

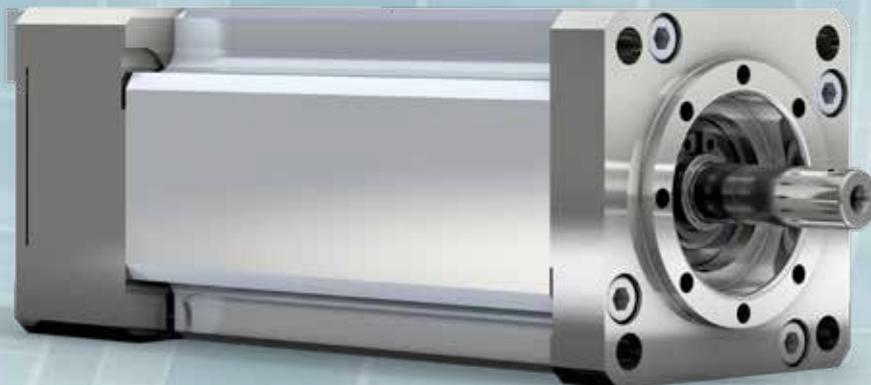


**WITTENSTEIN**

cyber motor

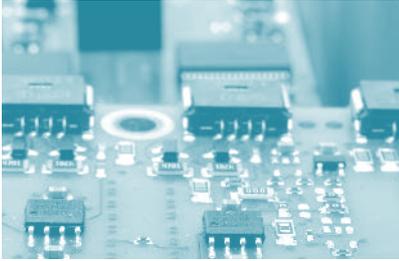
## cyber<sup>®</sup> special motors motors for vacuum environment

reliable  
efficient  
low outgassing



# Applications

## Semiconductors



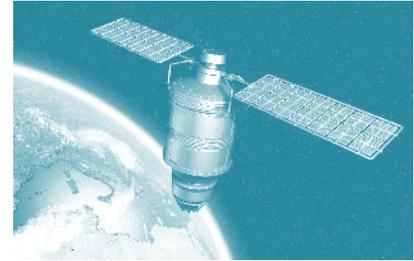
- Lithography (Extreme UV)
- Substrate manufacturing
- Doping
- Wafer handling & testing (cleanroom)

## Research & Development



- Particle accelerators
- Mass spectrometers
- X-ray measurement systems
- Vacuum casting

## Aerospace & Simulation



- Space robots
- Space simulators
- Microsatellites

# Benefits

## Customized

- custom interfaces (dimensions, connectors, etc.)
- customized performance
- Rotary or linear design
- Optionally available with gearbox

## Failsafe

- 100% quality controls
- Process monitoring with built-in sensors
- Vacuum tested
- Many years of experience

## Low outgassing

- Optimized selection of materials
- Modified design prevents air pockets
- Assembly in gray room
- Baking out of the materials



## Efficient

- Low-loss motors with high copper fill factor
- Up to 98% efficiency
- Less heat dissipation due to efficient cooling concept

## User friendly

- Simplified system design due to operation directly in vacuum
- Reduced vacuum failure risk
- Compatible with all standard controllers

## Cost efficient

- Efficient generation and maintenance of vacuum
- Time saving due to low outgassing / contamination
- Reduced operating costs

## We combine many years of experience with innovative concepts

To ensure **outstanding performance, reliability and safety** even in extreme conditions, every vacuum compatible servo motor from WITTENSTEIN cyber motor has an environment-specific design. Thanks to the specific selection of materials, ingenious design measures and assembly in gray room, our servo

motors are optimally adapted to each application's individual requirements. Our expertise in vacuum, cleanroom, high temperature, radiation and explosion technology allows us to provide you with a motor solution for even the most challenging applications.

### Selection of Materials

- Analysis of outgassing and heat resistance
- Optimized selection of insulation and lubricant depending on the vacuum class

### Design & Sizing

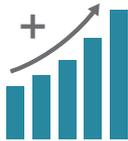
- Prevention of air pockets
- Duty cycle analysis
- Integrated temperature sensor

### Assembly

- Assembly in gray room
- Vacuum compatible ESD packaging
- Bakeout improves outgassing

## Solutions

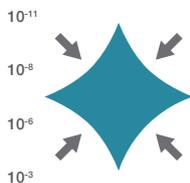
### We have the right vacuum motor for your application



#### Performance range

- Continuous torque: 0.01 to 1,000 Nm
- Power: 0.01 to 200 KW
- Stator outer diameter: 17 to 455 mm

IMPROVE YOUR CURRENT SOLUTION OR GET A TAILORED DESIGN FOR YOUR NEW CHALLENGES



#### Suitable for vacuum environment

- Operating pressure up to  $10^{-8}$  mbar
- Total mass loss for all materials used: < 1%
- Collected volatile condensable material: < 0.1%



#### High temperature

- Specific selection of materials for winding temperatures up to 240°C
- Sizing based on duty cycle and environmental conditions
- Temperature sensor enables process monitoring



#### Options

- Gearbox for use in vacuum
- Natural, flange or liquid cooling
- Feedback device, e.g.: Resolver, encoder
- Customized mechanical interfaces (flange, shaft, housing)
- Frameless design



cyber motor

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**WITTENSTEIN – one with the future**

[www.wittenstein-cyber-motor.de](http://www.wittenstein-cyber-motor.de)