QUALITY AND SERVICE
DELIVERED WORLDWIDE**