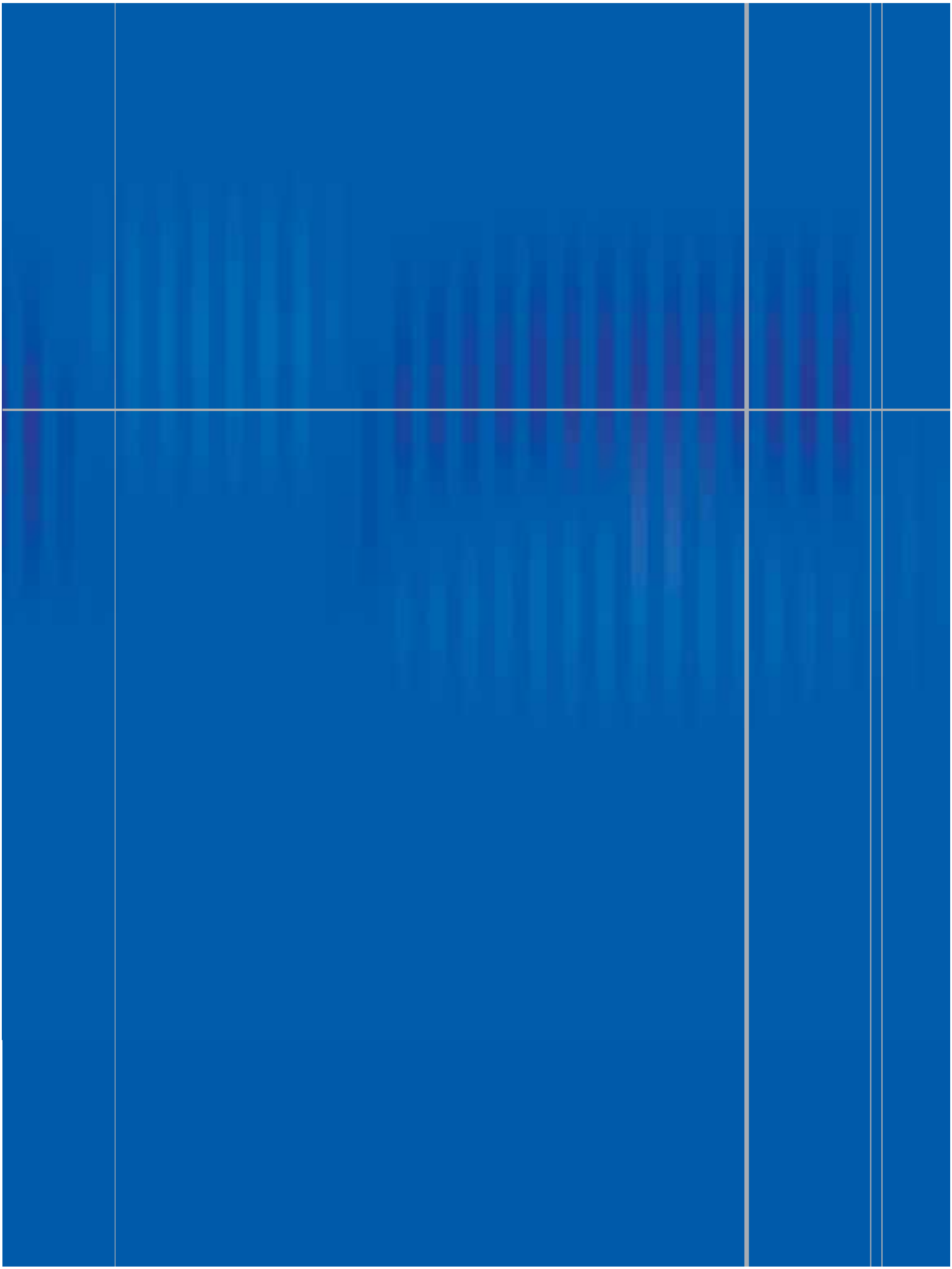
Ideas *in motion*

Drive technology and automation

Lenze



»The best machines and production facilities around the world use Lenze.«

About Lenze

The drive and automation technology specialist

In Germany, we are one of the most innovative companies in our sector. We employ around 3000 employees worldwide, of which more than 300 work in research and development on products, solutions, systems and services for drive tasks in machines and systems. Our headquarters are located in Hamelin, Germany, where the company was founded by Hans Lenze in 1947.

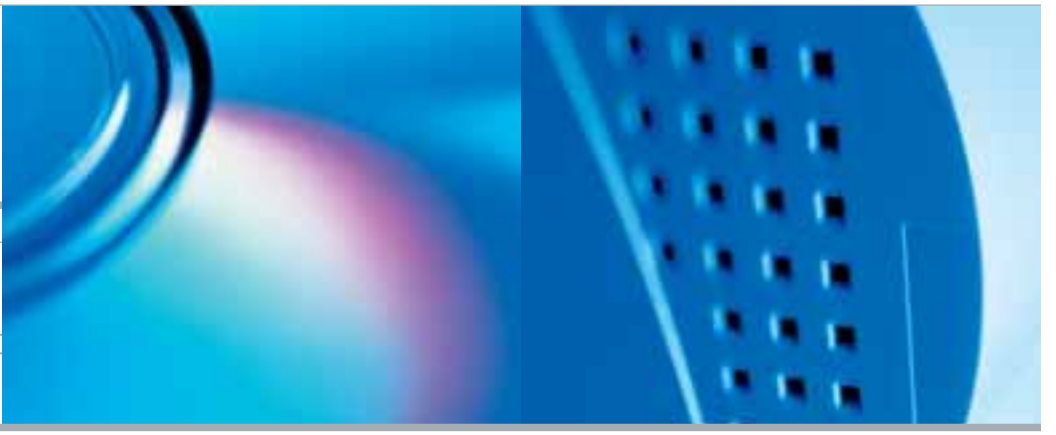
As a family business, we are independent. All operational units are set up as flexible, medium-sized companies under the Lenze AG umbrella. This gives us the room to manoeuvre that we need. The world is our market, which is why we now have a presence in some 60 international locations. Our largest sites are in Aerzen and Extertal (Germany), Asten (Austria), Shanghai (China) and Uxbridge (USA).

Lenze is a limited company, but its corporate culture is still heavily influenced by the spirit of a family business. The sense that each individual is really valued is ever present. Our employees distinguish themselves through their high level of commitment and are known for their excellent advisory skills.

Our products

Our research and development focuses on making our products easy to operate and, therefore, extremely usable. This is an approach from which our customers certainly benefit. Our products have a modular structure, are suitable for numerous applications and are able to grow in line with your requirements. See for yourself.

You can find the latest information about our company and our product range online from www.Lenze.com.



Drive solutions

Good ideas for increased productivity

Our drive systems improve machine performance. We do not focus on individual drives, but on complete drive solutions. These solutions are designed for use in materials handling and conveying technologies, all automotive industry processes, robotics, a wide variety of packaging machines and many other applications too.

Our high-performance, reliable products are based on established standards and are user-friendly. They take the requirements of modern engineering into account:

- Machines and systems are now required to perform considerably more tasks than in the past and their drive tasks need to be executed quickly and flexibly.
- Generally speaking, customers from all sectors of industry expect to be provided with standardised solutions that are easy to use and can be adapted to their individual needs.

Our many years of experience go into our preconfigured solutions, which form the basis for quickly and successfully implementing innovative machine and system concepts to deliver increased productivity.

For us, the drive solution is paramount. For this reason our range is complemented, where necessary, by a specially selected range of partner products which meet the same high quality standards as all Lenze products.

A drive system consists of the following components:

- The inverter, which transfers electrical power from the mains in a controlled manner, thus controlling the drive. A distinction is made between open-loop speed control without an encoder (frequency inverter) and precision closed-loop speed control with an encoder (servo inverter).
- The electric motor, which converts electrical power into mechanical power
- The gearbox, which adapts the mechanical power of the motor in line with the machine. It reduces speed and increases torque.

In an automation system, open-loop and closed-loop drive control occurs on three function levels:

- Logic – Sequence control, PLC functions
- Motion – Motion control, e.g. for positioning
- Drive control – Control of the drive's speed, torque and angle, for example

PC-based, controller-based and drive-based

The motion control can be PC-based or controller-based working from a central control system or drive-based working directly from the drive.

While a central concept is needed for coordinated three-dimensional movement – for example for robots –, a drive-based concept is very good for the following drive tasks:

- Positioning
- Line processes
- Winding
- Cross cutters/flying saws
- Cams

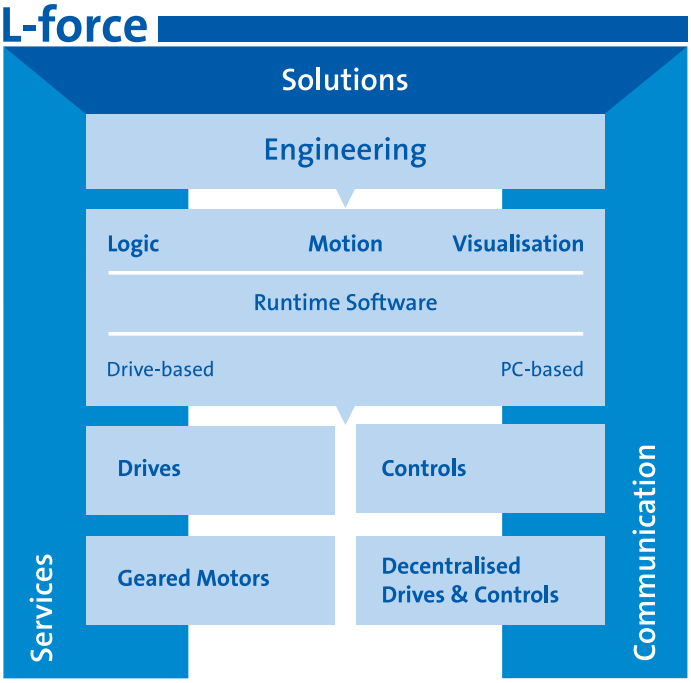
Intelligent drives also support drive-based logic functions for motion control.

L-force – *the solution*

Demands are increasing all the time. In the future, the most important challenges to be faced will be in the areas of cost efficiency, time saving and improved quality. Faster project planning and commissioning are expected together with higher power levels and production flexibility. The machines of the future call for a new way of thinking.

L-force is an extensive, uniform architecture which offers machine and system manufacturers comprehensive solutions that not only meet their current needs, but will also meet those of the future. L-force is our response to applications and sequences that are becoming more and more complex. It is based on an innovative, scalable range of products which cover all areas of drive and automation technology. Users benefit from the products' flexibility, usability and cost-effectiveness.

- Driven by innovation – new ideas for new possibilities
- Driven by flexibility – high scalability for individual solutions
- Driven by usability – simple solutions for even the most complex of requirements
- Driven by modularity – uniform products and solutions



An overview – *our products*

Software and automation components

Controls and industrial PCs

Frequency inverters

Servo inverters

Distributed drive technology

Standard three-phase AC motors, synchronous and asynchronous servo motors

Gearboxes and geared motors

Controls and industrial PCs – *powerful and robust*

Our portfolio includes industrial PCs and controls which you can use, together with our drive products, to build a complete machine control system consisting solely of Lenze components.

Drive control Drive PLC

The Drive PLC drive control provides an inverter network with additional control functions and is freely programmable in accordance with IEC 61131-3. Drive PLC supports numerous fieldbuses and expansions and has been specifically designed for combination with Lenze frequency inverters.

ETC Motion Control

For coordinated control of between 2 and 64 axes, we can supply the ETC system in two functional versions:

- As a CNC path controller meeting the requirements of DIN 66025
- As motion control meeting the requirements of PLCopen

Both versions are freely programmable in accordance with IEC 61131-3. The ETC Motion Control is combined with the multi-axis servo controllers of the ECS series.

PC-Based Automation

With PC-Based Automation, we can provide you with PC-based motion control. This combines the functions of machine control in a compact and harmonised system. All the control (logic) and movement (motion) tasks can be carried out on the basis of the real-time capable Windows® CE operating system. L-force Logic & Motion is optimised to the 9400 Servo Drives and ECS – the powerful VisiWinNET® is used as visualisation. Our robust, hard disk and fan-free industrial PCs provide the hardware basis. Thanks to the openness of the Ethernet, PC-Based Automation can be easily networked in higher-level systems – remote maintenance is then child's play, right up to the field devices.

I/O system

We supply an I/O system for integration of other process signals into our drive and automation systems:

- The compact IP20 I/O system with eight to 32 I/O channels
- The modular IP20 I/O system connects up to 32 I/O units

Both systems contain the Lenze system bus (CAN).

Drive PLC

ETC Motion Control

I/O system

Industrial PCs

We offer a comprehensive range of robust industrial PCs whose computing power and equipment can be individually configured. We also provide suitable TFT displays of up to 19 inches.

Control cabinet PC

Our modern control cabinet PC systems are the latest generation of industrial PCs. They are suitable for use as industrial servers or control room computers.

Embedded Line

These computers have been designed for mounting in control cabinets, the casing of machinery or other types of mounting cut-out. They combine high computing power with a robust structure.

Command station

This stand-alone command station is fully protected against dust and splashed water (IP65 enclosure). Individual operator concepts can be implemented for an extremely wide variety of application ranges.

Control cabinet PC

Embedded Line

Command station

A true automation system – *software, communication and much more*

Engineering software

Fast, reliable project planning and commissioning require high-performance engineering software. We have just the right software products. Global Drive Control (GDC) is an easy to understand and clearly arranged tool for the operation, parameter setting and diagnostics of drive tasks. The 9300 Servo PLC, ECS application and Drive PLC are programmed in accordance with IEC 61131-3 using the Drive PLC Developer Studio (DDS) software development environment. Our new L-force Engineer engineering software is designed to manage all drive and automation elements of a machine or plant from one central project navigation point. All software tools, ranging from configuration and commissioning to diagnostics, can be used and easily and intuitively operated from this point.

Visualisation

We offer a comprehensive range of visualisation products for user-friendly machine and system operation including everything from simple text displays and graphics displays to HMIs using Windows® CE.

HMI

The operating and display devices of the HMI range are integrated into the Lenze system world via the CAN interface. A uniform integrated development environment, the HMI Designer, allows the devices to be programmed and project planned for the task in hand. Depending on the application, users can select between text, graphics, simple touch displays or hand-held.

HMI with Windows® CE

Using the Windows® CE operating system and the VisiWinNET® Smart visualisation system, EL100 series devices can be used wherever increased flexibility and functionality are needed in the Windows® environment. In addition to the Lenze system bus CAN, the panels offer extra interfaces such as Ethernet, USB-A, USB-B and, as an option, an MPI interface.

Engineering software

HMI devices

VisiWinNET ®
visualisation software
Through this software, we provide a modular and scalable visualisation system that covers the entire bandwidth from local operation and monitoring to control systems with just one product.

Communication

Fieldbuses link control systems to drives and link drives to one another. All modern automation concepts are based on this uniform form of networking. We offer the following communication modules for all common systems:

- CANopen
- PROFIBUS
- AS interface
- DeviceNet
- INTERBUS

We also use the CAN system as a Lenze system bus for effective and low-cost networking of our components.

Ethernet
In automation technology, Ethernet is also now gaining in importance, allowing the factory to be continuously networked with the office.

We offer Ethernet communication in our control systems and in the new 9400 Servo Drives product range. We use ETHERNET Powerlink, PROFINET or EtherCAT for real-time capable Ethernet communication.

Remote maintenance
Remote maintenance allows operating data, parameters and programs to be accessed any time, any place, anywhere. This global monitoring of controllers facilitates preventive maintenance. The remote maintenance products we offer cover traditional data transmission via telephone lines, as well as via the Internet.

Visualisation software
VisiWinNet® Smart

Remote maintenance

Servo inverters – *drive-based intelligence*

If a position or speed has to be controlled precisely and dynamically, servo inverters are always the right choice. As well as actually controlling the drive, intelligent servo inverters can also perform distributed motion tasks, such as positioning, which relieves some of the load on the machine control or can even make it completely superfluous. We offer a co-ordinated range of products with a wide variety of uses, which also features appropriate servo motors. These products can perform almost all engineering drive tasks.

930 Servo Drives
This tiny low-voltage servo, which has an output power of 600 W and a supply voltage of 24 to 48 V, can independently control subprocesses in the machine. It is controlled via the integrated CAN bus.

940 Servo Drives
This compact servo controller features an integrated keypad and a pluggable memory chip for the drive configuration. This chip is called EPM and can be easily transferred to a different controller. Simple operation is the primary concern with this product. Besides precise speed and torque control, it can also perform positioning sequences independently. It has a power range of 0.25 to 2.2 kW.

ECS servo system
If multiple axes have to be moved quickly and in a co-ordinated manner, this servo system is in its element. It is optimised for use with highly-dynamic multi-axis applications, such as those required in handling devices or packaging machines. The ECS servo system is available in "panel-mounted", "push-through" and "cold plate" mounting types. It has a power range of 1.1 to 13.8 kW. All devices come with integrated safety functions and can be controlled via the CAN bus and many other fieldbuses.

930 Servo Drives

940 Servo Drives

ECS servo system

9300 servo inverter
These inverters are ideal for use in machines with a modular structure. Taking preconfigured standard applications as a starting point, individual expansions can be performed using freely interconnectable function blocks. Servo technology, Positioner, Cam Profiler, Register Controller and Servo PLC designs are available. This series can be used in the power range 0.37 to 75 kW.

9400 Servo Drive
9400 is the latest servo range and includes all the elements of a modern servo technology. Single Drive versions are available with a power range of between 0.37 and 370 kW and Multi Drive versions offering power ranges of up to 11 kW.

The standard applications are simple to use and solve various machine tasks while they can be adapted to the application in hand if required. Depending on your requirements, you can select between the StateLine and HighLine variants.

Alongside classic fieldbuses, we also offer the Ethernet, in the ETHERNET Powerlink real-time version for example. The modular safety engineering can carry out numerous drive-based safety functions. The mechanical concept allows you to quickly and easily install and start up drives – even when servicing is required.

9300 servo inverter

9400 Servo Drives

Frequency inverters – *for all power classes*

The speed of three-phase AC or geared motors can be precisely controlled using frequency inverters. In many cases where a motor is used, a frequency inverter is also advisable in order to adapt the speed to the process, provide improved energy efficiency or perform precise acceleration and deceleration processes. The possible uses of these electronically controlled drives are, therefore, practically unlimited. This is why we have developed a number of models that are ideal for use in a large number of engineering applications.

smd

This compact inverter is ideal for simple applications and its practical functionality is particularly impressive. Commissioning couldn't be easier - all you need are three on-board operator buttons and a handful of parameters. The settings are stored on a pluggable memory chip, the EPM, and can easily be transferred to a different inverter. The smd covers a power range of 0.25 to 22 kW.

tmd and tml

tmd and tml are the smd's big brothers and include vector control which facilitates more precise motor control. They also feature an integrated keypad and a pluggable EPM memory chip. The single-phase tml inverter works in the power range 0.25 to 2.2 kW, whilst the tmd covers the range 0.37 to 7.5 kW (three-phase).

smv

The design of the smv frequency inverters offers high degrees of protection, which allows them to be used outside a control cabinet. This assembly method is often required in larger plants, for example, in materials handling technology or for the operation of pumps and ventilators. The smv has a built-in operating unit and the pluggable EPM memory chip, and also offers the option of networking via a field bus. The smv features vector control for precise motor control and is available in the power range from 0.25 to 18.5 kW.

smd frequency inverter

tmd and tml frequency inverter

smv frequency inverter

8200 vector

The 8200 vector is multitalented, as it can be used in all machine and system automation applications. Precise vector control, an extensive range of options for fieldbus networking with the system control and a broad software scope enable a large number of frequency inverter applications to be performed. The compact type of construction saves space in the control cabinet and the drive can be operated via a pluggable keypad or via the PC. Inverters in the 8200 vector series are available in the power range 0.25 to 90 kW.

8400

The 8400 range is Lenze's new family of scalable frequency inverters. The 8400 BaseLine version is tailored for simple drive technology applications, such as those required in materials handling technology. The 8400 StateLine is designed for more demanding tasks and includes comprehensive options and interfaces for automation as well as optional integratable safety functions.

The 8400 HighLine also includes positioning control and is suitable for applications with moderate dynamics requirements that can be realised using standard three-phase AC current motors. All 8400 inverters are vector-controlled and are progressive in terms of drive performance and functionality. The 8400 BaseLine covers the power range from 0.25 to 3 kW, the 8400 StateLine and 8400 HighLine range from 0.37 to 11 kW.

9300 vector

This vector-controlled frequency inverter series is ideally suited to very demanding applications. Freely interconnectable function blocks mean that additional open-loop and closed-loop functions can be performed by the inverter, as well as the drive task itself. The drive is simply to operate, thanks to an easy-to-use user interface, whilst predefined basic configurations make commissioning faster. The 9300 vector has a power range of 0.37 to 400 kW.

8200 vector frequency inverter

8400 frequency inverter

9300 vector frequency inverter

Distributed drive technology – *machine-oriented switching and control*

In many machines and systems, the space available for control cabinets is tight. It is also advantageous for drives to be installed and tested whilst the system components are being mounted, in order to reduce the time required to assemble and wire the entire system. This is where distributed drive technology comes in. We have developed motor starters, inverters and motor control units with a high degree of protection for use in such applications.

Motor starter

starttec motor starter

These motor starters allow motors to be switched on and off without shocks or wear and can be connected via a variety of fieldbus systems. Reversal of the rotation direction and dual-motor operation are also possible. The starttec features IP65 degree of protection and can be installed either on or in the vicinity of the motor. It is designed for a motor current of 1.0 to 9.5 A.

Motor inverter

8200 motec frequency inverter

This robust frequency inverter is available with high IP65 degree of protection. It has the same functions as the 8200 vector model series and can be integrated in the machine automation system via a number of fieldbuses. Mounting and wiring are carried out by means of a carrier housing in which the drive electronics are installed. The 8200 motec covers a power range of 0.25 to 7.5 kW.

Servo Drives 930 fluxxtorque

This distributed servo drive can be mounted directly on the machine and up to 100 function data records can be saved on it.
It works in the power range 0.14 to 0.65 kW and is extremely accurate, simple to install and easy to clean.

starttec motor starter

8200 motec frequency inverter

Servo Drives 930 fluxxtorque

Motor control units

LCU motor starter

This distributed motor control unit can be used as a reversing starter and also for dual-motor operation. The integrated safety engineering ensures safe disconnection. Communication with the control is performed via the PROFIsafe fieldbus, including safety signals. The power range extends up to 3.0 kW.

LCU frequency inverter

The LCU is a decentralised inverter variant of the 9400 Servo Drives series. It has a high degree of functionality and modularity. Safety engineering and reliable communication via PROFIsafe are both integrated in the device. The LCU covers the power range 0.75 to 11.0 kW.

ICU motor control unit

This distributed motor control unit operates on the basis of inductive, i.e. zero contact, energy transfer. It is designed for mobile applications such as driver-less transport systems, bottom pallet systems, push / skid applications and inductive monorail overhead conveyors. Control signals are transmitted using infrared, radio or even inductive means. The ICU can handle different speed profiles and steering options. The ICU motor control unit can be produced as a single axis control system or for multiple drives. Its power ranges from 0.5 to 10 kW.

OCU motor control unit

This control unit is designed for use in monorail overhead conveyors, push / skid applications and for bottom pallet applications. As well as controlling the standard block section of a system PLC, it also controls the distance between vehicles. Various functions for the distributed vehicle control system can be integrated. One OCU can control one or more motors. Its power ranges from 0.5 to 10 kW.

LCU motor starter

LCU frequency inverter

ICU and OCU motor control units

Servo and three-phase AC motors – *dynamic and reliable*

We offer a uniform range of motors providing the following features for a wide variety of applications: high dynamic performance, compact construction, robust design, a number of brake mounting options, feedback systems and fans. They can also be directly fitted to our gearboxes. Depending on the application in question, our motors can be combined with frequency inverters or servo inverters, resulting in an ideal interplay between the various components.

- Servo motors and servo inverters form a single unit which provides high dynamic performance and accuracy.
- Three-phase AC motors work in conjunction with frequency inverters. They can also be used with servo inverters by installing a feedback system in all applications that require good, robust drive behaviour.

Standard asynchronous motors

13.750 standard asynchronous motor

The asynchronous motors in the 13.750 series have a compact design which allows for space-saving installation. These motors work in the power range 30 to 250 W.

13.710 standard asynchronous motor

The asynchronous motors in the 13.710 series cover the power range 12 to 90 W and are naturally ventilated. Omitting the fan means that they run quietly and allows these motors to be used in production areas where there is fluff or dust in the atmosphere.

MDXMA standard asynchronous motor

We offer three-phase AC motors in this series with the power range 0.25 to 22 kW. Their comprehensive options (brake, feedback system, fan) mean that they can be used in many applications that require precise control and a wide setting range.

13.750 and MDXMA asynchronous standard motors

SDSGS synchronous servo motors, SDSGA asynchronous servo motors

MCS synchronous servo motors

Synchronous servo motors

SDSGS synchronous servo motor
This compact, naturally-ventilated motor with a smooth, easy-to-clean surface achieves torques of 0.45 to 11 Nm.

MCS synchronous servo motor
This motor is all about dynamics. Its rated torque is in the range 0.5 to 51 Nm, with a peak torque value of 191 Nm. The fully encapsulated stator has been designed using innovative Single Element Pole Technology. High-quality magnetic materials and specially developed pole formats increase power density and ensure an optimum concentricity factor.

MDSLS servo spindle motor
This motor with an integrated ball screw is a mechatronic unit designed specifically for use in welding guns, presses and seaming applications. It can achieve a maximum feed rate of up to 250 mm/s and a force of up to 15 kN.

Asynchronous servo motors

The SDSGA asynchronous servo motors with torques of 0.27 to 5.1 Nm achieve excellent smooth running characteristics. Plug-in connections ensure fast mounting and easy servicing.

MCA asynchronous servo motor
This dynamic motor is characterised by its robust structure, small construction volume and low moments of inertia. The motors provide rated torques of up to 61.4 Nm and peak torque values of up to 300 Nm.

MDFQA asynchronous servo motor
These through-blown motors, with their generously dimensioned bearings, are designed for continuous operation at high torques. They achieve continuous torques of 75 to 480 Nm and peak torque values of up to 1600 Nm.

MDSLS servo spindle motor

MCA asynchronous servo motors

MDFQA asynchronous servo motors

Gearboxes and geared motors – *always the right drive*

Gearboxes serve as speed and torque converters. The ratio is used to adapt the speed and torque of the motor to the machine's operating point.

G-motion gearboxes and geared motors
All gearboxes are primarily used with integrated three-phase AC motors as geared motors. The drives' outstanding feature is the way in which they can be ideally adapted to different machines. This is made possible by a well-equipped modular gearbox/geared motor system which offers options for both the gearbox (shaft designs, flanges, pre-stage) and the motor (brake, encoder, fan, handwheel). Optimised teeth profiles and ground gears ensure low-noise operation and low backlash. All geared motors can be operated with inverters. This facilitates 87 Hz operation which increases power density significantly.

Geared motors up to 4 kW can be equipped with the starttec electronic motor starter to give a smooth starting performance.

In order to provide integrated speed control, geared motors up to 7.5 kW can be combined with the 8200 motec motor inverter.

GST helical gearbox/geared motor
This is a robust single or two-stage helical geared motor for general use in the power range 0.06 to 45 kW.

GFL shaft-mounted helical gearbox/geared motor
This is a two-stage shaft-mounted helical gearbox for use where space is at a premium in the power range 0.12 to 45 kW.

GKR bevel gearbox/geared motor
This is a two-stage aluminium helical-bevel gearbox in the power range 0.06 to 7.5 kW.

GKS helical-bevel gearbox/geared motor
This is a three-stage cast-iron helical-bevel gearbox in the power range 0.12 to 45 kW.

GSS helical-worm gearbox/geared motor
This is a cast-iron helical-worm gearbox in the power range 0.12 to 9.2 kW.

G-motion GST helical gearbox and geared motor

G-motion GKS helical-bevel geared motor with 8200 motec frequency inverter

G-motion ATEX

ATEX gearboxes and geared motors

We offer a comprehensive range of geared motors for use in potentially explosive atmospheres. The special G-motion series designs meet the requirements of ATEX categories 2GD and 3GD for dust and gas.

G-motion servo

All G-motion gearboxes in the power range up to 20.3 kW can be combined with MCS, MCA and MDFQA servo motors. This results in servo geared motors which can meet maximum requirements in terms of dynamics, positioning accuracy and durability.

GPA servo planetary geared motors

Lenze's servo planetary geared motors are characterised by a high overload capacity, high torsional stiffness and a low backlash of about three angular minutes.

G-motion EHB

GKK series monorail overhead conveyor geared motors for light load applications meet the requirements of VDI directive 3643 (C1 standard). They incorporate a mechanical disconnect clutch which can be used to interrupt the drive train between the driven shaft of the gearbox and the drive shaft of the motor. This makes it possible to move the carriage by hand if required.

Worm and planetary geared motors

SSN worm geared motor

SSN worm geared motors are very adaptable thanks to their mounting options with B14 flange, B14 hollow shaft and B3 foot mounting. The materials selected and the way in which they are machined ensure a long service life.

SPL planetary geared motors

SPL planetary geared motors feature smooth housings. The optimised design allows for space-saving installation and variable motor mounting using standard IEC sizes.

GKK monorail overhead conveyor gearbox

GPA planetary geared motor

SPL planetary geared motor

Services – *at your side all over the world*

We provide a complete and reliable package of services for our entire product range. The services we offer are based on the product life cycle – from installation and commissioning advice through to servicing, spare parts supplies and repairs. Our service specialists have extensive on-site application experience, which means they also have excellent practical expertise.

You can find comprehensive information about our products in our current catalogues and flyers, which are available as paper copies or online. Documents relating to the commissioning and mounting of our products can be found on our website under Services and Downloads.

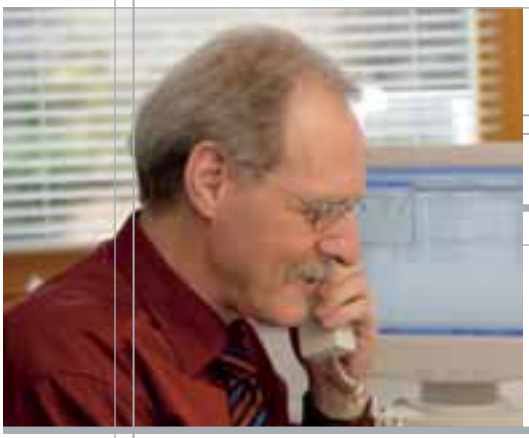
Helpline

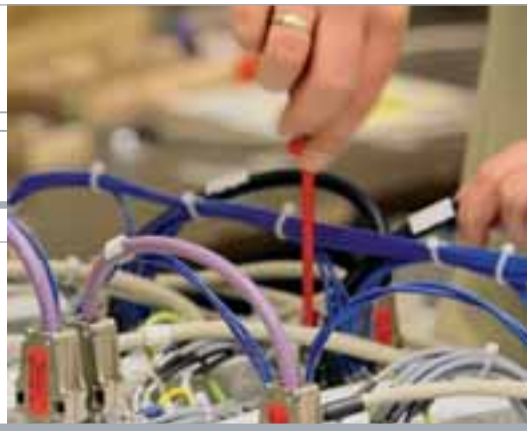
Our experts are there for you 24 hours a day and we can help you wherever you are. From over 30 countries you can ring 008000 24 hours (008000 24 46877) to find your nearest service centre:

- Diagnosis and fault elimination
- Spare parts supply
- Servicing and repairs

Product training

We will show you how to fully utilise the potential that your machines offer. We will teach you all you need to know in order to plan your project, to commission, operate and service our drive and automation technology during special product training sessions. You will benefit from the experience of our application engineers and develop the necessary confidence to run your system safely.





Our training programme, which covers both the theoretical and practical aspects of our drive and automation technology, is something to be proud of. We will advise you thoroughly and provide you with broad basic knowledge or specific expertise, whichever you prefer. You can find up-to-date information about our training programme on the Internet.

Application Knowledge Base

In addition to our comprehensive training programme, we also offer you access to our knowledge database, the Application Knowledge Base. At www.lenze.de/akb you will find all the information you will need to use our products efficiently and reliably:

- Technical notes on applications for Lenze products
- Product information
- Answers to frequently asked questions (FAQ)
- Software downloads

Services – *ideal for your application*

You too can benefit from our modular range of co-ordinated products and services.

Application/engineering

Our experienced engineers ensure right from the planning stage that the finished product will work exactly as you want it to. Our offer extends from the customised programming of tried-and-tested standard products through to the project planning and set-up of complex control panels:

- System selection
- Software engineering
- Applications

Installation/start-up

To ensure that everything works perfectly right from the word go, we take care of commissioning for you – from the individual drive components right through to the complete system solution:

- Checking of the installation
- Preparatory function tests
- Integration and parameterisation of drive components
- Trial run and final acceptance
- Personnel training

We make sure that your machines run safely and reliably.

After sales

You want your machine or system to provide high availability and consistently good production results. By making use of our expert service when it comes to repairing, maintaining and overhauling individual system components, you can ensure that your machine or system continues to deliver these desired results in the long term:

- Status analysis, preventive measures and stockpiling strategy
- Error analysis and fault elimination
- Spare parts supply
- Servicing and repairs

System technology/engineering

Our experts in electrical factory automation and drive technology will find the best solution for your requirements. Independent of any particular manufacturer, we will put together a productive drive or automation solution.

Advice/conception

- Drive/automation technology and process engineering
- System integration
- Open and closed-loop control, measuring, positioning

Development: hardware and software

- Creation of circuit diagrams using CAD (Eplan, AutoCAD, for example)
- Software creation for PLC, PC and host systems
- Operating, monitoring, visualising (WinCC, Procon, for example)
- Networking (CAN bus, PROFIBUS, Ethernet, DeviceNet, for example)

Switchgear engineering

One-off and series production in accordance with

- VDE, EN, UL, ATEX regulations
- EMC Directive and Machinery Directive
- Customer specifications

Mounting/commissioning/training

- Installation and cabling of switchgear on site
- Global commissioning of the switchgear
- Briefing and training of operating personnel
- Service provided by highly-qualified technicians and engineers

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