



SIMATIC MICRO-DRIVE 24/48V Servo Drive System

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siemens.com/micro-drive

SIMATIC Micro Drive



SIMATIC Micro-Drive

Virtual Product Launch
Wednesday 10th June 2020

Agenda

Session 1 – 09:00 – 10:00

Micro-Drive Product Details, distribution, and product partners.

Session 2 – 10:15 – 11:15

Micro-Drive Product Support, Technical Details, and Demonstration.

Session 3 – 11:30 – 12:30

Sales Support Tools, SIMOVE, and plant simulator.

[siemens.com/micro-drive](https://www.siemens.com/micro-drive)

SIMATIC Micro-Drive



Session 1 – 09:00 – 10:00

Micro-Drive Product Details, distribution, and product partners.



Gary Wilcock



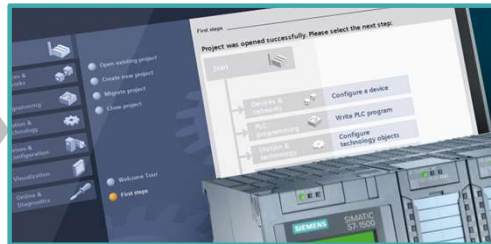
Dan Burbridge



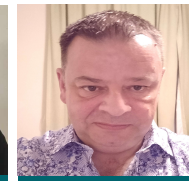
Rich Fear

Session 2 – 10:15 – 11:15

Micro-Drive Product Support, Technical Details, and Demonstration.



Steve Roberts



Mark Wortley

Session 3 – 11:30 – 12:30

Sales Support Tools, SIMOVE, and plant simulator.



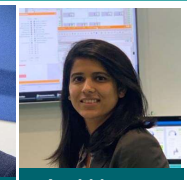
Rohan Beck



Chris Jones



Dave Sutcliffe



Anubhi Khandelwal

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Session 1 – 09:00 – 10:00



- 1 SIMATIC MICRO-DRIVE - Introduction

- 2 SIMATIC MICRO-DRIVE – Functions & Features

- 3 APPLICATIONS – User Cases

- 4 Dunkermotoren

- 5 ebm-papst

SIMATIC MICRO-DRIVE

Portfolio gap and requirement



Siemens drive portfolio shows gap in the area of extra-low voltage (24/48V)

This gap will be closed by SIMATIC MICRO-DRIVE



Extra-low voltage DC	low voltage AC			
Basic	Basic	Midrange	High-End	
24 V DC / 48 V DC SIMATIC MICRO-DRIVE TM-ServoDrive 	<ul style="list-style-type: none"> SINAMICS V20 SINAMICS V90 	<ul style="list-style-type: none"> SINAMICS G120C SINAMICS G120P SINAMICS G120 SINAMICS G110D/G120D / G110M SINAMICS G130 / G150 SINAMICS G180 SINAMICS S110 SINAMICS S210 	<ul style="list-style-type: none"> SINAMICS S120 SINAMICS S150 	
100 – 1000 W	0.05 – 30 kW	0.12 – 6,600 kW	0.12 – 5,700 kW	
				DC
				Simple and demanding applications
				<ul style="list-style-type: none"> SINAMICS DCM
				6 kW – 3 MW
				AC
				Demanding applications with high performance classes
				<ul style="list-style-type: none"> SINAMICS GL150 / SL150 SINAMICS SM120 CM / SM 150 / GM 150 SINAMICS GH150 / GH180
				6 kW – 14.2 MW

Main requirements of this drive system

- Safety extra-low voltage <60VDC (typical 24 to 48 VDC)
- Easy control via PROFINET with PROFIdrive-Telegrams (Technology Objects)
- Safe drive functionality (more then only STO hardwired)
- PROFIsafe (safety bus communication)
- Fully integrated in Siemens-tool chain (e.g. TIA Portal)
- Easy selection and commissioning also for non drive experts
- Low-Maintenance (no fan, no brushes, ...)

SIMATIC MICRO-DRIVE Market Size

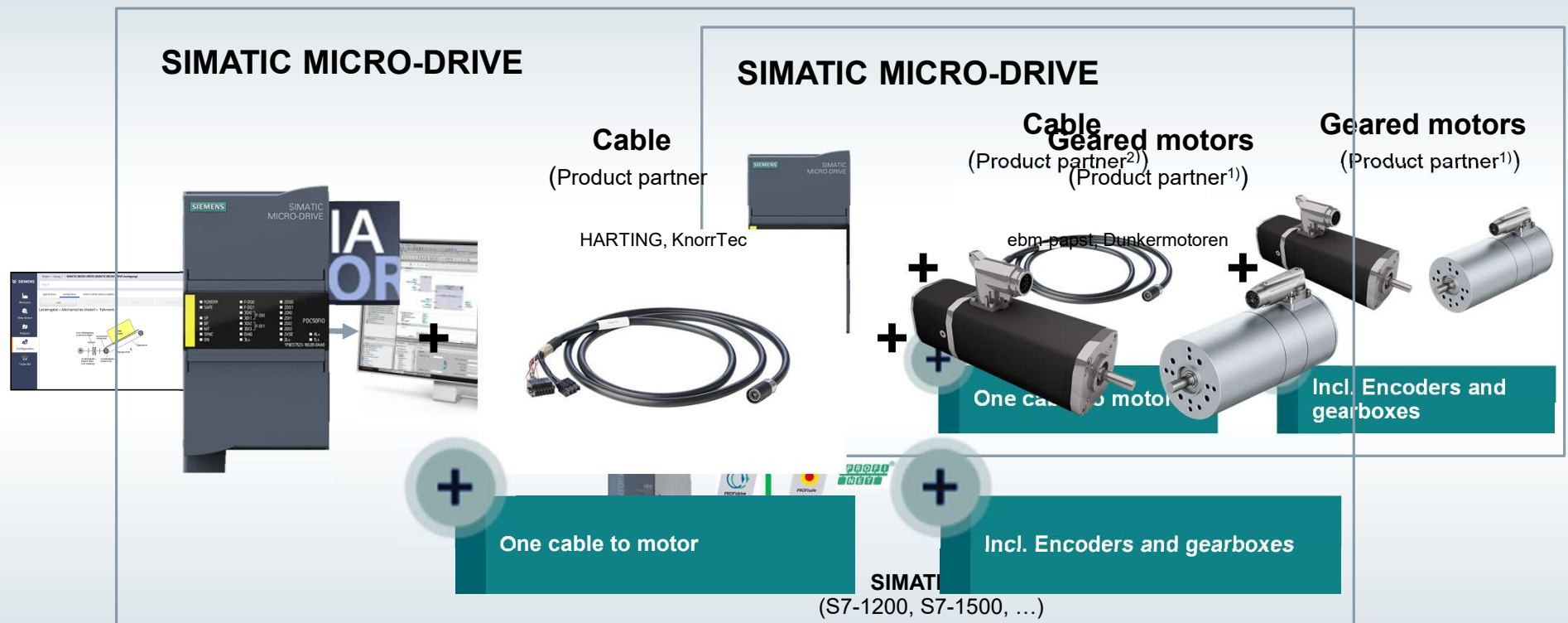
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Ingenuity for life

 <p>Extra-low voltage DC</p> <p>Basic</p> <p>24 V DC / 48 V DC</p> <p>SIMATIC MICRO-DRIVE</p> <p>Estimated Market Size</p> <p>~2' GBP</p>										
	Low voltage AC					DC		AC		
	Basic	Midrange		High-End		Simple and complex applications		Complex applications with high performance classes		
	<ul style="list-style-type: none"> SINAMICS V20 SINAMICS V90 	<ul style="list-style-type: none"> SINAMICS G120C SINAMICS G120P SINAMICS G120 SINAMICS G110D/G120D / G110M SINAMICS G130 / G150 SINAMICS G180 SINAMICS S110 SINAMICS S210 		<ul style="list-style-type: none"> SINAMICS S120 SINAMICS S150 		<ul style="list-style-type: none"> SINAMICS DCM 		<ul style="list-style-type: none"> SINAMICS GL150 / SL150 SINAMICS SM120 CM / SM 150 / GM 150 SINAMICS GH150 / GH180 		
	0.05 – 30 kW	0.12 – 6,600 kW		0.12 – 5,700 kW		6 kW – 3 MW		6 kW – 14.2 MW		

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SIMATIC MICRO-DRIVE 24V/48V DC&EC System Overview

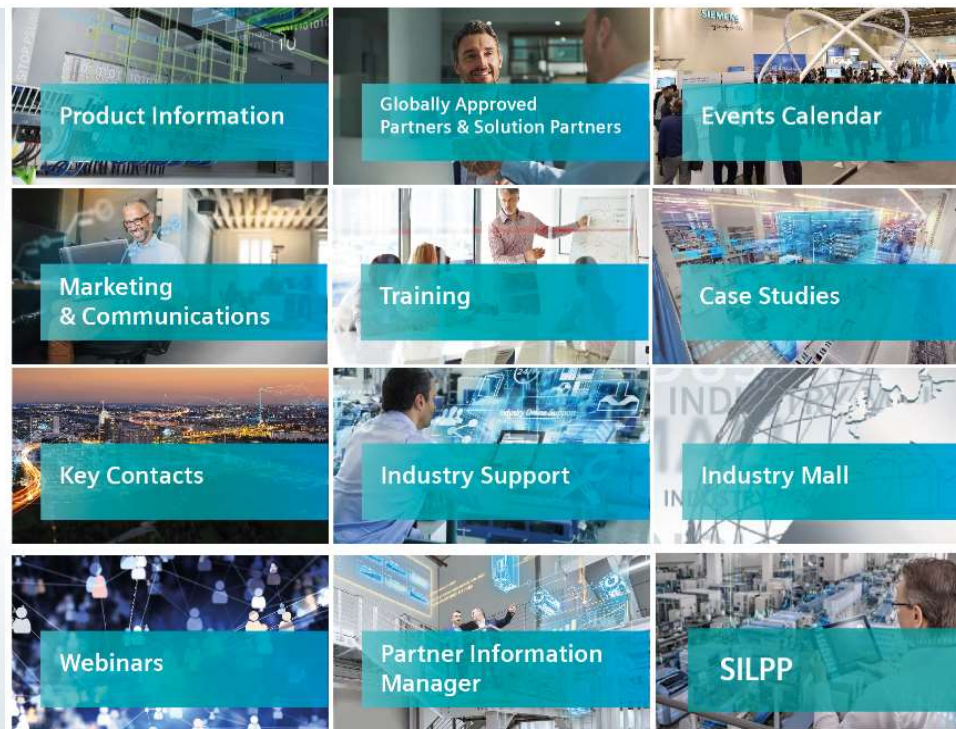
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SIMATIC MICRO-DRIVE Go 2 Market - Approved Partner Network



- In-depth technical knowledge of our products
- Competent technical advice
- System expertise
- Application expertise
- Market and industry knowledge



- Reliable delivery of high-quality products and systems, both individually or in packages
- Un paralleled stock availability
- Easy-to-use electronic ordering option
- Application support
- After-sales services
- Technical support

SIMATIC MICRO-DRIVE Competition

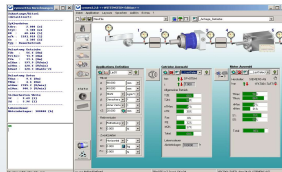
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Controller
+ motor
+ encoder
+ brake
+ cable

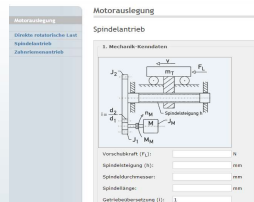
Design and
selection
tool



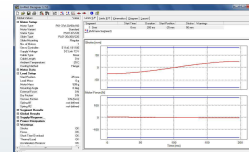
+ own Windows-
based tool
"cymex"



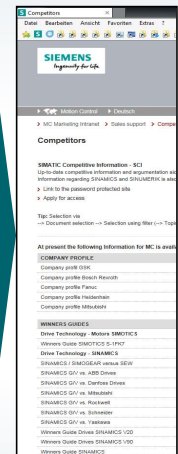
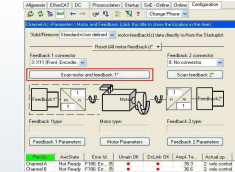
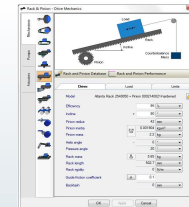
+ own
Web-based
design tool

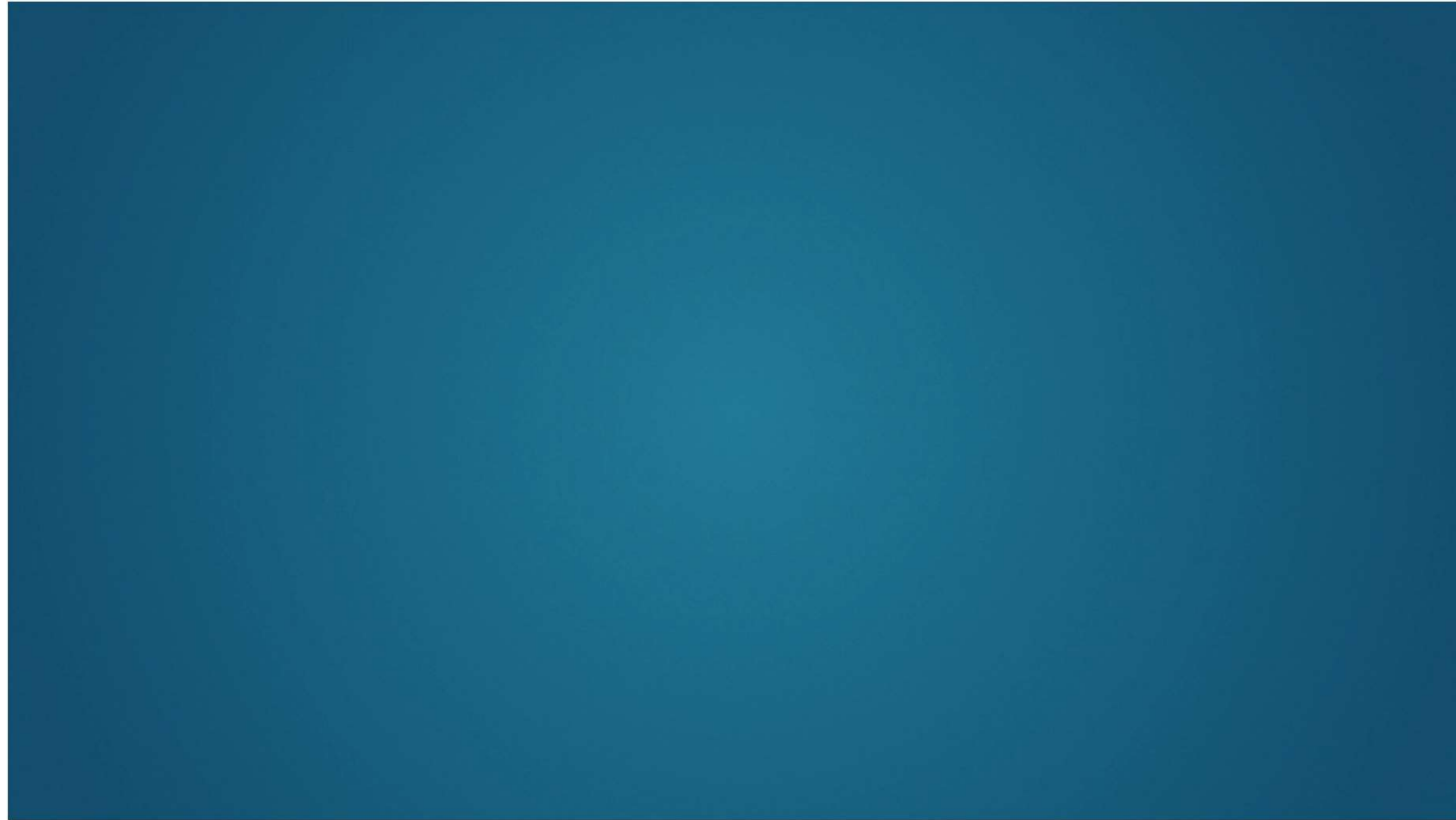


+ own Windows-
based tool
"LinMot Designer"



+ manufacturer-independent
design tool "Servosoft"
Canadian software company "TwinCat DriveManager"
"ControlEng"





SIMATIC MICRO-DRIVE Functions & Features

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C:\ProgramData\Siemens\Documents\Automation\Siemens\SIMATIC Controller\SIMATIC Controller

SIMATIC MICRO-DRIVE Focus Branches

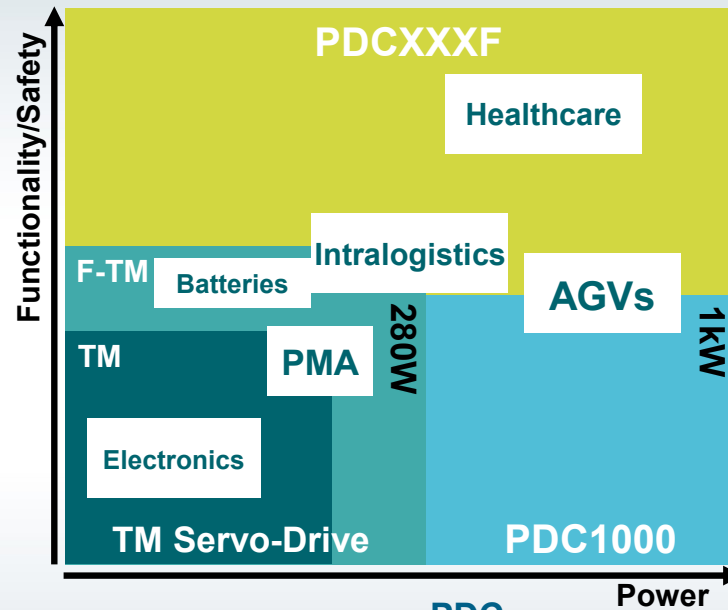
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F-TM ServoDrive + Base Unit With permanent wiring



F-TM ServoDrive

Designed for smaller performances in industries with focus on compactness and simple safety requirements



PDC

Is a PROFINET participant with a focus on higher performance and extended safety functionality (e.g. SLS and SLT)

PDC Motor/Encoder-cable + Supply +I/Os with connectors



SIMATIC MICRO-DRIVE Highlights and USPs

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**Fast and Safe
Communication via
PROFINET**
PDC: IRT (<1ms)



**Easy Commissioning
and Servicing via TIA
Portal**
Single Button Tuning



**PDC: Safety integrated
with new function: Safety
Limited Torque (SLT)**
Via PROFISAFE



**Easy Drive Selection
with the TIA Selection
Tool**
Simple Drive Sizing



**F-TM Servo Drive: Power
density with integrated
STO function**
(SIL2/hardwired)



**Single Cable Connection
to Motor Available**
Save time during
commissioning



Extra Low Voltage
0.1 kW – 1 kW at 24-48V
Battery applications including
energy recovery system.



SIMATIC MICRO-DRIVE

Perfect collaboration in TIA Environment

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SIMATIC
S7-1500/T/F



SIMATIC
MICRO-DRIVE



Perfect collaboration
in the TIA Environment

OR



SIMATIC
S7-1200/F



SIMATIC
ET200SP/T/F Open

Advantages of the Servo drive system

- Safety Functions
Stored in PDC itself
- Safety Functions
controlled by PLC via
PROFISAFE
- Programming in TIA
Portal using
SINA_Speed and
Technology Objects

Benefits of TIA Environment – SIMATIC MICRO-DRIVE HSP for TIA Portal

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Devices and networks
PDC selection

Device diagnostics

The collage consists of five screenshots from the Siemens TIA Portal software interface:

- Top Left:** A screenshot of the 'Hardware Config' window showing a project tree on the left and a hardware configuration table. The table lists components like 'PS 307 5A' and 'PS 307 5A' with their respective specifications.
- Top Right:** A screenshot of the 'Safety Integrated' configuration window, showing a 'Safety Integrated' section with various safety-related parameters and a 'Safety Integrated' button.
- Middle Left:** A screenshot of the 'Hardware Config' window showing a project tree on the left and a hardware configuration table. The table lists components like 'PS 307 5A' and 'PS 307 5A' with their respective specifications.
- Middle Right:** A screenshot of the 'Safety Integrated' configuration window, showing a 'Safety Integrated' section with various safety-related parameters and a 'Safety Integrated' button.
- Bottom:** A screenshot of the 'Safety Integrated' configuration window, showing a 'Safety Integrated' section with various safety-related parameters and a 'Safety Integrated' button.

Devices – configuration

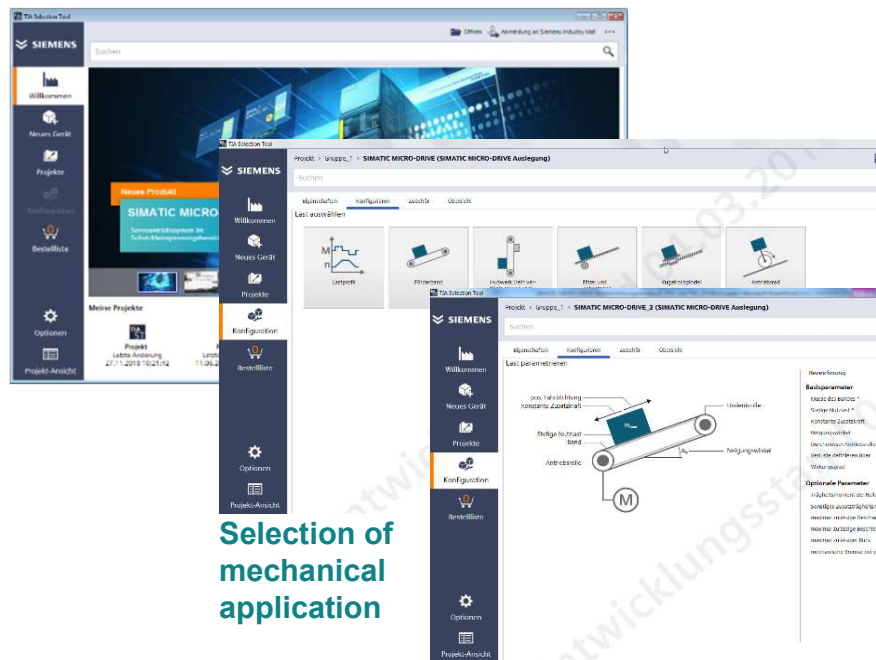
Safety configuration

Benefits of TIA Environment

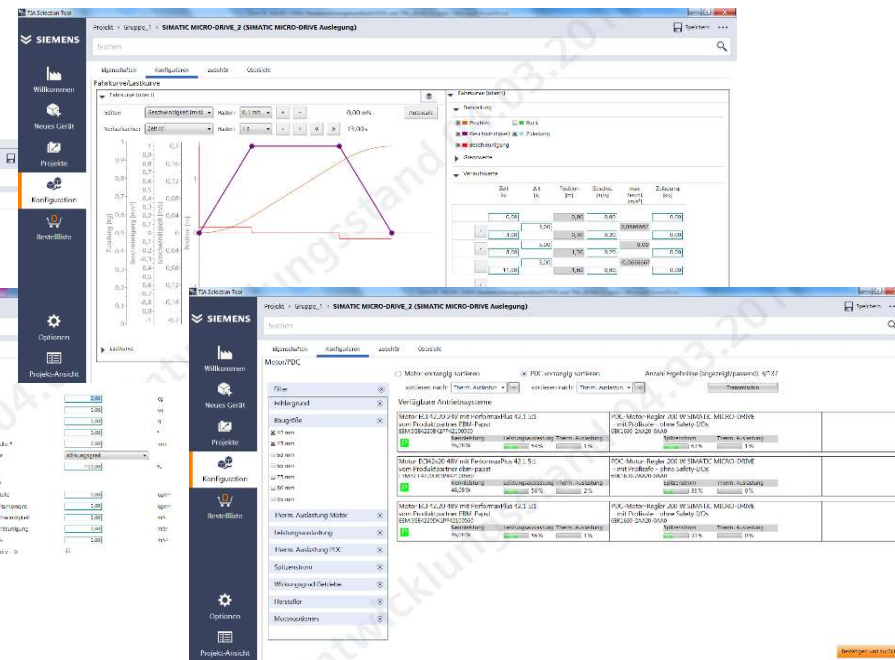
TIA Selection Tool – for Micro-Drive

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TIA Selection Tool



Enter motion



SIMATIC MICRO-DRIVE

Key Safety Points



- **FAILSAFE functions:** Only product in this market with safe drive functions such as **STO, SS1, SLS, SLT, SSM**
- **FAILSAFE communication:** Only product in this market with **failsafe communication to trigger failsafe functions**
- **TIA Portal:** Fully integrated into the **TIA Portal**
- **SLS and SSM:** Failsafe functions SLS and SSM with Hall effect sensors and incr. encoders

Safety Focus - SLT control via PROFISAFE for the PDC

Functionality

Safety Limited Torque (SLT)

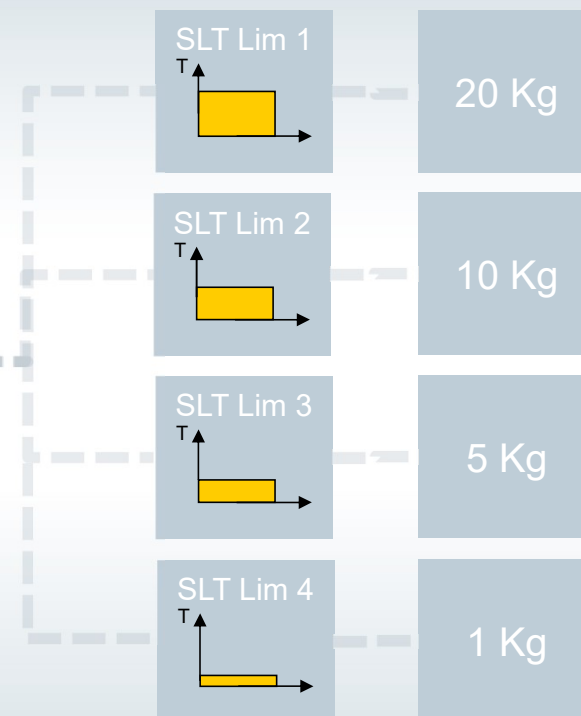
New safety integrated function from Siemens

SLT is suitable for machines that pose a hazard when a torque or force is exceeded and that require work to be performed directly on them while:

- In operation
- In Setup mode
- Undergoing maintenance

SLT can be set at **four different levels** within the drive parametisation. The required SLT level is **selected in the controller** using two bit control. When SLT is triggered, **Safe torque off (STO)** is activated (active low).

Application



SIMATIC MICRO-DRIVE Safety-functions

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The standard version is divided into performance classes.

Power class 100W to 1000W

PDC100

PDC1000

The standard variants only support the safety function.

- STO-hardwired via onboard terminal (STO+ and STO-).



SIMATIC MICRO-DRIVE Safety-functions

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The **F variant** is divided into performance classes.

Power class 100W to 1000W

PDC100F

PDC1000F

The **F variants** support the following safety functions

- STO (Safe Torque Off) - safe torque cut-off via onboard terminal (STO+ and STO-).
- STO (Safe Torque Off) - safe torque cut-off controllable via PROFIsafe
- SS1 (Safe Stop 1) - stop function according to stop category 1 (time-monitored) can be controlled via PROFIsafe
- SSM (Safe Speed Monitor) - safe speed monitoring controllable via PROFIsafe
- SLS (Safely Limited Speed) - safely limited speed controllable via PROFIsafe
- SLT (Safely Limited Torque) - safely limited torque controllable via PROFIsafe



SIMATIC MICRO-DRIVE – Gear Motors

Features and Benefits



EC motors are Partner Products

Motor with

- IQ encoder,
- Hall sensors
- optional planetary gear
- optional holding brake



Feature / Function		Benefits
Robust industrial plug A rotatable plug for single cable connection	▶	<ul style="list-style-type: none"> • Free choice of the direction of the cable outlet from the machine
Sealing ring Protection class IP65 with optional sealing ring	▶	<ul style="list-style-type: none"> • High tolerance to harsh environmental conditions
Dynamic motors Motors with low moment of inertia	▶	<ul style="list-style-type: none"> • High performance for dynamic machines with low load inertia
Compact Motors Motors with medium inertia and very compact design	▶	<ul style="list-style-type: none"> • For applications with higher load inertias • Completely assembled and tested Label: „for SIMATC MICRO-DRIVE“

Micro-Drive

Applications & Value

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SIMATIC MICRO-DRIVE 24V/48V DC&EC Drive System



Focus Industries / Applications

Focus Industries

- Logistic (AGVs, Shuttles)
- Medical
- Electronics
- Battery
- Handling
- Packaging
- Automatic assembly
- Metal forming
- Printing
- Winders, etc.

Applications

- Secondary / auxiliary drive
- actuator
- Dynamic processes (limited)
- speed axes
- positioning
- Synchronous axis control
- AGV (auto. guided vehicle)
- shuttle
- Conveyor, etc

MICRO-DRIVE – Value Cases

Medical Imaging – Medical OEM – Safety/Positioning

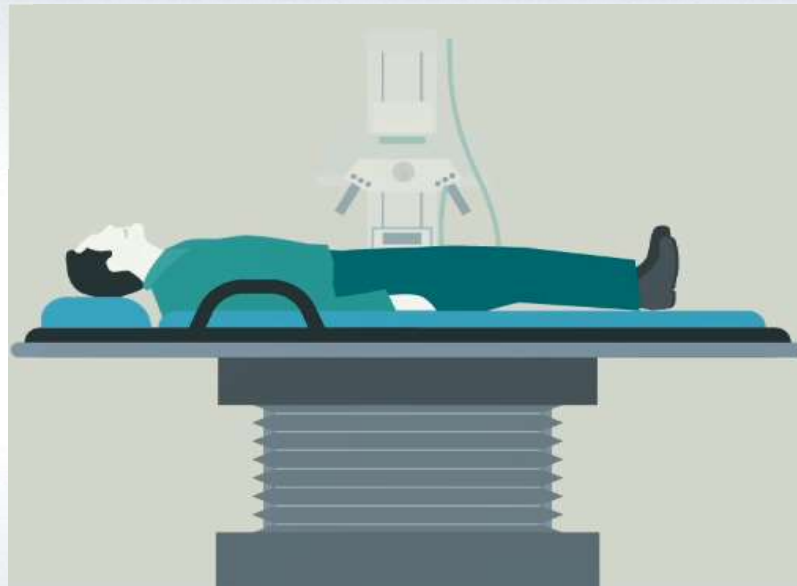
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Servo-Drive System

Key Features:

- Safety Integrated
- High Positioning Resolution
- Single Phase
- Extra Low Voltage – Human Low Power
- Low Noise
- Low EMC



Value Added:

Safety Integrated – Helps achieve industry standard SIL Rating allowing straightforward regulation compliance.

Safe Limit Torque allows OEMs to create safe sensor less positioning systems which saves engineering time and reduces unit costs.

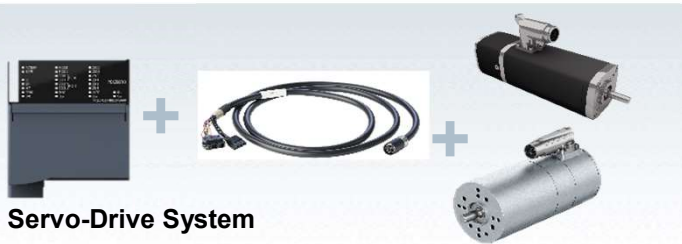
Single Phase/ Low Power – Single phase low power allows OEMs to create products that can be installed into buildings with standard power infrastructure. Generates increased market.

Low Noise/EMC – Low noise improves customer experience and DC means no EMC that could interfere with medical imaging. Easier for OEMs to reduce EMC levels without additional shielding.

MICRO-DRIVE – Value Cases

Intralogistics – AGVs – Systems Integrators and End Customers - All Industries Involving logistics

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Key Features:

- Low Power
- Safety Integrated
- Complimentary Products
- High positioning Precision
- TIA Portal Engineering



Value Added:

Safety Integrated – Integrators can ensure safe working environment for end customers – comply to given SIL requirement. Safe Limit Torque reduces chance of injury

Low Power – Low power allows AGVs to be battery powered, no need for a tether which simplifies implementation and requires fewer charges boosting productivity and output as well as reducing costs.

SIMOVE – All in one package for AGV integrators, reduces costs in engineering time and adds customer value through comprehensive support.

TIA Engineering – Reduces engineering time of full system reducing costs for system integrators

Additional Offering - SIMOVE

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SIMOVE

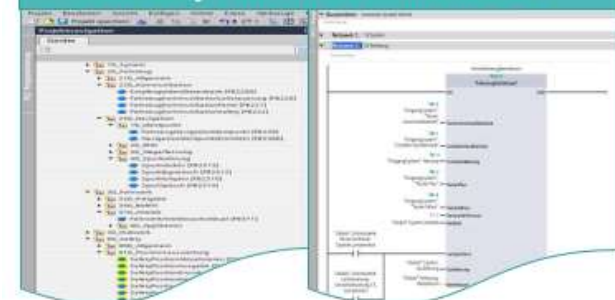
- **Standardised solution for AGV applications**
- **Use of standard automation and drives components + tailored application software**
- **Easy system extension via open interfaces and 3rd party integration**
- **Competence team for application support**
- **Comprehensive and scalable hardware portfolio comprising of PLC, IPC, IO, Drive, RFID, Safety, Communication and localisation components.**



Recommended component list tailored for different types of AGVs

Bez.	Hersteller	MLFB	Benennung	Menge
CPU	Siemens	6ES7512-1SK01-0AB0	SIMATIC DP, CPU 1512SP F-1 PN für ET 200SP, Zentralschleife mit Arbeitsspeicher 300 KB für Programm und 1MByte für Daten	1
SD	Siemens	6ES7954-1EG00-0AA0	SIMATIC SD, Memory Card für S7-1x 00 CPU/SNAMICS, 3, 3V Flash, 24 Mbyte	1
BA 2xFC	Siemens	6ES7193-6AF00-0AA0	SIMATIC ET 200SP, Busadapter BA 2xFC, 2x Fast-Connect Anschluss für PROFINET	1
F-DI 8x24VDC HF	Siemens	6ES7136-6BA00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-DI 8x 24VDC HF, 15mm Baufr.	2
F-DQ 4x24VDC/0.5A	Siemens	6ES7136-6DB00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-DQ 4xDC 24V/0.5A, 15mm Baufr.	1
PM HF	Siemens	6ES7136-6BA00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-DI 8x 24VDC HF, 15mm Baufr.	1
F-RQ 1xDC24V/AC24V	Siemens	6ES7136-6BA00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-RQ 1x 24VDC/24V AC 2A, 15mm Baufr.	1
230VISA	Siemens	6ES7136-6BA00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-DI 8x 24VDC HF, 15mm Baufr.	1
EX 15x24VDC	Siemens	6ES7136-6BA00-0CA0	SIMATIC DP, Elektronenmodul für ET 200SP, F-DI 8x 24VDC HF, 15mm Baufr.	1

Preconfigured "TIA AGV project" and library with function blocks



MICRO-DRIVE – Value Cases

Pick and Place Machines – Machine Builders – Food and Bev

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Servo-Drive System

Key Features:

- Low Power
- High positioning Precision
- Motor Compatibility
- Compact
- Modular
- TIA Engineering



Value Added:

Safety Integrated – Reduced failure rate and increased reliability reduces losses due to downtime

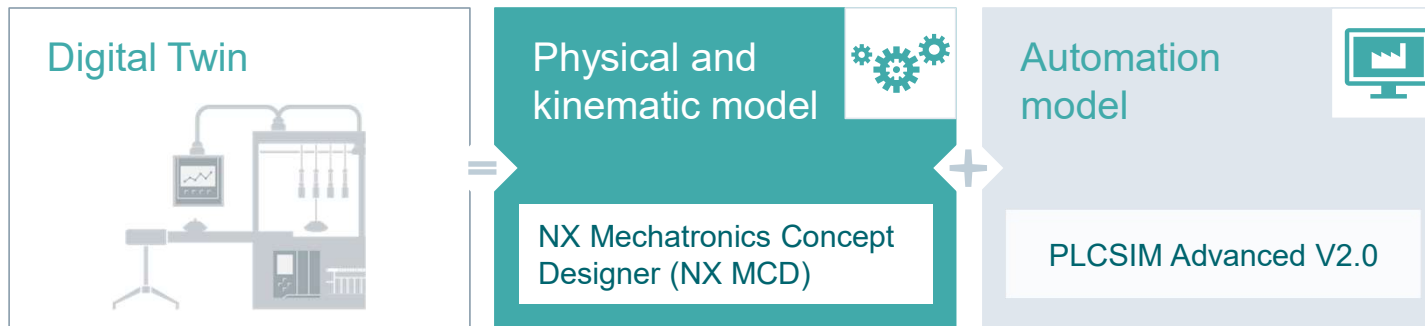
Low Power – Third party motor compatibility allows flexibility in motor choice. E.g. hygienic motors can be used.

Compact Modularity – Compact and modular systems are an industry trend for machine builders, add value by allowing seamless scaling of existing designs in a small footprint.

TIA Engineering – Reduces engineering time of full system reducing costs for system integrators

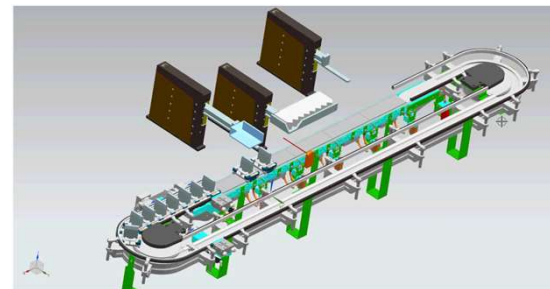
Additional Offering – NX MCD/PLCSim Advanced

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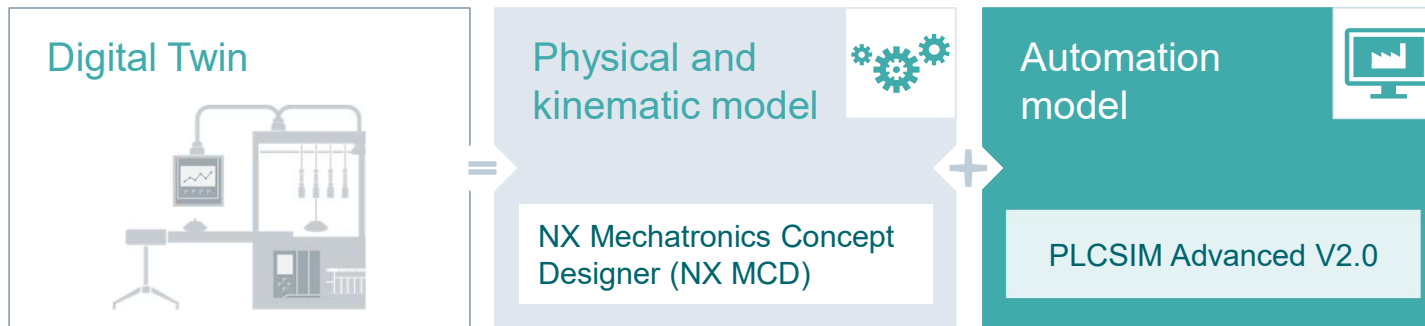
NX MCD – Creation of the machine concept

- **Creation of mechanical model** of machine by using CAD-Data
- **Physical and kinematic enrichment** of machine components like motion, material flow, gravity or collisions
- **Different design alternatives can be simulated** and validated in an easy way



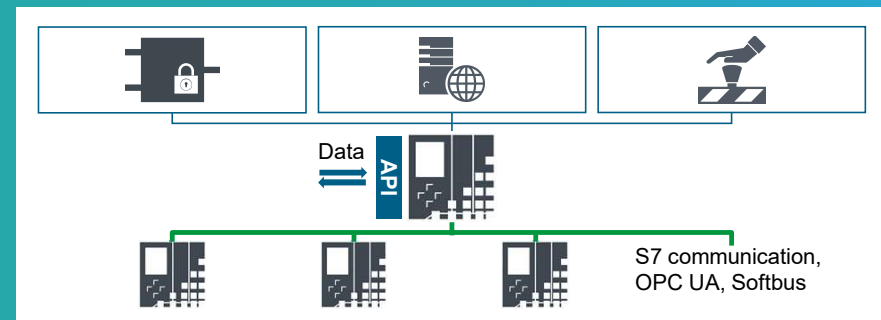
Additional Offering – NX MCD/PLCSim Advanced

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PLCSIM Advanced – Emulation of S7-1500 controllers

- **Extensive function simulation** including communication, know-how protected blocks, safety and web server
- **Public interfaces for exchange of data** with customized co-simulation or test software
- **Support of multiple and distributed instances** for simulation of multiple controllers on a PC/in the network
- **Virtual Time Management and synchronization**



MICRO-DRIVE – Value Cases

Storage and Retrieval Systems – Distributed Systems – Systems Integrators - Warehousing

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Servo-Drive System

Key Features:

- Positioning
- Modularity
- Safety Integrated
- TIA Portal



Value Added:

Safety Integrated – Does not require sensors to detect obstructions due to safe limit torque function, this reduces cost of system and meets user requirements

Modularity – Multiple Micro-Drives can be controlled by single 'F' controller. This makes a cost effective solution for warehouses.

Positioning – Range of high precision positions can be programmed simply using TIA portal. Due to servo motor capability

TIA Engineering – Seamless integration with existing Siemens install base

F-TM Servo Drive – Value Case

Printing Machine Additional Process - High install base of ET200SP – End Customer

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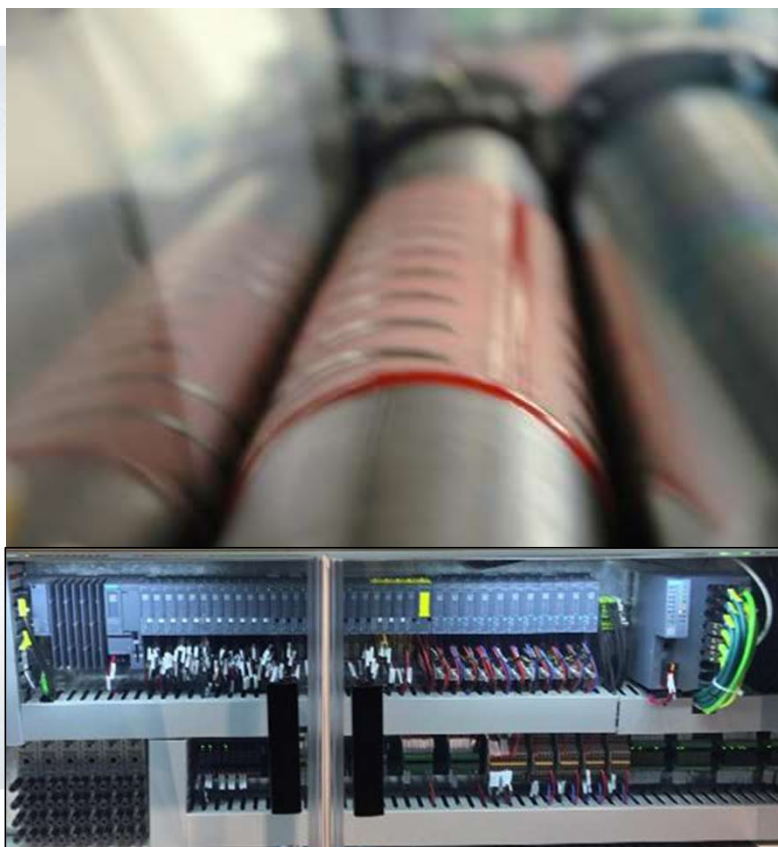
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Servo-Drive System

Key Features:

- Scalable, Modularity
- ET200SP Platform
- Positioning
- Compact



Value Added:

Scalable Modularity – Can be added into existing process seamlessly when an additional step to a process is required.

ET200SP Platform – Use of ET200SP platform aids compactness and significantly reduces costs for those with high existing install bases. Also pairs with ET200SP 'F' CPUs.

Positioning – Printing processes require high precision positioning for low speed high precision printing

Compact – high power density. 20mm wide and compatible with ET200SP i/o



Product Introduction SIMATIC Micro Drive

10th June 2020

Innovation in Motion



Dunkermotoren Headquarters



Dunkermotoren at a glance

- » Founded in 1950
- » Part of AMETEK since 2012
- » 1200 employees worldwide
- » Turnover: >235Mio.€
- » 7% CAGR over 20 years

Market leader in

- » Door automation
- » Motors with integrated electronics
- » High diversity in applications
- » Environmental engagement
- » 3.5 Million motors per year
- » 40,000 orders per year

Production Facilities and Capabilities

- » New product introduction and release
- » Corporate industrial engineering including tool & sample shop
- » Customer proximity
- » Lower quantities/dedicated skills
- » Orders using a high variety of the modular portfolio

- » Customer proximity - delivering in China
- » High quantity/low variety products
- » Specific products for the Asian market

- » High labor content
- » Recurring business
- » Backup for Bonndorf production lines



Bonndorf (Germany)



Taicang (China)



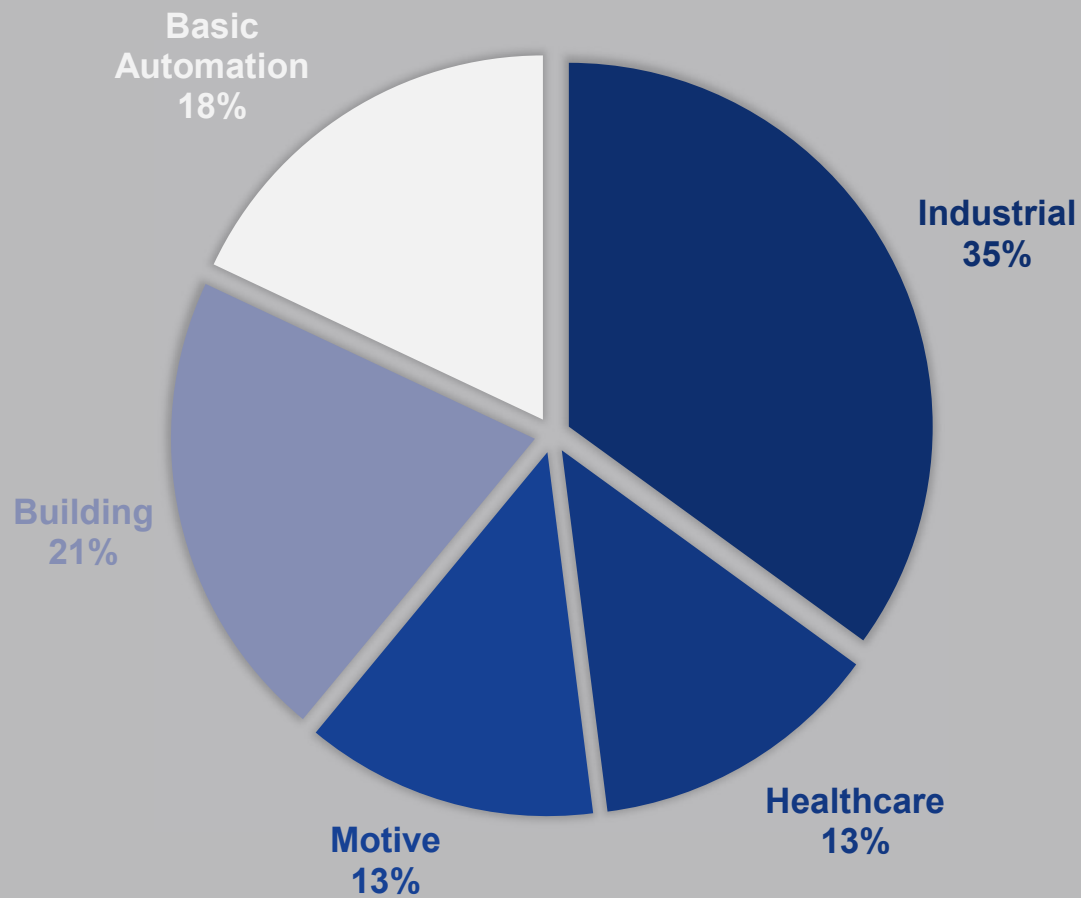
Subotica (Serbia)



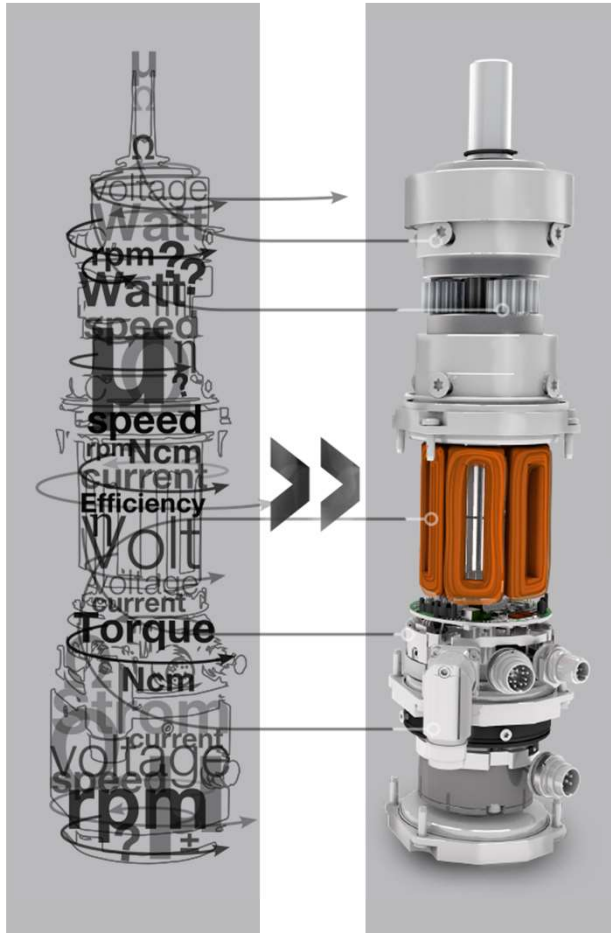
Our Markets



Breakdown of Sales by Segment



Transforming Requirements into Solutions



Modular System

- » Decades of experience combined in one modular system
- » Extended application areas and combination possibilities
- » Complete drive solutions supplied by one partner

ENCODERS	BRAKES	CONTROLLERS	MOTORS	GEARBOXES
Incremental Encoder up to 4096 ppr 	Power-off Brakes 0.2 - 7 Nm 	Integrated Controller 	Brushless DC-Servomotors 6 - 3900 Watt 	Planetary Gearboxes 0.3 - 160 Nm 
Magnetic Pulse Generators 4 ppr 	Power-on Brakes 0.2 - 3 Nm 	External Controller 	Permanent Magnet DC-Motors 3 - 370 Watt 	Worm Gearboxes 0.75 - 30 Nm 
Absolute Encoder Up to 4096 ppr 		dGo/ dMove/ dPro  EtherCAT CANopen	Stepper Motors 8 - 14 Nm 	Spirotec Gearboxes 9 - 18 Nm 
			AC-Motors 5 - 100 Watt 	Bevel Gearboxes 1.6 - 24 Nm 
			Universal Motors 150 - 1200 Watt 	Spindles and Cylinders 450 - 2500 N 
			AC/DC Blowers Thru-Flow, Bypass 	
			Linear Motors 19 - 3690 N 	

Micro-Drive Portfolio

2020



Micro-Drive Portfolio



PRODUCTS ▾ CONFIGURATION INDUSTRIES ▾ COMPANY ▾ KNOWLEDGE ▾ DOWNLOADS ▾ CONTACT ▾

CONFIGURATION



Reset

Expert-Mode ▾

All Articles ▾

Power

W

1,9

1127



Results of Combinations 26,606,547

#



Component

Power ▲

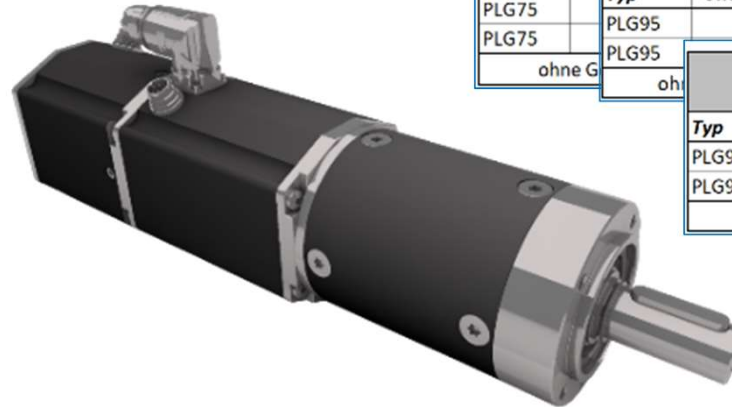
Micro-Drive Portfolio

Micro-Drive Catalogue Portfolio

- » Condensed program to cover most realistic application samples
- » Covers motors with various winding voltages
- » Covers gears from 4:1 up to 175:1
- » Brakes are available
- » IP65 coverage

Options for Micro-Drive Solutions

- » Extend the catalogue to the full Dunkermotoren portfolio if needed



		Controller	PDC50	
		Motor	BG45x30	BG45x30
Typ	Untersetzung	Spannung	24V	40V
PLG52	6,25		96545.02600	96545.02800
PLG52	2			
PLG52	1,2			
ohne Getriebe				

		Controller	PDC200	
		Motor	BG655x50	BG655x50
Typ	Untersetzung	Spannung	24V	40V
PLG63	4,00		96566.02610	96566.02810
PLG63				
PLG63	1			
PLG63	3			
PLG63	1			
PLG63	1			
ohne Getriebe				

		Controller	PDC400	
		Motor	BG75x50	
Typ	Untersetzung	Spannung	40V	
PLG75	4,00		96575.02620	
PLG75				
PLG75				
PLG75				
PLG75				
PLG75				
ohne Getriebe				

		Controller	PDC600	
		Motor	BG95x40	
Typ	Untersetzung	Spannung	48V	
PLG95	4,00		96595.02630	
PLG95				
ohne Getriebe				

		Controller	PDC1000	
		Motor	BG95x80	
Typ	Untersetzung	Spannung	48V	
PLG95	4,00		96595.03030	
PLG95	16,80		96595.03031	
ohne Getriebe			96595.03099	

Overview of Additional Solutions

CASM electric cylinders

- » Continuous thrust up to 5.4 kN
- » Speed up to 1 m/s
- » In-line and parallel adapter
- » Long lifetime
- » Positioning via digital inputs
- » Strokes up to 800 mm



Linear Spindle Motor LSM & LSG

- » Thrust up to 680 N
- » Speed up to 300 mm/s
- » Cost-efficient design

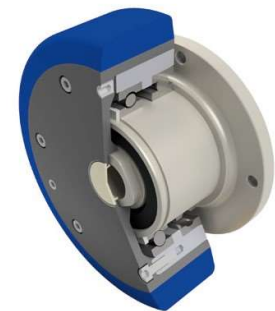
Linear Positioning Actuator LPA

- » Dynamic positioning with ramps
- » Thrust up to 220 N
- » Positioning resolution up to $\pm 5 \mu\text{m}$
- » Strokes up to 1000 mm



Hub Gearbox – Series NG

- » Available in 3 sizes
- » Reduces installation space
- » Includes the AGV tyre
- » Outstanding radial load capacity
- » Durable robust design



Application Examples

2020

Your solution

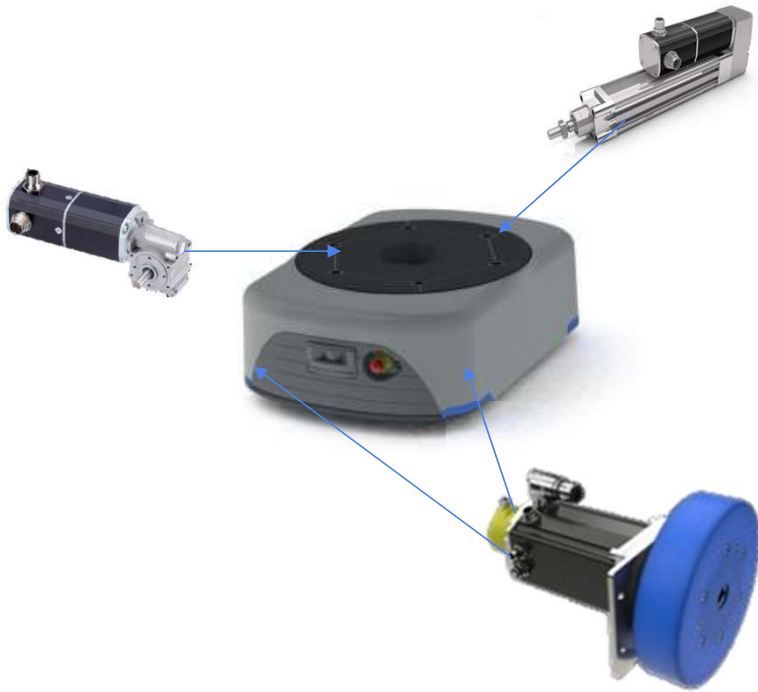
Your requirement



Solutions Solved with Dunkermotoren

Application examples solved:

» Goods to person robotics



Solutions Solved with Dunkermotoren

Application examples solved:

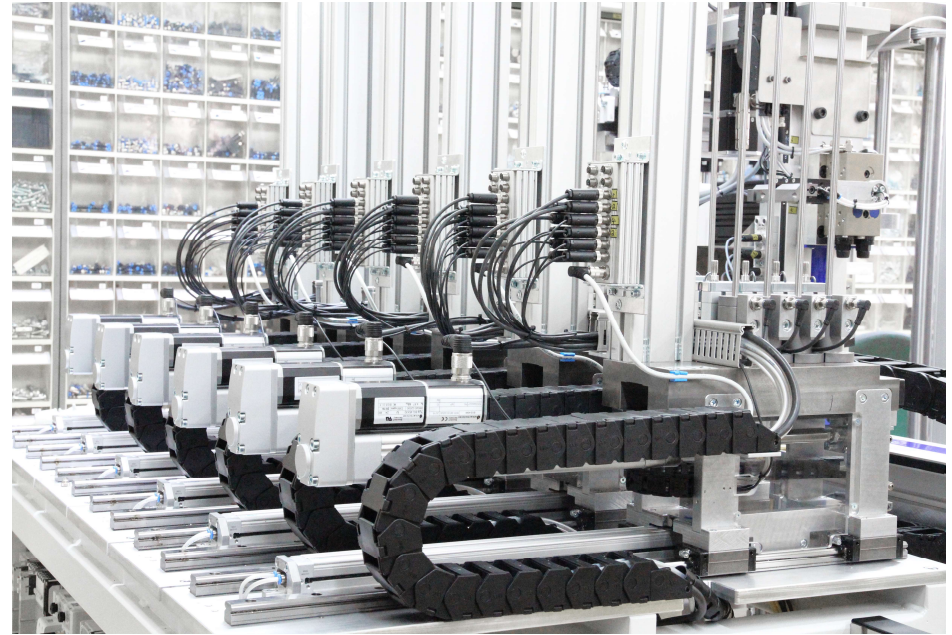
- » Goods to person robotics
- » Handling within car production



Solutions Solved with Dunkermotoren

Application examples solved:

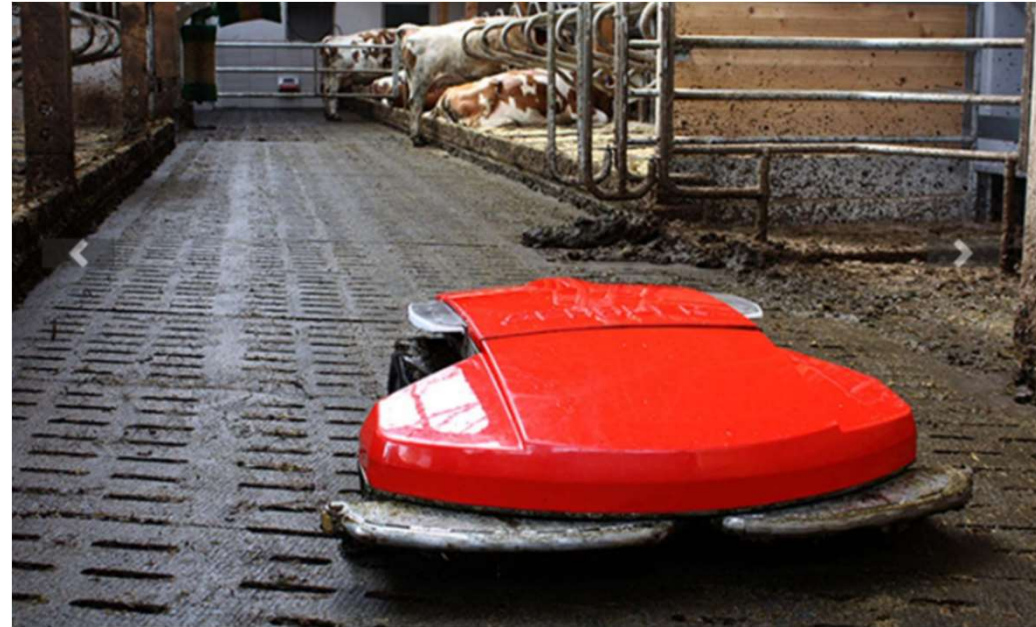
- » Goods to person robotics
- » Handling within car production
- » Replacing pneumatic actuators



Solutions Solved with Dunkermotoren

Application examples solved:

- » Goods to person robotics
- » Handling within car production
- » Replacing pneumatic actuators
- » Agricultural robot for barn management



Solutions Solved with Dunkermotoren

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- » Agricultural robot for barn management
- » Railway gates, boarding gates



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- » Goods to person robotics
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- » Replacing pneumatic actuators
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- » Railway gates, boarding gates
- » Surgery tables



Solutions Solved with Dunkermotoren

Application examples solved:

- » Goods to person robotics
- » Handling within car production
- » Replacing pneumatic actuators
- » Agricultural robot for barn management
- » Railway gates, boarding gates
- » Surgery table
- » AGV and AMR



Micro-Drive Product Support

Support for Micro-Drive Products

- » Personal support by sales team available in EU, Asia and US
- » 1 hour, more in depth training session (online at the moment)
- » Technical information which is product related such as
 - » General technical data from catalogue and website
 - » 2D-drawings
 - » 3D-models of every article no. available for the Micro-Drive
- » Selling pricelist for projects
- » Special SIEMENS discount for small quantities
- » Application support
 - » Via telephone also with customer
 - » Visit together with SIEMENS for application support
 - » Support for customisation of Dunkermotoren products
- » Drive configuration via SIEMENS TIA Selection Tool (Micro-Sizer)



Dunkermotoren – Additional Information

Virtual exhibition booth

Experience our new Product Highlights



Visit our Online Shop

View our range of quick build products



‘Dunker Inside’ Company Video

See where our solutions are installed





Thank You!

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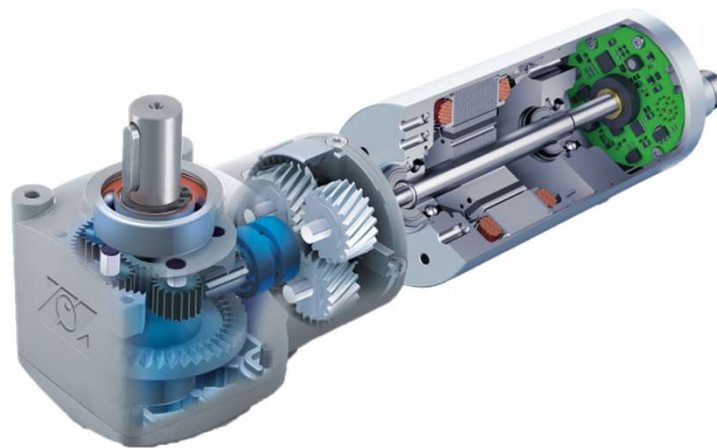
Drive Technology – SIMATIC Micro-Drive

10/06/20

Helen McHugh

ebmpapst

the engineer's choice



Topics Covered

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1. Company Overview
2. Product portfolio
3. Siemens Micro-Drive Partner
4. Applications / Case Studies
5. ebm-papst UK Ltd - Contacts

Core Competencies

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Perfectly harmonized core competencies

A world market leader ebm-papst is renowned for its engineering, innovation, and quality.

Building on our success as a valuable, sustainable and fair partner for our customers, and our suppliers.

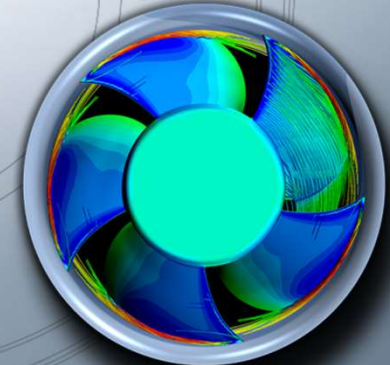
Motor Technology



Electronics



Aerodynamics



ebmpapst



- 29 production sites
- 48 sales offices

ebm-papst in figures

(financial 18/19)

€ 2,185 million
sales

15,058
employees

€ 108 million
R&D expenditure

76%
International sales

€ 131.8 million
capital investment

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Research & Development
Technology leader based on innovation

ebmpapst

the engineer's choice

> 700 engineers and
technicians worldwide

Innovation
based on inspiration
and simulation

108 million euros
R&D expenditure

Best partner
Development of customer-
specific solutions

Innovative *aerodynamics and drive engineering*

ebmpapst

Perfect system solutions for our markets

the engineer's choice



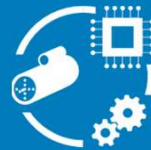
Refrigeration &
Air Conditioning



Industrial &
Ventilation
Technology



Industrial Air
Technology



Industrial Drive
Technology



Automotive



Household
Appliances



Heating
Technology



Mulfingen



St. Georgen



Landshut

Industrial Drive Technology Modular System

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Product Portfolio

- ☐ Drive Motors
- ☐ Transmissions
- ☐ Encoders and Brakes
- ☐ Electronics (hardware & software)
- ☐ Commissioning & Service tools



Modular System

Industrial Drive Technology

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Motors

Type	BLDC internal rotor motor	BLDC external rotor motor	DC internal rotor motor
Nominal power Nominal torque Size	ECI up to 750 W up to 1.8 Nm Ø 42 up to 80 mm	VD / VDC-Motor up to 125 W up to 0.3 Nm Ø 32 up to 68 mm	BCI-Motor up to 100 W up to 0.3 Nm Ø 42 up to 63 mm
Features	High service life Excellent motor dynamics High power density High efficiency – up to 90% High overload capacity	High service life Excellent smooth operation Very compact design	Economic motor High starting torque

Gearheads

Type	Planetary gearhead	Spur gearhead	Crown gearhead
Performance range Reduction Output power Nominal torque	3 types up to $i = 3468 : 1$ up to 500 Watt up to 70 Nm	2 types up to $i = 2136 : 1$ up to 250 Watt up to 30 Nm	2 types up to $i = 289 : 1$ up to 250 Watt up to 40 Nm
Features	Very high service life High radial loads High pitch diameter Low Noise	High service life Robust design	High efficiency Compact design

SIMATIC Micro-Drive

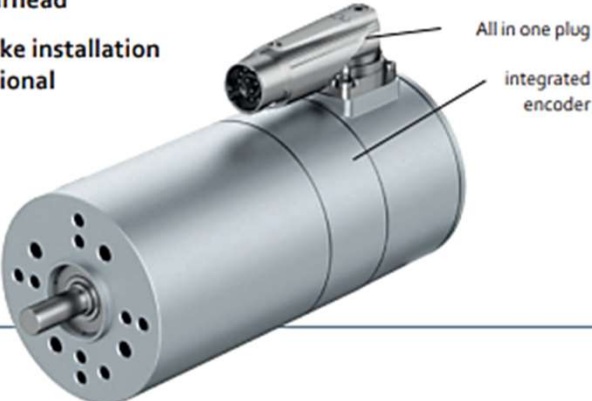
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ECI-Motor with iQ-Encoder Technology

Feature / function	Benefit
3-phase, electronic commutated internal rotor with heavy-duty magnet	+ High power density in the smallest installation space
Rotor position monitoring via hall sensors	+ High overload capacity
Winding insulation - insulation class E	+ Long service life
Protection class from IP 54 to EN 60 034-5	+ Excellent smooth running
Different motor types combinable with planetary gearhead	+ Industrial-grade all in one plug (rotatable)
Brake installation optional	+ Self-lockable quick-release connector
	+ Simplified project planning via storage of motor data in the TIA-Portal
	+ Automatic recognition of the drive components via electronic data sheet in the motor
	+ Informative system diagnosis notifications
	+ Quick and easy start-up
	+ Motor temperature detection and evaluation



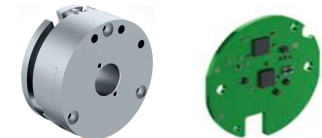
SIMATIC Micro-Drive

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Product Matrix motors for SIMATIC MICRO-DRIVE

Brushless internal rotor motors ECI		ECI-42.20-K1	ECI-42.40-K1	ECI-63.20-K1	ECI-63.40-K1	ECI-63.60-K1	ECI-80.40-K1	ECI-80.60-K1
U _N	VDC	24	24	24	24	24	24	24
		48	48	48	48	48	48	48
M _N	mNm	110	220	360	670	880	1 200	1 800
P	W	46	92	150	280	370	509	754
n _N	rpm	4 000	4 000	4 000	4 000	4 000	4 000	4 000
I _N	A	1.30	2.60	4.50	6.50	8.50	12.0	18.5
d	mm	42	42	63	63	63	80	80
Motor Feedback								
K1 (Hall sensor system)		X	X	X	X	X	X	X
Siemens iQ-Encoder		X	X	X	X	X	X	X
Brakes								
Hold brake (quiescent current)		X	X	X	X	X	X	X
Gearheads								
Planetary gearheads PerfomaxPlus 42.1		X	X					
Planetary gearheads PerfomaxPlus 42.2				X	X	X		
Planetary gearheads PerfomaxPlus 63.1				X	X	X		
Planetary gearheads PerfomaxPlus 63.2				X	X	X		
Planetary gearheads PE080							X	X
PDC (ProfiDriveControl)								
PDC 100 / 100F / 100FIO		X	X					
PDC 1000 / 1000F / 1000FIO			X	X	X	X	X	X





Medical

Examples

- X-Ray equipment
- MRI Scanners
- Patient positioning
- Patient Lifting
- Laboratory Equipment
- Dosing Pumps

Key Features

- Compact design
- High power density
- Accurate adjustment
- Controllability
- Reliability / Safety
- Low Noise



Intralogistics

Examples

- Transfer Automation
- Storage & Retrieval Systems
- Shuttles
- Roller Drives
- Racking Systems

Key Features

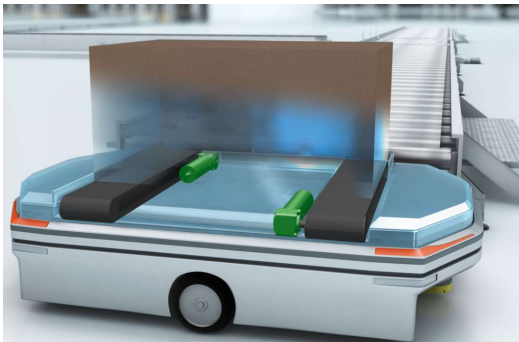
- High power density
- Rapid response
- Dynamic
- Accurate adjustment
- Controllability

Automated Guided Vehicles



Examples

- AGV's
- AMR's



Key Features

- Compact design
- Lightweight
- Energy Efficient
- High power density
- Controllability
- Safety

General Automation



Examples

- Process Automation
- Robotics

Key Features

- High power density
- Controllability
- Accuracy
- Reliability
- Safety

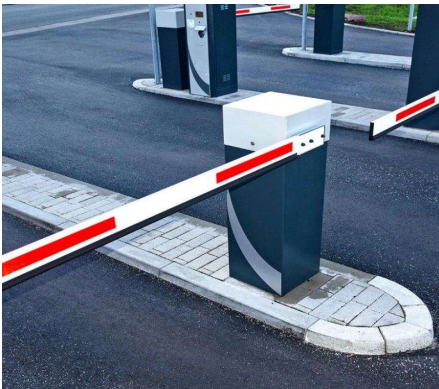
Access Control

Examples

- Entry Systems
- Access Barriers
- Access Gates
- Automatic Doors
- Ramps

Key Features

- High power density
- Smooth Operation
- Accuracy
- Reliability
- Safety



- Sales & Warehouse
- Laboratory / Testing
- Design Engineering
- Manufacturing & Assembly
- Education / Training

IDT Team

- | | |
|----------------|----------------------------------|
| • Helen McHugh | Divisional Director |
| • Ziaf Hussain | Business Development Manager |
| • Simon West | Project Engineer |
| • Clare Foster | Sales Support / Order Processing |





Thank you for your attention

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