SPINEA

EXCELLENCE IN MOTION

Spinning the world

SPINEA – Technological Leader in High Precision Compact Gears

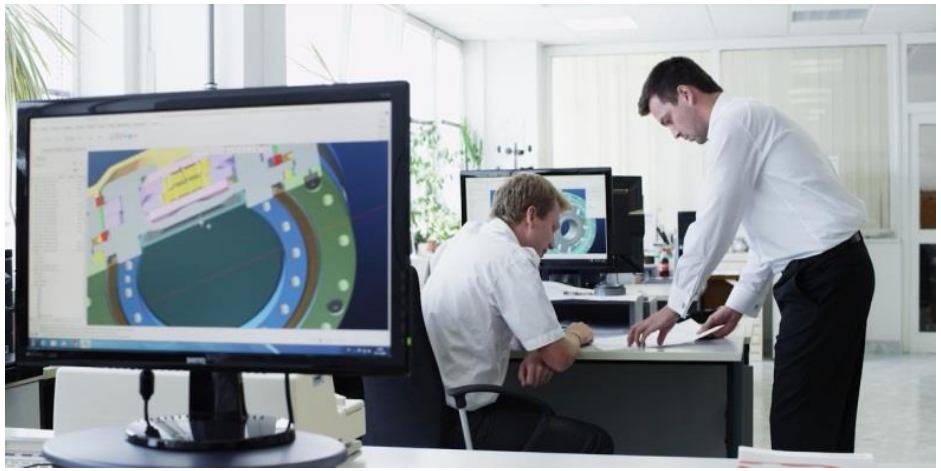
SPINEA has been established in 1994 and since then has been growing over the years with the first factory capacity enhancement up to a **new green field factory opened in 2019.**

SPINEA brough the latest high precision compact gear technology to the market and became technological leader competing with Japanese competitors only.

SPINEA started supply to robotic industry, thanks to cooperation with KUKA and ABB, nevertheless soon after has developed applications for other **market segments,** ranging from molding machinery, food and beverage manufacturing, machine tool, security and surveillance up to medical and construction robotics.

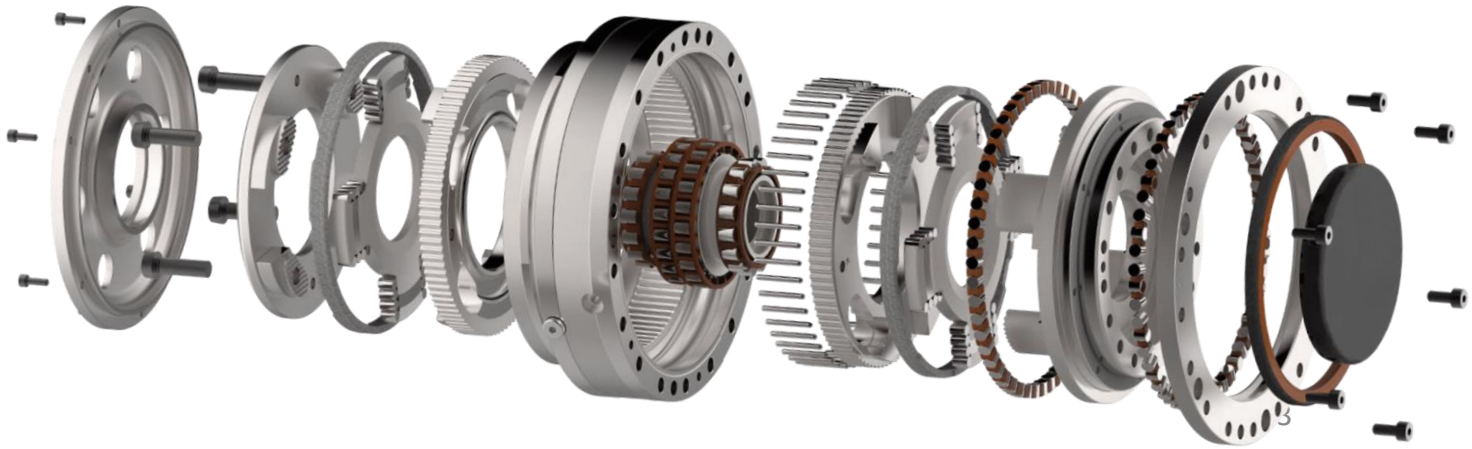
SPINEA has **worldwide presence with local offices in Germany and China** and numerous sales partners all over the world.

SPINEA – Technological Leader in High Precision Compact Gears



SPINEA has **strong research and development** capabilities. A significant investment has been made to strengthen technological leadership of SPINEA in recent years. SPINEA has been granted **numerous patents,** also for the new generation of G series reducers.

Engineering capabilities of SPINEA enable joint product development with customer as well as tailored solutions to suit any application.



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CTO of SPINEA was nominated finalist for **European Inventor of the year in 2009 by** European patent office.

Member of worldwide leading organizations as IFR, EUnited, VDMA, MCMA

Europäisches Patentamt
European Patent Office
Office européen des brevets

IFR International Federation of Robotics

EUnited Robotics · European Robotics Association

VDMA

mcma Motion Control & Motor Association

1995 **2001** **2009** **2010** **2018**

SPINEA is the multiple winner of national award for **the best Slovak industrial product of the year.**

SPINEA References

Robotics

ABB
KUKA
COMAU
ESTUN ROBOTICS
GSK
STEP

Special Applications

CERN
BMW Sauber F1 Team
filmotechnie Camera Remote Systems

Machine Tools

DMG MORI
DOOSAN
SWAROVSKI
TOSHULIN
Silfax
WAFIOS UMFORMTECHNIK

SPINEA Product Portfolio

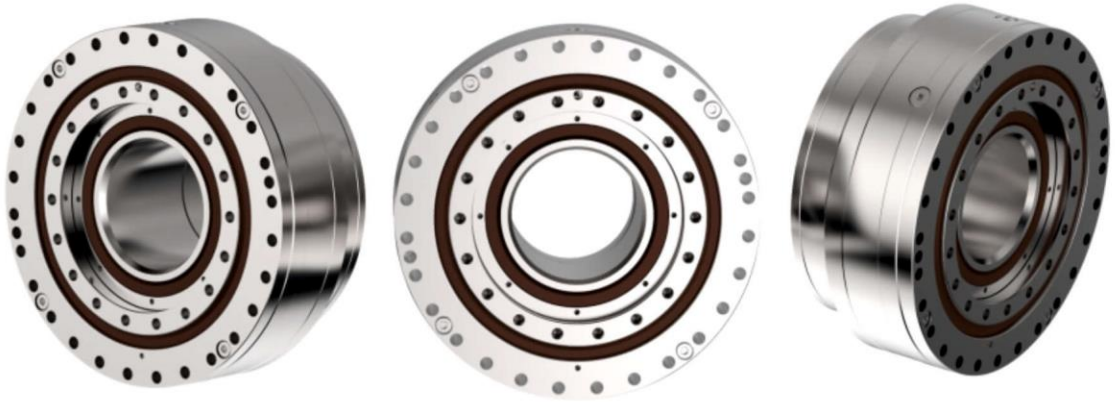
TwinSpin ®

TwinSpin ® G series

The G series a new generation of TwinSpin® high precision reduction gears with innovative design of the main bearing and improved performance for the most demanding applications.

G series brings **significant improvements in torque to weight ratio** in comparison with the previous generation as well as innovative design of main bearing reaches unprecedented tilting stiffness and high precision. Modularity of design enables to meet highly demanding requirements of specific application with customized solution.

TwinSpin ® G



TwinSpin ® GH

TwinSpin ®

TwinSpin ® G series

TwinSpin®

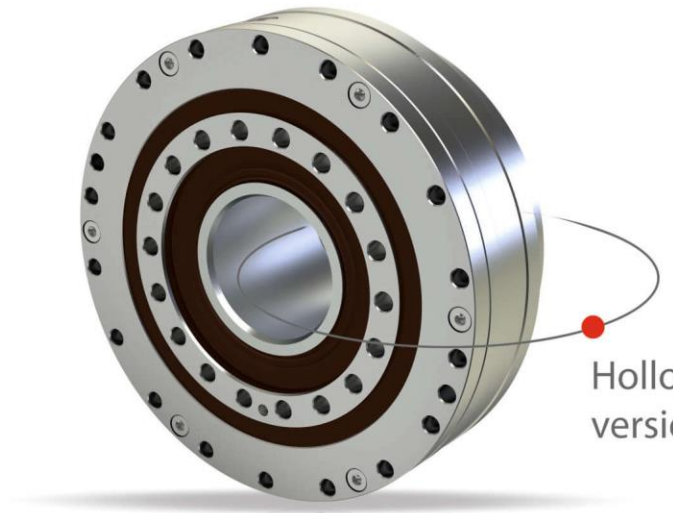
- 075G
- 085G
- 095G
- 115G
- 155G
- 185G
- 225G

Innovative design

Model	Weight	Rated torque
TS 085 G	1,7 kg	75 T_R [Nm]

TwinSpin®

- 085GH
- 115GH
- 125GH
- 155GH



Hollow-shaft version

Model	Weight	Rated torque
TS 085 GH	1,3 kg	41 T_R [Nm]

TwinSpin ®

TwinSpin ® M series

TwinSpin ® T series

TwinSpin ® H series

TwinSpin ® E series

TwinSpin®

AS SMALL AS POSSIBLE

THE SMALLEST HIGH PRECISION
CYCLOIDAL GEAR IN THE WORLD

TwinSpin® M

TwinSpin®

HIGH PRECISION GEARS - THE KEY COMPONENTS TO ACHIEVE **SUPERIOR FEATURES OF SURGICAL ROBOTS**

DriveSpin ®

DriveSpin®

HIGH PRECISION
ACTUATOR

SMART COMBINATION

HIGH PRECISION
REDUCTION GEAR TwinSpin®

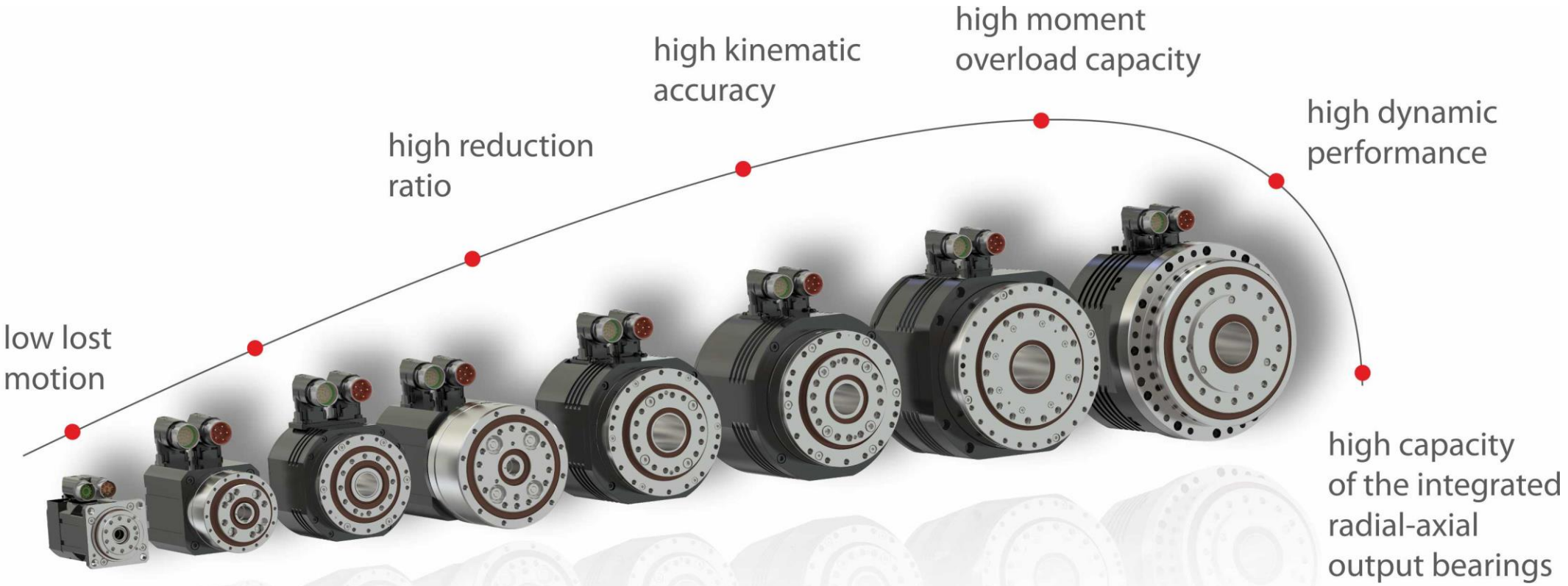
Servomotor

DriveSpin ®

Our DriveSpin® actuators are a perfect combination of optimised servomotors and TwinSpin ® high precision gears.

DriveSpin ®

Hollowshaft family of high precision actuators from SPINEA

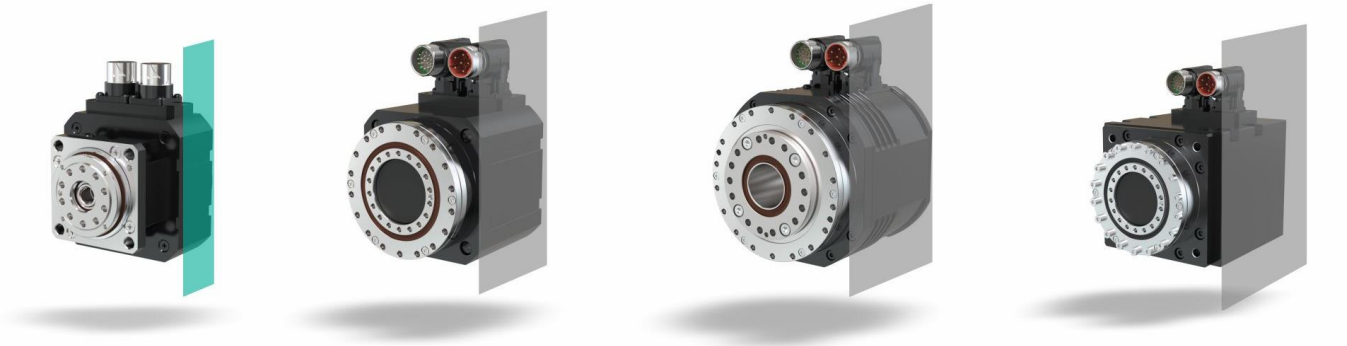


DriveSpin ®

Limited space?

Our flat **DriveSpin® DSF** solves it.

DSF - the most unique **DriveSpin®**.



DSF (flat) | DS (standard) | DSH (holow-shaft) | DSM (modular)

advantages of DSF:

extremly short axial length • compact design • higher torque density • low mass

RotoSpin

The RotoSpin rotary module is intended for the applications where high repeatibility of positioning accuracy is requested. RotoSpin is a module based on TwinSpin ® reducer which ensures the rotary motion without backlash, high torsional and tilting stiffness, together with high precision of output bearing.

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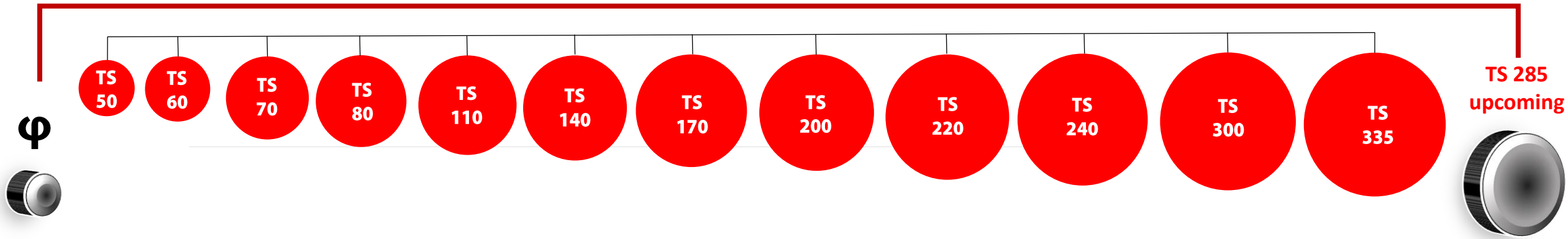
TwinSpin® Product Size Portfolio

TWINSPIN REDUCER SIZES

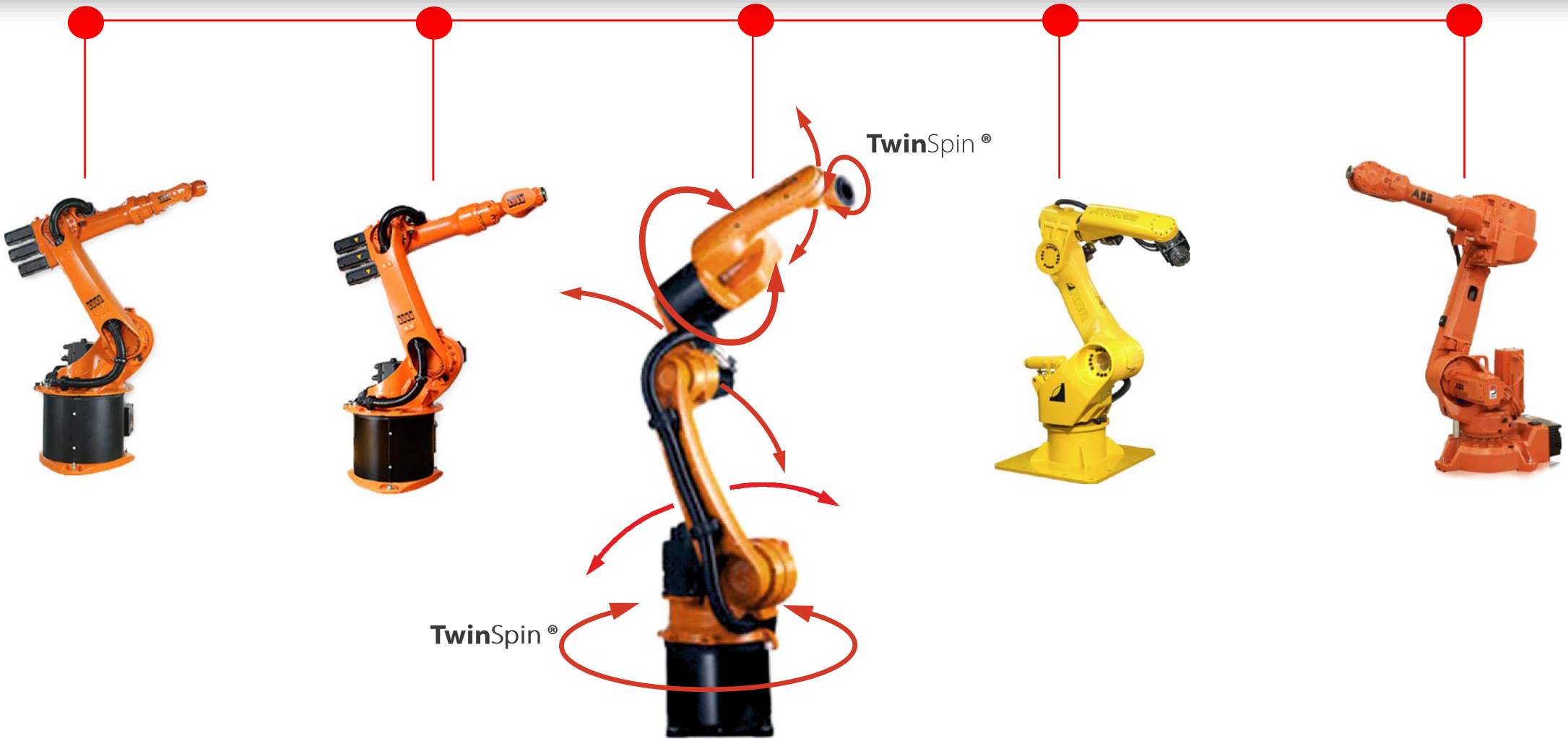
THE WIDEST SIZE PORTFOLIO IN cycloidal reducers



SPINEA Product Benefits

- High torsional stiffness at low torque level
- Low setting of LM (0.3 – 0.5 arcmin), even in small gears OD < 100mm - Gseries
- High tilting moment capacity
- The highest tilting stiffness on the market in the given size
- Compact design
- Exceptional precision
- Tailored design possibilities
- High overload capacity
- Exceptional performance stability over lifetime
- Food grade lubricants exceptional performance
- Unique small gear design
- Large hollow design

SPINEA product portfolio is able to cover all 6 axis of small, low and medium payload robots



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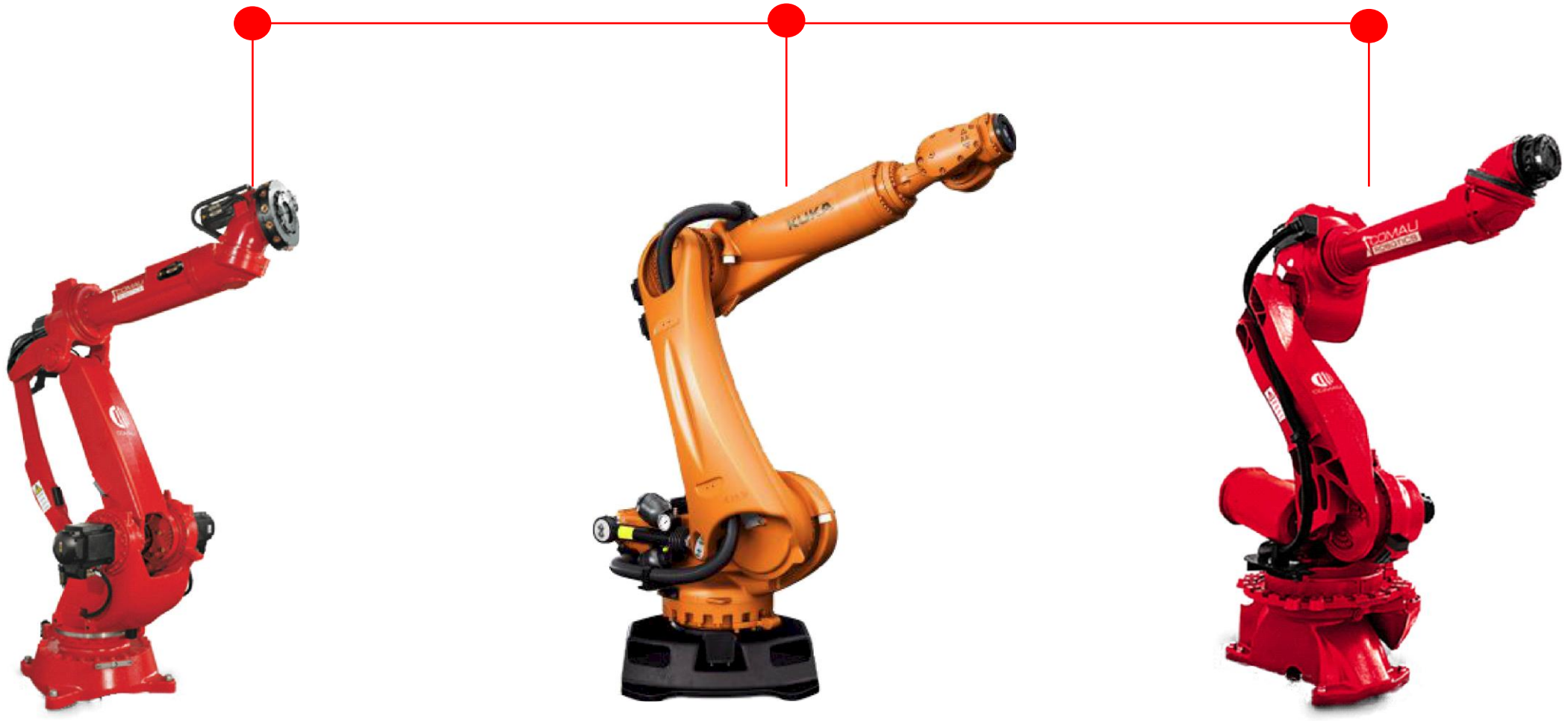
SPINEA product portfolio is able to cover upper axis of high and heavy payload robots



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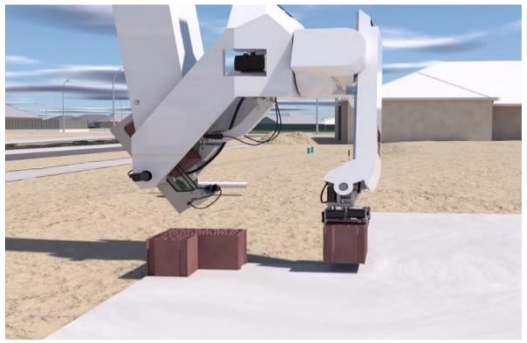
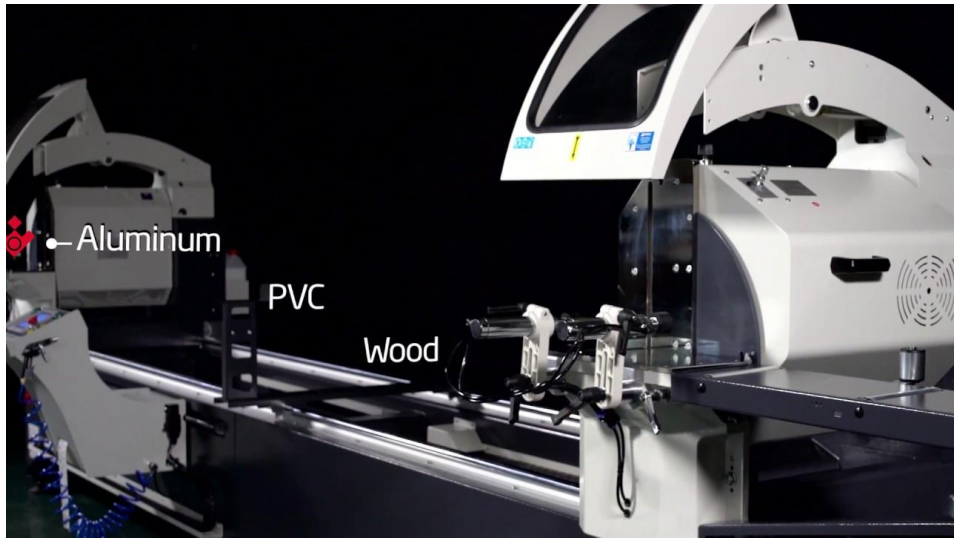
SPINEA Core Component for Construction Robotics



SPINEA offers the widest range of sizes covering the needs of small to medium payload robots for construction. We are providing tailored gearbox development for industrial robots or service robotics and bring high level of added value for customers in terms of quality and technical performance over product lifetime.



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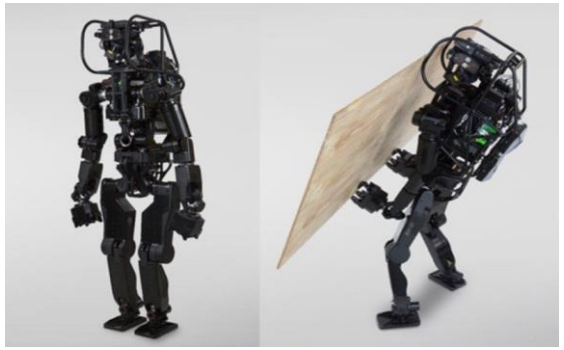
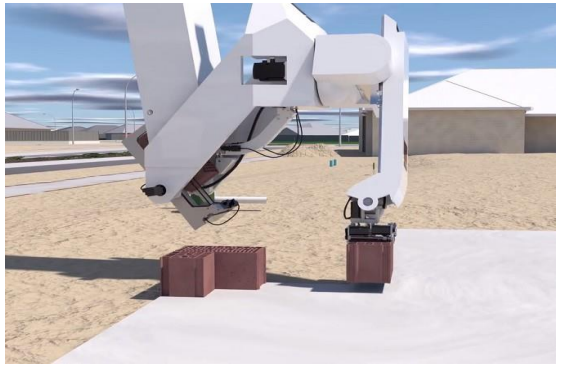
SPINEA in Robotics





Requirements of
construction robotics

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High Stiffness

High safety factor

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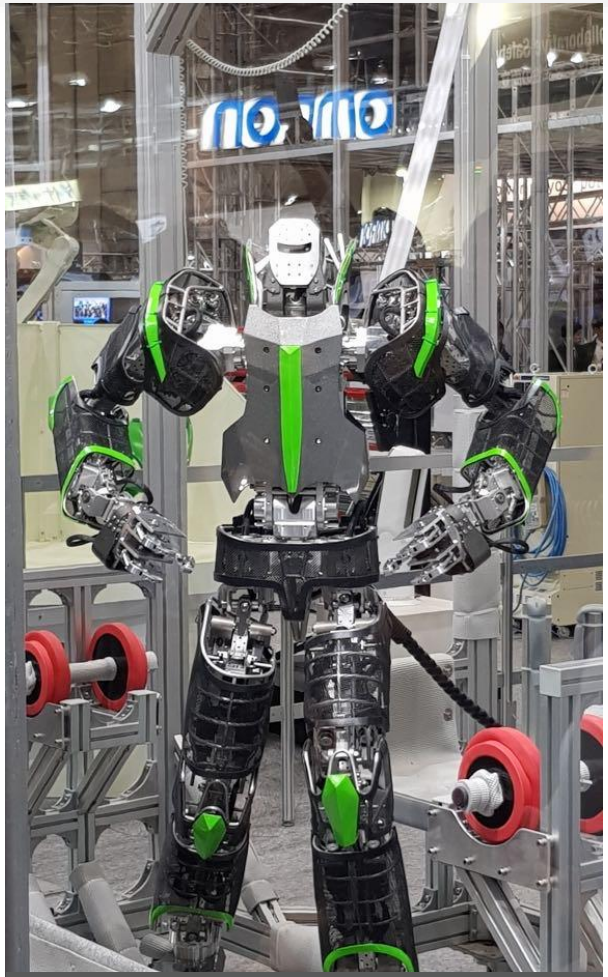
High Precision



TS50 in Humanoid Kawasaki robot Projekt at University Tokyo

SPINEA products for humanoid robotics offers:

Highest stiffness in small compact gears

High overload capacity – 2,5x of nominal torque

Very low lost motion kept in lifetime = high precision

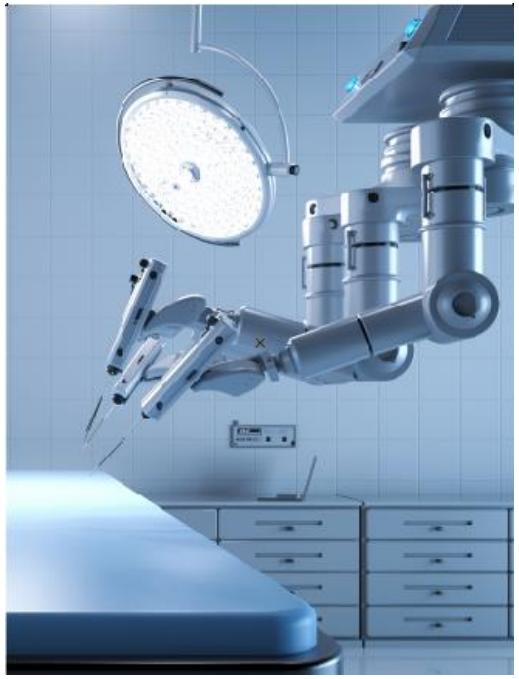
Long Lifetime proven by internal and external testing

SPINEA Core Component for Healtcare Applications

SPINEA is already active in new surgical robot development where its Twinspin **high torque density reducers provide** strong advantage.

SPINEA brings a high level of safety factor thanks to **high overloading capacity of Twinspin ® reducers.**

SPINEA hollowshaft actuators enable customers to design modern healtcare robotic systems fulfilling **highest precision, safety and quality criteria.**



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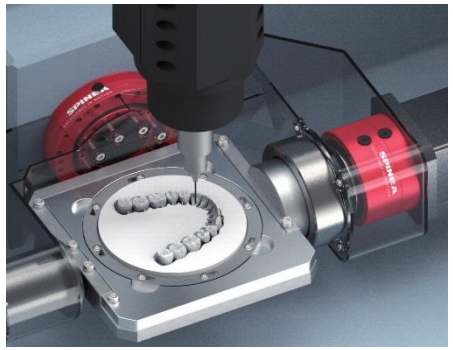
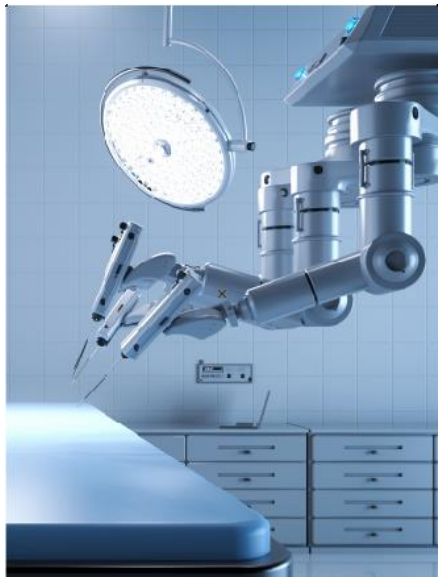
SPINEA in Segments

Dental milling machines
Axis A, B of dental machines equipped with TwinSpin ® gearboxes and thus ensuring the highest quality of dental tooth implants.



Surgical robots
Precise positioning, high overload capacity and compactness as the main Advantages of TwinSpin ® gears are ensuring the highest quality of robotic surgery.



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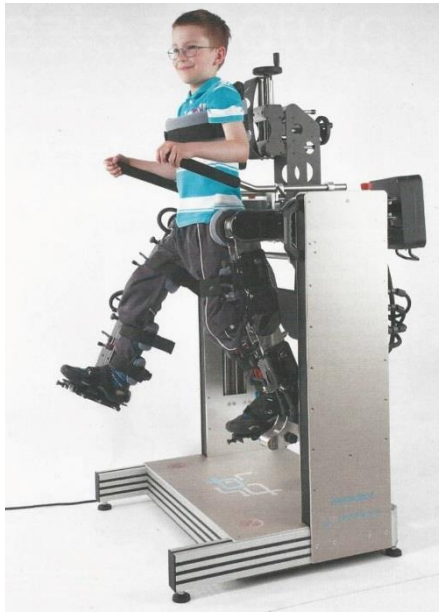
Rehabilitation robots
The rehabilitation robots that are used as gait training devices or other medical rehabilitation systems where key features as compactness, low noise and low back driving torque of TwinSpin ® reducers are appreciated.



SPINEA in Segments

Injection molding
In injection molding machines the high productivity, high speeds and precise position of SPINEA products are used together with high reliability and long lifetime.

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Packaging facilities
Compact design, small outer diameter and robust design of TwinSpin ® reducer with high overload capacity for maximum cycle speed performance.

Woodworking machines
SPINEA gearboxes improve the efficiency and quality performance of machining heads when working with wood, tool exchangers, saws and rotating positioning units.

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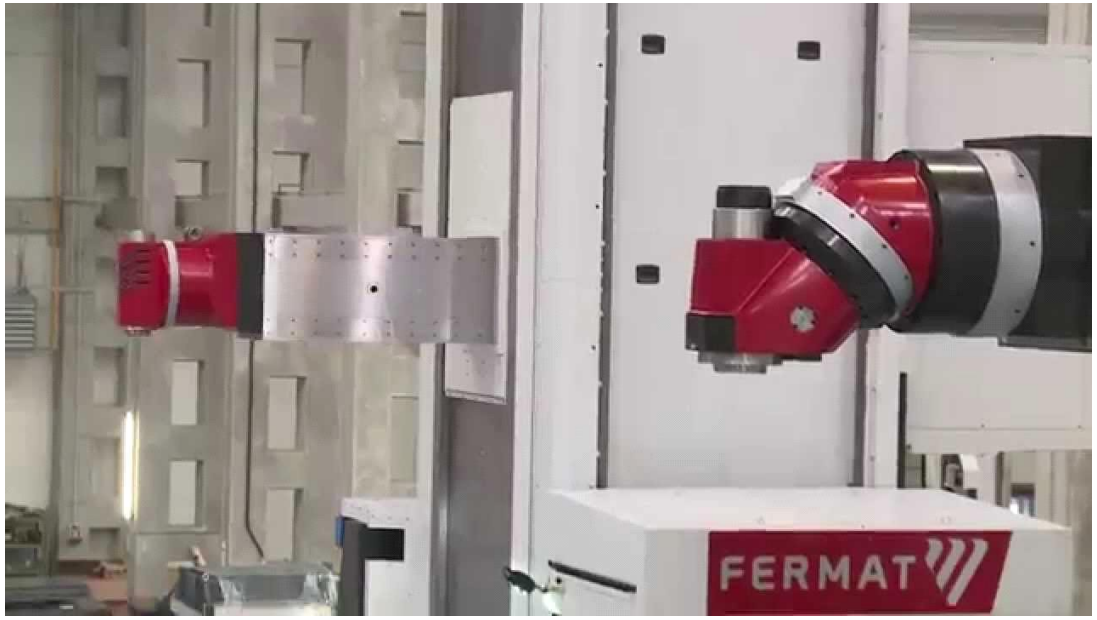
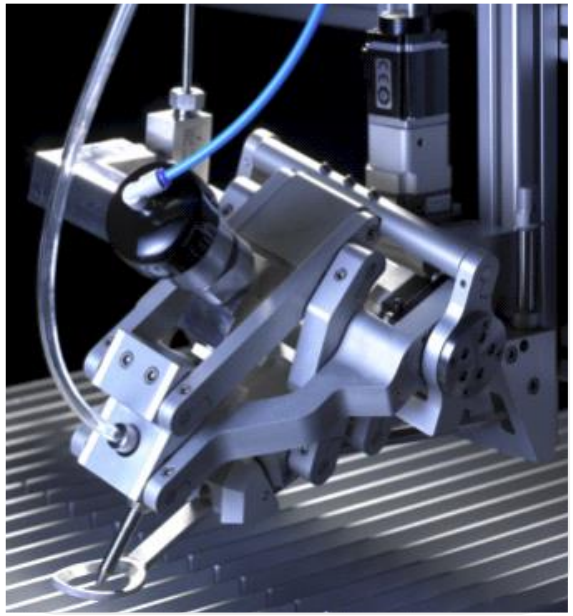
SPINEA in Segments

Machine tools centres
Machines used for accurate working with metals, plastics, wood materials, alloys and other materials.



Cutting machines
Thanks to implementation of SPINEA gearboxes the cutting machines reach high quality, accuracy and cutting speed of metal sheets or other materials.



SPINEA – Core Components for Broad Market - Segment Applications

SPINEA products were **successfully implemented in other numerous projects and segments** as for example:

- **CERN** – SPINEA products were used in the **particle accelerator** project

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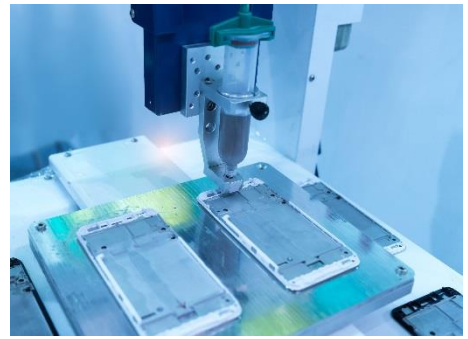
- **3C industry** - mobile phones manufacturing as Foxconn, Huawei, Apple, flat panels as well as semiconductor industry



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- ALMA - **astronomical telescopes** project which observes electromagnetic radiation in Space at submilimeter wavelength

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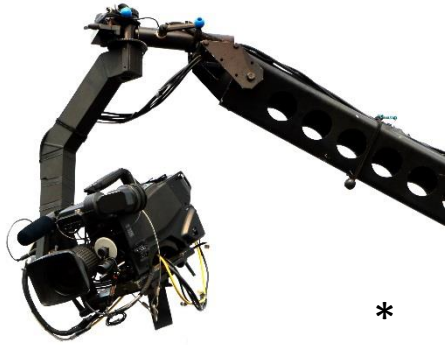
- **FILM and TV cranes** and camera positioners used for shooting the movies such as **Fast and Furious or Game of Thrones**



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SPINEA – Core Components for Broad Market - Segment Applications

- **Food and beverage** automation as used in packaging machines of Tetrapak and OPM

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- **Crystal and Jewellery making machines** as in Swarovski or Preciosa

Key Market Advantages of SPINEA

- SPINEA has brought the latest gearbox technology for industrial robots and general industry

- Robotic customers have been benefitting from close cooperation with SPINEA and have launched successful robot ranges

- **Innovation- the newest , proved and patented robotic gear principle**
- **Core component for industrial and service robotics**
- **Wide product size portfolio**
- **Design flexibility**
- **The only supplier of small cycloidal gears**
- **Exceptional technical performance**

- SPINEA is strong in tailored gearbox development for all types of segments

SPINEA brings high level of added value for customers in terms of quality and technical performance

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THANK YOU

* Ilustration pictures