

MAKING MODERN LIVING POSSIBLE

Danfoss



VLT® Solution

The meat industry relies on VLT® drives



Built to last

VLT® drives are built to last – even when it gets hot. VLT® drives are manufactured to the highest quality standards and are built to operate trouble-free in ambient temperatures of up to 50°C, year after year. This guarantees maximum uptime and lowest possible cost of ownership.





Rugged and robust field enclosure
A range of drives designed for installation in the process environment with no need for any additional enclosure including within wash-down areas.

The preferred drives provider among leading meat companies globally

Since 1968, when Danfoss launched the world's first frequency converters, VLT® has been the preferred brand within the meat industries.

Largest installed base

Danfoss has an installed base of variable speed drives in the meat & poultry industry globally that is larger than any other supplier and we are committed to maintaining this position.

Expert knowledge

Our expert knowledge of meat processing equipment, packaging machinery and utilities within all types of meat and poultry manufacturing plants, has helped us design and build a portfolio of products for applications such as:

- Grinders
- Mixers
- Cutters
- Brine injectors
- Tumblers
- Decanters and separators
- Conveyors

- Boilers
- Smokers
- Slicers
- Clipping
- Thermoforming
- Packing rooms
- Refrigeration
- Compressors
- Condenser fans
- Evaporators

Excellent VLT® features

- Up to 150 m screened motor cable, and up to 300 m unscreened, EMC compliance
- Operates up to 50° C ambient temperature
- IP66/Type 4x versions for wash-down areas
- Safe stop function for safety category 3 – feedback not required
- Integrated harmonics filter as standard
- Integrated RFI filters
- CTC coating available (3C2 standard, 3C3 optional)
- Real side-by-side mounting
- USB communication

- iF Awarded user interface
- Standard platform – if you know one, you know them all

Up to 150 m between the drive and the motor

The basic design of VLT® drives allows for up to 150 m of screened motor cable – without disturbing other electronic equipment. This allows the VLT® to be installed in a central control room – far away from some of the most remote variable speed conveyors and machines in a modern meat processing plant.

Peace of mind

You will find our dedicated sales and service staff all over the world providing 24 hour service. They are always ready to support you with commissioning assistance, technical training and troubleshooting. They can even – in many countries – offer a cost-efficient package of DrivePro service agreements to avoid any surprises to your maintenance budget.



Danfoss Drives received the Frost & Sullivan Award for Product Innovation 2006 for the unique VLT® AutomationDrive series.



The new VLT® series local control panel (LCP) was given the international iF design award in 2004. The panel was chosen from a total of 1,003 entries from 34 countries in the category "interface in communication".

Improved process control using less energy in the meat and poultry industry



Marinater



Emulsifier



Brine injector



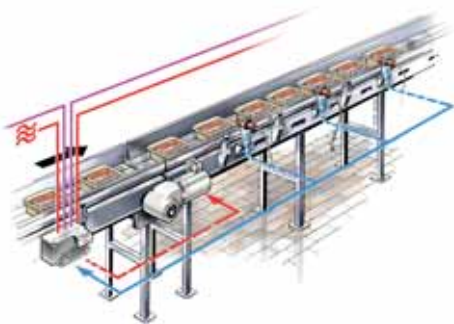
Slicer



Mixer/grinder



Cutter



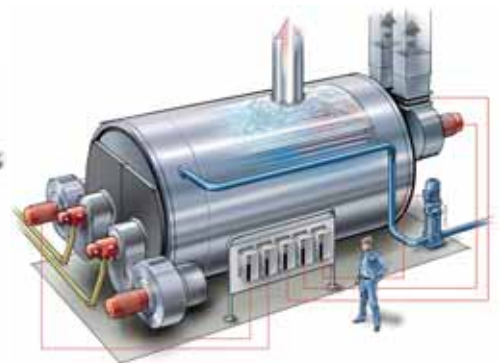
Conveyor



Decanter/separator



Pumps



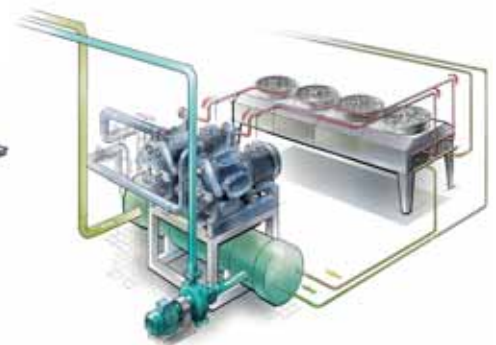
Boiler



Tray sealer



Thermoformer



Refrigeration



Packer



Waste water treatment

For better products

Grinders, mixers, cutters, injectors, tumblers, conveyors and slicers are precisely and reliably controlled by VLT® drives. VLT® drives come in all power sizes and offer all the features required to optimise the production of meat products.

For energy saving

Heating, cooling, pressurised air, water and waste water are all Danfoss core competencies. Dedicated VLT® drives series offer dedicated features for all these applications.

Energy savings, less waste, better product quality

Wherever shafts turn, VLT® drives provide optimum control by optimising the voltage and frequency to the motor according to the actual demand for power, speed, torque, pressure, flow etc. A change of recipe merely requires a shift between pre-configured set-ups minimising downtime during job changes.

VLT® Bring value to your meat processing by:

- Optimising and often reducing energy consumption
- Minimising waste
- Improving quality and product consistency

VLT® drives have several dedicated features that optimise production while protecting the drive, motor and equipment.

Pipe Fill Mode

Dedicated control algorithms to quickly fill and pressures the system without the risk of stressing mechanical parts.

Dedicated Operating Systems
Synchronizing and positioning capability to ensure food traceability standards are maintained throughout the production train.

Compressor control functions
Optimise the efficiency of refrigeration and air systems allowing dynamic adaption to widely varying production demands.

Two-step ramps

The pump quickly reaches minimum speed and fills the system without stressing the valves.

Flow compensation

Flow resistance is dependent on flow speed. The drive will reduce the pressure at low flows to save energy.

Built in EMC filters, DC chokes and a direct Category 3 SafeStop input makes VLT® drives a safe choice. The advanced motion control options for positioning and synchronization makes for flexible production set-up.

VLT® drives come in the full enclosure range from IP 00 to IP 66/Type 4x. A variety of performance classes from simple speed control to high performance are available.

The MCT 10 Software makes it easy to program and set parameters for even large systems

Energy optimisation

VLT® drives feature Automatic Energy Optimisation, ensuring optimal magnetisation of the motor delivering improved electrical efficiency.

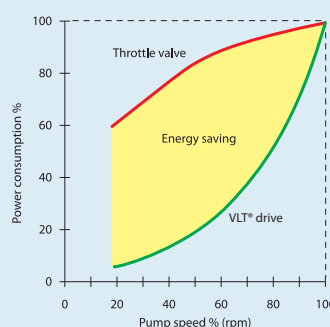


Danfoss provides a broad range of IP 66/Type 4x enclosed drives suitable for mounting in production areas, exposed to humidity, dust and frequent washdowns.

Bus control

Automation means less waste and better process control. VLT® drives handle the most common bus protocols in the industry while integrating seamlessly into the overall control system. Remote input and output blocks adds further design efficiencies.

Comparison of energy consumption



Energy savings using a VLT® drive are achieved even with a modest reduction in speed.

For centrifugal pumps, power consumed is directly proportional to the cube of the speed:

$$\%P = (\%rpm)^3$$

Therefore a small reduction in pump speed results in a large reduction in energy consumption.

Even a 20% reduction in pump speed results in almost 50% reduction in energy consumption.



Brine injector features	Benefits
IP 20 to IP 66/Type 4x	Suitable for wash-down areas
Optional build-in MCO 305 (electronic cam)	Optimal functionality
Flux vector control	Optimal factory efficiency
Safe Stop	Optimal factory safety



Marinater features	Benefits
High motor torque (flux vector performance)	Tolerant against load chocks
IP 20 to IP 66 /Type 4x	Suitable for washdown areas
AC brake	Dynamic braking without brake resistors
Coated circuit boards	Resistant against chemically cleaning agent and salty environment
Built-in Smart Logic Controller	Stand alone control No need for separate PLC
Graphic display	More information in different languages
Constant torque mode	Quality in process control



Emulsifier features	Benefits
High starting torque	Soft start/stop, save cost on wear and tear
Torque control	Gearbox failure elimination
Variable speed operation	Reduced maintenance cost



Reliable and high quality handling

Critical hoist operations

Hoist operation is critical. Hoists must be able to overcome the high torque demand. VLT® drives ensure this.

Avoid torque damage

Damage from over-torque can be avoided via online monitoring through fieldbus with a built-in fully adjustable time and torque electronic shear-pin.

Easy change of set-up

The electronic cam disc operation permits a simple change of setup for different packaging types.

Permanent magnet motor operation

VLT® drives operate permanent magnet motors for accurate positioning and synchronising control and energy efficiency.

An algorithm in the VLT® Automation-Drive can manage permanent magnet motors in closed-loop control with an external encoder attached to the motor. It communicates via ENDAT, Hyperface, Resolver or incremental encoders.

True low-torque

With dynamic braking and the unique true low-torque feature, VLT® drives are ideal for marinaters, mixers and tumblers in either direction.

Reliability is critical

The internal speed controller provides stable and accurate operation of the machine.

Short downtimes are provided by a AC brake function that absorbs the energy without the use of brake resistor.

VLT® drives provide higher reliability of operation.

For packing lines

For packing lines, conveyor start profiles from the packing machines are very critical.

Feeds even frozen material

High torque at low speed benefits cutters. This prevents the drive from tripping when feeding frozen meat into the cutters and grinders.

Longer motor life

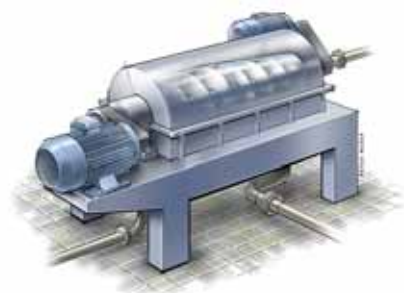
Motor at stop function allows motor to be maintained at run temperature during standstill eliminating the need for auxiliary heaters to avoid water leakage.

Motor Check

Check for motor faults, connection quality and field isolator status at standstill without auxiliary equipment



Cutter features	Benefits
Dual rotation	Less switchgear No gearbox above the product
Variability of speed	Flexibility of curd
High Torque	Central agitation Start with frozen material



Decanter features	Benefits
Accurate torque control	Suitable for back drive applications
Load sharing through common DC-bus	Energy savings through regenerated energy
Variable speed and torque	Flexible process control and optimisation
Flux motor control	Robust against load shifts
Controlled start and stop	Reduced maintenance cost
AC brake	Dynamic braking without brake resistor



Mixer/Grinder features	Benefits
High torque	Save cost – no need for over-sizing Better controllability of extrusion process
Small dimensions	Save space
Certified Safe Stop functionality	Saves external components
IP 20 to IP 66/Type 4x	For all operating conditions (central or decentral)
Coated circuit boards	Resistant against cleaning agents and salty environment
Built-in Smart Logic Controller	Stand alone control No need for separate PLC
Flux vector control open and closed loop	High start torque – no oversizing necessary



Accurate dosing and filling in packaging applications

VLT® drives fit for dosing

VLT® drives provide accurate and precise dosing for minced meat and for the filling of thermoform containers for semisoft or solid products. This goes for a wide variety of products that can be warm, hot, cold, semi-frozen, viscous, abrasive, particulated, chunky or free flowing.

Overall VLT® benefits are:

- Rapid changeover
- Easily cleaned
- Reduced maintenance
- Ease of operation
- Connectivity
- Load sharing
- Kinetic backup
- Bus communication
- AC braking
- PM motor function

Dosing

Control of flow with different viscosities requires optimum control and rapid response times.

Synchronisation and positioning

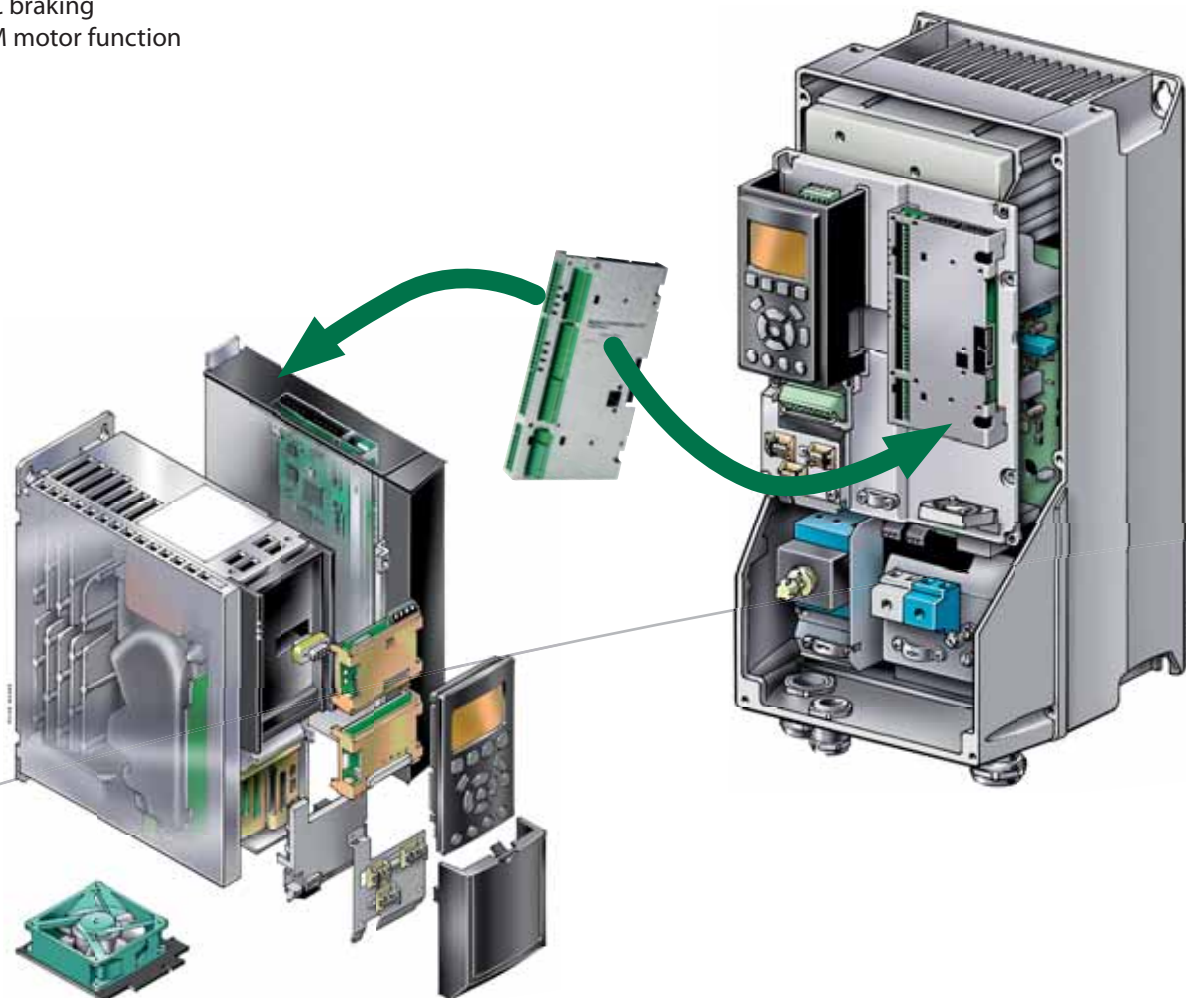
With VLT® drives' wide range of motion control options, they allow positioning, synchronising and cam control with almost any motor and feed-back system.

Whether you need an absolute or an incremental feedback system, VLT® drives offer innovative and easy to use motion control solutions.

VLT® Motion Control Option

VLT® Motion Control Option is an integrated freely programmable Motion Controller for VLT® AutomationDrive. It adds functionality and flexibility to the already comprehensive standard functionality of these drives.

The option is also available pre-programmed for synchronising or positioning.





Slicer features	Benefits
Optional build in MCO 305 (electronic cam)	High product quality
Aseptic drives	Easy cleaning, product quality
Multi setup	Reduced machine setup
Fieldbus	Permanent monitoring and documentation of capping
Design optimised for hygienic critical areas	Easy cleaning
Synchronisation	Avoid cap jams More flexible machine Less mechanical wear and tear



Tray sealer features	Benefits
IP 20 to IP 66 /Type 4x	For all operating conditions
Built-in MCO 305 (electronic cam)	Product and machine care production
Flux vector control	More flexible machine Cost reduction
Safe Stop	For all operating conditions
PM motor control	Factory efficiency Aseptic machine design



Thermoforming features	Benefits
IP 20 to IP 66 /Type 4x	For all operating conditions
Optional build in MCO 305 (electronic cam)	Synchronize and positioning
Flux vector control	More flexible machine Cost reduction
PM motor control	Factory efficiency Aseptic machine design



Precise and configurable speed synchronisation

VLT® drives provide optimum speed regulation between process stations and meet different torque requirements. Wide conveyors require low speeds and higher torques where narrow conveyors require high speeds and lower torques.

Single item conveyors require high speeds and high torques for quick starts.

Reduced bottlenecks

Weigh stations or detectors require vision systems, sensors and an intelligent freely programmable drive. Therefore product with faults detected are rejected. The sensor can give an input to the VLT® drive to count the number of units processed during a set time frame. If the number of units is less than is required for the next station, then the check station conveyor system is accelerated to meet the demand. The opposite occurs when the count gets too high, to reduce bottlenecks in the conveyor systems.

Fewer encoders

New VLT® drives provide open-loop positioning with high accuracy and minimum installation cost, so that encoders and encoder cables often can be omitted.

Less downtime

Adjustable ramps ensure that products stay in place during starts and stops.

Positioning functions ensure that containers are placed correctly in an inspection situation – regardless of production speed.

Less noise – less waste

Synchronisation features adjust conveyor speeds according to the overall production to prevent congestion, damage to product, noise and energy waste.

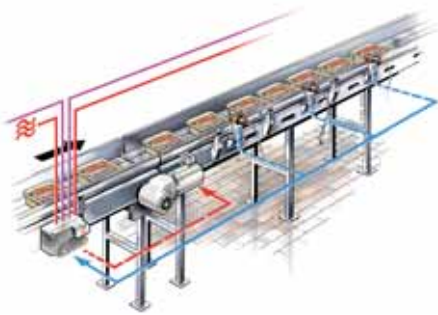
Overall VLT® benefits

- Line efficiency
- Prevents scuffing
- Reduced maintenance
- Gentle starts and stops
- Minimised noise

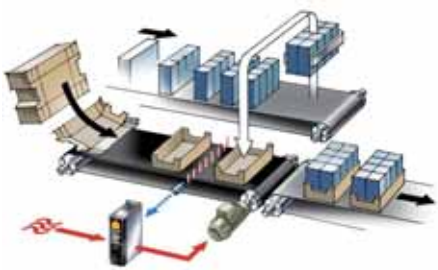
Fieldbuses available

- Profibus
- ProfiNet
- DeviceNet
- CanOpen
- Ethernet IP
- Powerlink





Conveyor features	Benefits
Central/decentral solutions	Plant layout design/retrofit flexibility
IP 20 to IP 66 /Type 4x	For all operating conditions incl. wash-down areas
150 m motor cables	Flexibility
Ramping	Protects fragile products
Coated circuit boards (optional)	Resistant against chemically cleaning agent and salt environment
Built-in Smart Logic Controller	Stand alone control No need for separate PLC
Graphic display with several languages	Usable globally
Safe stop function	Optimal safety, save cost



Loader features	Benefits
Coordinated operation	Less noise Easy line modulation No congestion
Multi-setup configuration, for multipack lines	More flexible lines Reduced time for line setup



Pallet conveyor features	Benefits
Accurate ramping	Protects bottles
Variable speed	Efficiency
AC braking	Dynamic braking without brake resistor



Fast and flexible packaging

No need for expensive servo systems

VLT® drives provide very fast accelerations even with high loads in packing machines.

With built-in synchronising and positioning control, VLT® drives make packing/unpacking machines extremely efficient and flexible so that when equipped with VLT® drives, expensive servo systems are unnecessary.

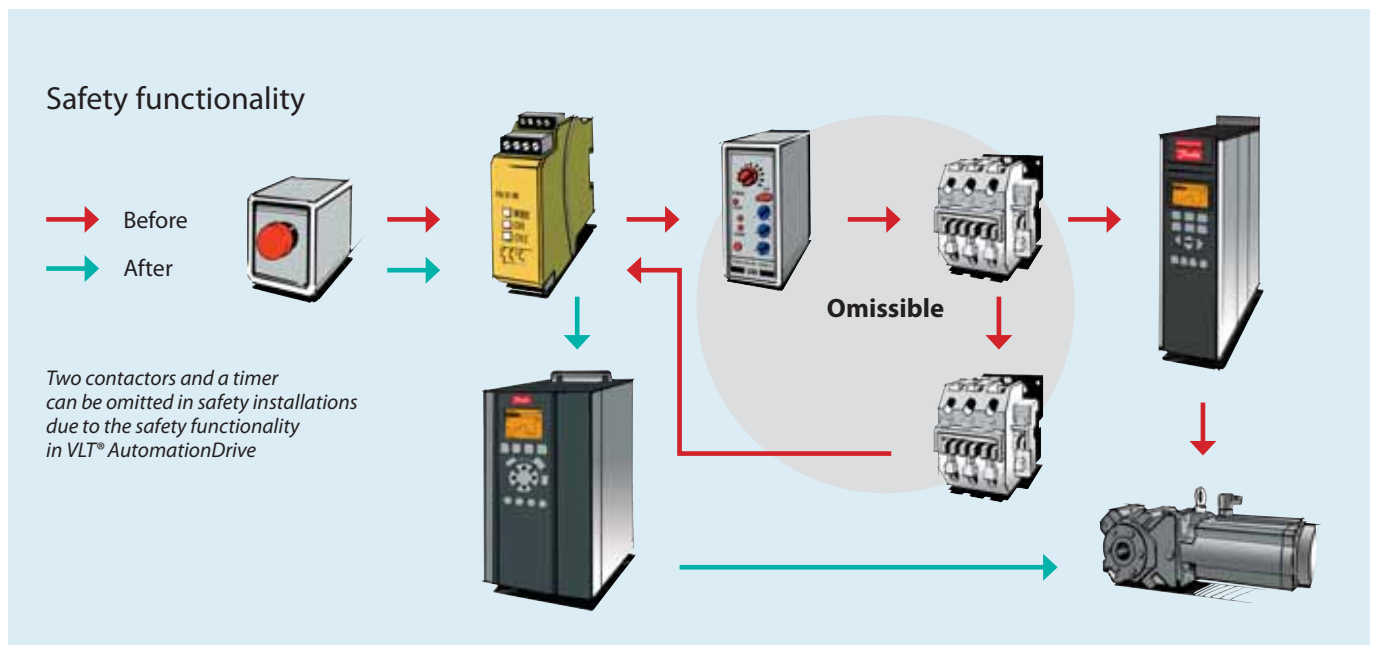
Replace mechanical systems and add flexibility

Wrapping requires precise positioning and synchronising. VLT® operated motors replace mechanical systems and add flexibility.

Optimise palletising

To move crates, for example from a pallet to a conveyor, requires precise stopping. Dynamic braking of the vertical operation with heavy load optimises the process and reduces mechanical wear.

Positioning, synchronising, and load estimation are features that make palletiser operation faster and more flexible.



One wire safety

The VLT® AutomationDrive comes as standard with the Safe-Stop functionality suitable for category 3 installations according to EN 954-1.

This feature prevents the drive from unintended starts by activating a safe stop. Terminal 37 can be used as "safe coast" for this purpose – the stop function satisfies Stop category 3 EN 60204-1.

No need for external components

Expensive and bulky external components can be omitted, wiring is considerably simplified, and production downtime is minimised with this solution. The safety related signals can be transferred via discrete signal wiring (in compact machinery) or via safe bus communication.



Packer features

Synchronisation/positioning features

Cam control

Benefits

VLT® drives can replace expensive servo drives

Fast operation
Flexibility



Wrapper features

Synchronisation/positioning

Safe stop

Benefits

Use of cams
Integrated positioning
Nonlinear synchronous motion
sequence on leading axis
Precision stop

No additional cabling
Manual shutdown of motors
VLT® drive is still functional



Palletiser features

Synchronisation/positioning features

Cam control

Benefits

VLT® drives can replace expensive servodrives

Fast operation
Flexibility



Optimise supply of water, heating, and cooling

In any industry – meat industry included – VLT® drives are employed to optimise water supply, heating, cooling, and other functions supporting the production.

Optimised compressor control

VLT® drives can optimise control of compressors, reduce energy consumption and provide constant pressure regulation.

Fewer starts and stops will reduce mechanical wear, and speed control is attractive when an air compressor is running for long periods at part-load. VLT® soft starters, high-power drives, AHF harmonic filters with built-in cascade controller option, DC coils, and PID controllers are applied.

Optimised boiler efficiency

VLT® drives optimise the combustion efficiency by controlling both forced draft and induced draft. The flow rate in the feed water is also controlled via VLT® drives. Overall energy consumption – electricity and fuel – is minimised.

Energy savings and comfort

Fans and compressors benefit from dedicated features in VLT® drives. With the “skip resonance” function you easily identify for the drive which frequencies to pass to avoid frequency noise and damage.

Smart Logic Control

The new VLT® drives have Smart Logic Control built in. With this feature you can make the drive react expedient on inputs and events and often replace PLC.

Optimise water and wastewater treatment

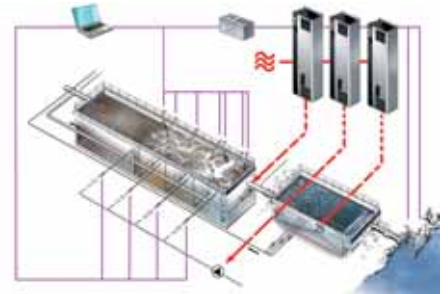
Danfoss Drives' long-term involvement within Water and Wastewater resulted in dedicated drives and features for water handling. The VLT® features improve system hydraulic performance and system efficiency.

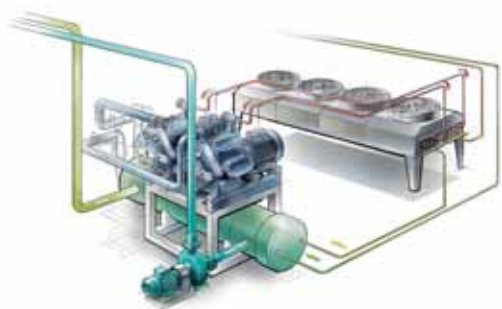
- Saves energy
- Saves commissioning time
- Saves auxiliary equipment
- Optimises pump control
- Optimises process in aeration tank

Pump Cascade Controller

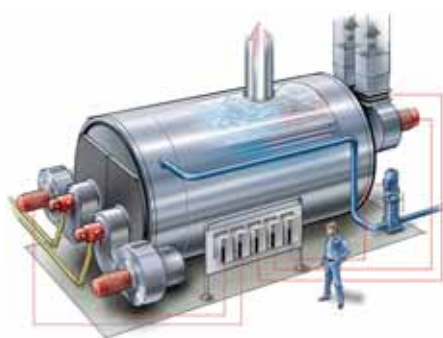
The Pump Cascade Controller is the most sophisticated controller on the market.

It distributes running hours evenly across all pumps, keeps wear and tear on individual pumps to a minimum and ensures that all pumps are in great shape.





Fan features	Benefits
Load dependent capacity control	Energy saved
Skip resonance	Noise reduction
Operate single fans as well as multiple parallel operating fans – or in cascades	Save installation cost
VLT® Pre-heat function	Eliminate anti-condensation heater



Compressor features	Benefits
Over capacity	No need for larger compressor/drive
Reduced current limit	Ensure functionality of cooling system Protect the application
Running at current limit	Extend the systems' capacity
Minimum starts and stops	Protect compressor Reduce energy consumption
Setpoint in temperature	Easy commissioning
Monitor running hours	Schedule maintenance
Electronic control	Less maintenance
Cascade control	Stable pressure

Boiler features	Benefits
Accurate speed control of blowers	Less energy consumption Reduced pollution Stable temperature
Electronic control replaces mechanical control	Reduced maintenance time/costs



Two concepts – two sets of benefits

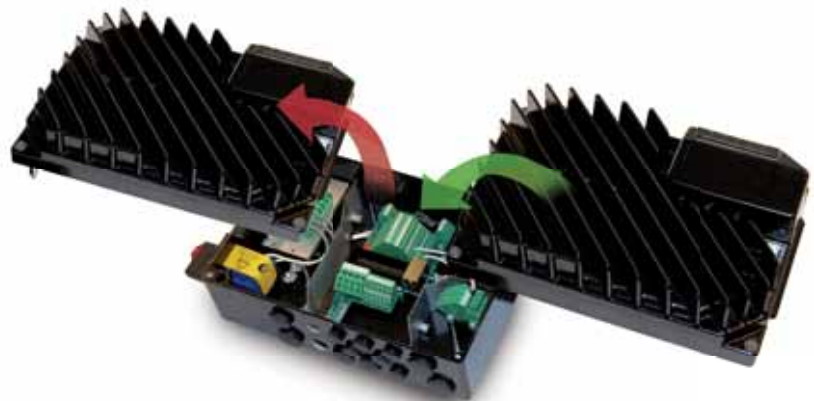
Whether to use central or decentral drives depends on the layout of the bottling plant, the distance from the control room to the conveyor motors and the installation cost for electrical cabinets and cables.

Decentral concept

Decentral drives are meant for de-located mounting, where the need for space-consuming control cabinets is eliminated. With the drives placed near – or directly on – the motor, there is no need for long screened motor cables.

One-box concept

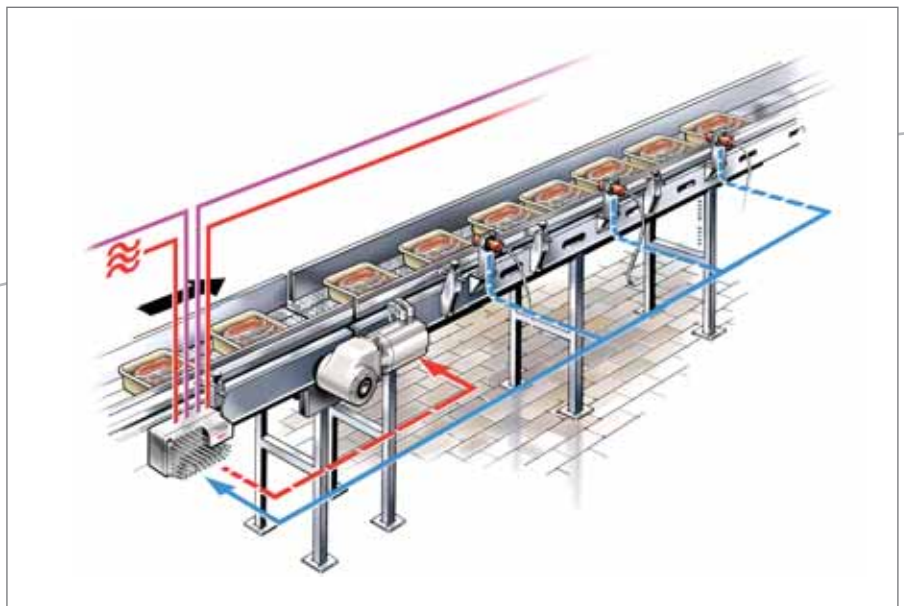
All options are built as part of the unit, reducing the number of boxes to be mounted, connections and terminations in the installation. Consequently labor costs in mounting hours and risk of failures are dramatically reduced.



Decentral features	Benefits
Special painting treatment and smooth surface	Easy cleaning; no dirt trap
Pluggable twin-part design (installation box and electronic part)	Easy and fast service
Adapts to any brand of motor and geared motor, induction as well as permanent magnet motors	Easy and flexible installation
Integrated power and fieldbus looping terminals	Cable savings
Set-up and controlled through pluggable control panel, fieldbus communication and MCT10 PC software	Easy commissioning



Danfoss provides a broad range of IP 66 enclosed drives suited for mounting in production areas, exposed for humidity, dust and frequent washdowns.



A smart, dedicated kit allows larger drives' enclosures to be mounted in Rittal cabinets so cool air removes 85% of excess heat without contact to the electronics.

Central concept

Traditionally drives are placed in control cabinets with other control equipment.

150 metre motor cables

The long motor cables, built-in EMC filters and excellent EMC performance supports the central solution.

50° C ambient temperature

Intelligent cooling solutions

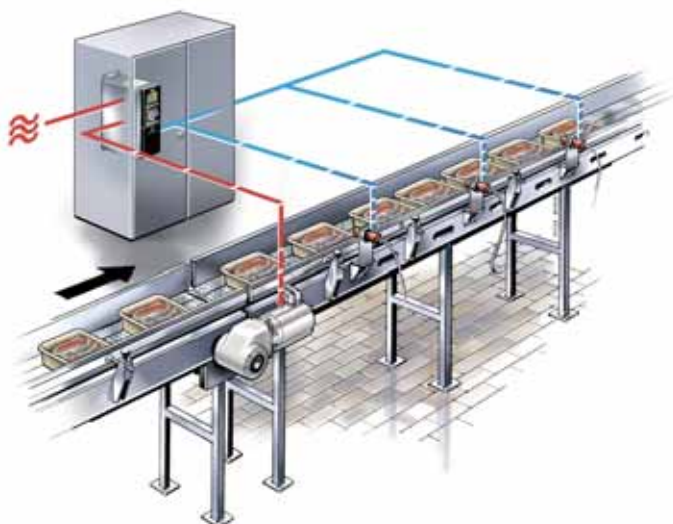
Intelligent cooling solutions, cold-plate solutions, coating solutions, and smart duct cooling solutions for high power drives are available.

Real side-by-side

All central VLT® drives are designed for side-by-side mounting in ambient temperatures up to 50° C without derating.



Central features	Benefits
Multiple I/O's	Easy set-up and commissioning
Remote mounting	Low enclosure class sufficient
Cold-plate cooling available	No derating issue
Rittal kit available	Easy commissioning No derating issue
Multiple set-up	Flexible
Automatic Motor Adaptation	Easy commissioning
Book style concept True side-by-side mounting	Space-saving cabinet mounting



Modular concept

VLT® drives are designed for maximum customisation from the factory and maximum flexibility once installed. Choose from thousands of hardware configurations, built and tested from factory. Upgrades and further options are a matter of plug-and-play.

Proven meat and poultry experience



Lantmännen Danpo

Swedish-owned Lantmännen Danpo is one of Europe's leading producers of chicken. The two Danish sites are among the most modern and advanced in the industry.

The company slaughters 36 million chickens per year and exports about 50% of total production.

The processing factory in Farre is built as a pioneer project within the energy and environmentally sound production and uses VLT® drives from Danfoss.



Greenlea Premier Meats Ltd , New Zealand

Privately owned and operated, Greenlea Premier Meats has progressed from inception in 1993 to a modern, expansive enterprise renowned for providing consistent quality and a high level of service.

With Danfoss drives, Greenlea Premier Meats enjoy greater energy savings and improved flexibility with their process control.



Hans Kupfer & Sohn, Germany

Founded in 1906, the Hans Kupfer & Sohn butcher's shop is known for producing the world famous Original Nürnberger Rostbratwürste.

High quality and hygiene standards secure the certification to supply to Japan and the USA and the three sites – Nuremberg, Heilsbronn and Günthersleben- produce an annual amount of 36.000 metric tons of sausage specialties. The new facility in Heilsbronn is equipped with the newest technology and runs with Danfoss drives.

Product overview



VLT® AutomationDrive

An extremely flexible and cost-effective drive suitable for all industry applications – from simple speed control to dynamic servo applications.

VLT® AutomationDrive comes in a basic version (FC 301) and an advanced version (FC 302) with additional functionalities.

- 0.25 – 3.7 kW, 200 – 240 V, 0.37 – 800 kW, 380 – 500 V, 37 – 1.2 MW, 525 – 690 V

- Built-in DC coils and RFI-filter (optional)
- Bookstyle IP 20/IP 21/NEMA 1/ IP4X top and IP 55/NEMA 12
- Compact drive IP 55 and IP 66/NEMA 4
- Integrated Smart Logic Controller, (USB and RS485) as standard
- Integrated optional communication options (Profibus DP/V1, DeviceNet, CanOpen and more)
- Integrated optional additional I/O (digital I/O's, encoders, (incremental, absolute, sin/cos, resolver))
- Integrated Motion Control Option (PLC)



VLT® Decentral Frequency Converter

Optimum variable speed drives for bottle conveyors.

For mounting on (any) motor or near the motor. No additional installation box due to integrated T-distributor and loop-through cage clamp terminals.

Integrated Profibus or DeviceNet fieldbus interface. FCD 302 also available with etherNet and ProfiNet.

Built-in optional service switch. Optional electromechanical brake control.

- 0.37 – 3 kW (FCD 302); 0.37 – 3.3 kW (FCD 300); 0.37 – 7.5 kW (FCM 300)
- Mounted on the wall close to the motor, or directly on the motor
- IP 66/NEMA 4X, with a corrosion resistant coating
- CE, also IEC 61000-3-2, UL, and C-tick
- Twin part design makes commissioning and service easy



VLT® 2800 Series

An extremely compact series of drives prepared for side-by-side mounting and developed specifically for the low power market.

- 0.37 – 2.2 kW, 200 – 240 V and 0.55 – 18.5 kW, 380 – 480 V
- Multipurpose
- Side-by-side mounting in any direction
- Built-in PID controller, RFI-filter and DC coils
- Bookstyle IP 20
- Integrated RS 485 interface as standard
- Integrated Profibus (optional)



VLT® Soft Starters

Optimum motor starter for palletiser and other applications where smooth starting and stopping is essential. The MCD 3000 is ideal for turning stations and corner converters thanks to optional reverse operation.

- 7.5 – 800 kW, versions for 200 – 690 VAC
- Current limit soft start with initial current ramp up
- Four different auto-adjustable ramp down profiles
- Numerous motor protection features
- Manual or remote control and password protection of parameters



VLT® Motion Control Tool MCT10

For Managing Drive Parameter in systems the new Motion Control Tool MCT10 is the perfect tool to handle all drive-related data.

The MCT10 offers you:

- Project orientation, one file that contains all parameters settings plus user-defined documents
- Explorer like view, give the user a low learning curve
- VLT® Motion Control Tool offers programming of synchronisation and positioning in same environment: one PC tool for all tasks
- Online and offline commissioning
- Support of different interfaces RS485, RS232, USB and Profibus (plus more to come)
- Import of drive setting from Windows and DOS version of Dialog

Service you can rely on 24/7 – around the world

Sales and Service Contacts worldwide

Helping to optimise your productivity, improve your maintenance, and control your finances.

- 24/7 availability
- Local hotlines, local language and local stock

The Danfoss service organisation is present in more than 100 countries – ready to respond whenever and wherever you need, around the clock, 7 days a week.

Find your local expert team on www.danfoss.com/drives

Pick your dedicated solution from the VLT® service menu:

Keep you running

- Current drives update
- Commissioning and regular adjustments
- Preventive maintenance

Service features	Benefits
24/7 availability	The base for efficient use of your resources and Danfoss Drives assets
Hotline Onsite-repair	Quick response time Reduced impact on production
Certified repair with warranty	More reliable production Improved maintenance
Start-up and commissioning	Increased performance with on-time failure free operation
Application experts	Optimise performance Reduced lifecycle cost
Training	Trained resources for optimal design and maintenance
Harmonic survey	Prevent failure Optimise performance
Preventive inspection	Reduce downtime Lower maintenance cost
Optimisation and retrofit	Life-cycle optimisation
Installed base evaluation	Reduced capital and space bindings Optimised availability
Stock maintenance and consignment	Optimised availability with effective finance planning
Extended warranty	Predictable budget for repair cost
Agreed response time	Minimising downtime
Fixed repair and maintenance cost	Effective finance planning for maintenance
Drives Upgrade Program	Long-term finance planning for technology upgrade of drives

Keep you fit

- Training
- Stock maintenance & consignment
- Harmonic Survey
- Environmental Disposal

Fix your costs

- Fixed Price
- Post warranty agreement
- Transport insurance
- Response time





Environmentally responsible

VLT® products are manufactured with respect for the safety and well-being of people and the environment.

All activities are planned and performed taking into account the individual employee, the work environment and the external environment. Production takes place with a minimum of noise, smoke or other pollution and environmentally safe disposal of the products is pre-prepared.

UN Global Compact

Danfoss has signed the UN Global Compact on social and environmental responsibility and our companies act responsibly towards local societies.

EU Directives

All factories are certified according to ISO 14001 standard. All products fulfil the EU Directives for General Product Safety and the Machinery directive. Danfoss Drives is, in all product series, implementing the EU Directive concerning Hazardous Substances in Electrical and Electrical Equipment (RoHS) and is designing all new product series according to the EU Directive on Waste Electrical and Electronic Equipment (WEEE).

Impact on energy savings

One year's energy savings from our annual production of VLT® drives will save the energy equivalent to the energy production from a major power plant. Better process control at the same time improves product quality and reduces waste and wear on equipment.

What VLT® is all about

Danfoss Drives is the world leader among dedicated drives providers – and still gaining market share.

Dedicated to drives

Dedication has been a key word since 1968, when Danfoss introduced the world's first mass produced variable speed drive for AC motors – and named it VLT®.

Twenty five hundred employees develop, manufacture, sell and service drives and soft starters in more than one hundred countries, focused only on drives and soft starters.

Intelligent and innovative

Developers at Danfoss Drives have fully adopted modular principles in development as well as design, production and configuration.

Tomorrow's features are developed in parallel using dedicated technology platforms. This allows the development of all elements to take place in parallel, at the same time reducing time to market and ensuring that customers always enjoy the benefits of the latest features.

Rely on the experts

We take responsibility for every element of our products. The fact that we develop and produce our own features, hardware, software, power modules, printed circuit boards, and accessories is your guarantee of reliable products.

Local backup – globally

VLT® motor controllers are operating in applications all over the world and Danfoss Drives' experts located in more than 100 countries are ready to support our customers with application advice and service wherever they may be.

Danfoss Drives experts don't stop until the customer's drive challenges are solved.

