



**BAUMÜLLER**

# High-Torque Direct Drives DST2-560

Permanent-field synchronous motors

be in motion

# High-Torque Direct Drives DST2-560

## Time to make the change

Today's machine concepts have to meet a formidable set of requirements. In addition to increased productivity and availability, as well as higher energy efficiency, costs also have to be reduced. But

these goals will not be met using high-maintenance transmissions and high-loss standard motors or hydraulic systems. But if you use direct drive technology instead, you can benefit from the many advantages. See for yourself!

## DST2-560

### Reduction in machinery footprint

- High overload capability and dynamics
- High-efficiency electric drives
- Compact design, relatively little installation space required
- Different shaft and flange options allow optimal integration with the machine

### Reduction of service and maintenance costs, as well as avoiding downtimes

- Reduction of service cost by eliminating mechanical transmission elements and hydraulic fluid
- Simpler assembly and logistics because fewer components are used; meaning less susceptibility to faults
- Emission reduction contributes to sustainability

### Additional option – redundant system

In case of damage to the winding system, the motor can continue running at reduced power (emergency mode).

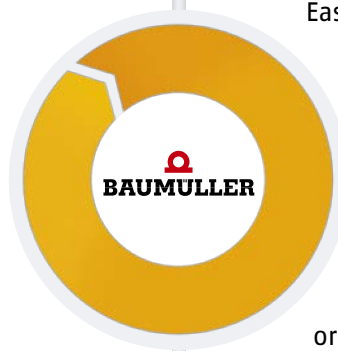
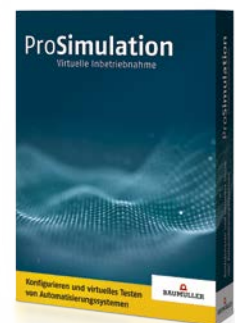
## ProSimulation

### Time and cost savings during development and commissioning

The creation of a real prototype can be optimized or completely replaced

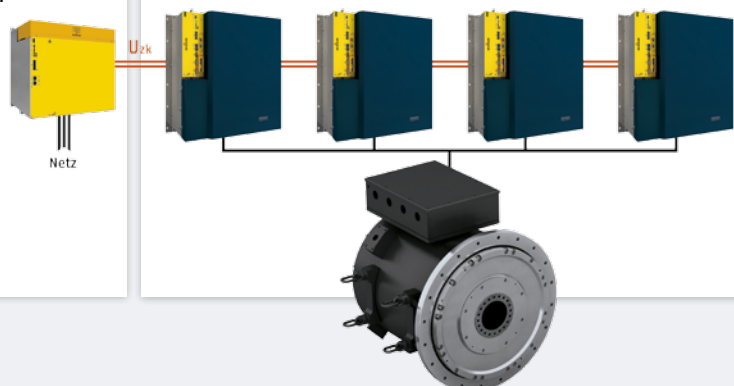
### Accumulation of simulation know-how in your company

Easy introduction to "digital twin" technology



## Converter

- Motor operation with multiple water or air-cooled servo drives possible
- Load sharing is possible via field bus
- Synchronization of actual sensor values via field bus, thus no costly sensor signal splitting by cable



## Direct drive technology for innovative machine solutions

The torque motors in the DST2 series are permanent-magnet multi-pole synchronous motors in water-cooled design. Because of the high torque densities in the low and medium speed range, the energy-efficient motor series is particularly suitable for the direct drive in general mechanical engineering. In combination with the high overload capability and the very good smooth running characteristics of the drives, sophisticated and dynamic applications can be implemented.

The integrated water cooling with stainless steel allows optimal dissipation of losses with a high protection level. A fan unit is not necessary with these motors, which means significantly reduced

noise emission from the motor. The robust and compact motors are also largely maintenance-free, which is another plus for economical operation.



### DST2 560 – Technical data

Type	$n_N$ [min <sup>-1</sup> ]	$P_N$ [kW]	$M_N$ [Nm]	$I_N$ [A]	$K_E/cold$ [V/1000min <sup>-1</sup> ]	$\cos\varphi$	$\eta_N$	$f_N$ [Hz]	$M_{0max}$	$I_{0,max}$ [A]	$n_{max}$ [min <sup>-1</sup> ]
DST2-560K054W-010-5	100	153	14600	345	2825	0.84	0.9	50	30300	840	190
DST2-560M054W-010-5	100	196	18700	530	2343	0.84	0.91	50	40400	1345	230
DST2-560L054W-010-5	100	245	23500	535	2929	0.84	0.91	50	50600	1345	180
DST2-560B054W-010-5	100	305	29200	650	2981	0.84	0.91	50	60700	1590	180
DST2-560K054W-020-5	200	300	14400	610	1579	0.83	0.94	100	30300	1500	340
DST2-560M054W-020-5	200	385	18300	965	1275	0.83	0.94	100	40100	2475	400
DST2-560L054W-020-5	200	485	23100	965	1594	0.84	0.95	100	50500	2475	340
DST2-560B054W-020-5	200	605	28900	1240	1557	0.83	0.95	100	60600	3040	350
DST2-560K054W-030-5	300	435	13900	890	1046	0.83	0.96	150	30200	2265	400
DST2-560M054W-030-5	300	555	17600	1150	1038	0.83	0.96	150	40000	3040	400
DST2-560L054W-030-5	300	700	22300	1495	1001	0.83	0.96	150	50300	3940	400
DST2-560B054W-030-5	300	875	27800	1820	1023	0.83	0.96	150	60400	4625	400

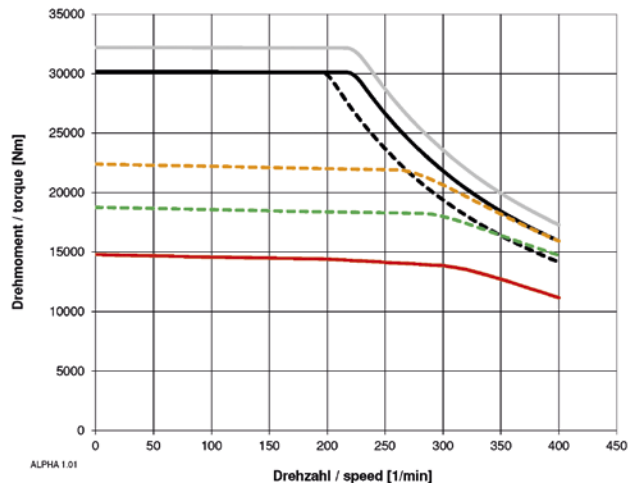
Subject to change. The values specified are maximum values.  
For details, please refer to the relevant technical documentation.

Subject to change

## Characteristic curves DST2-560

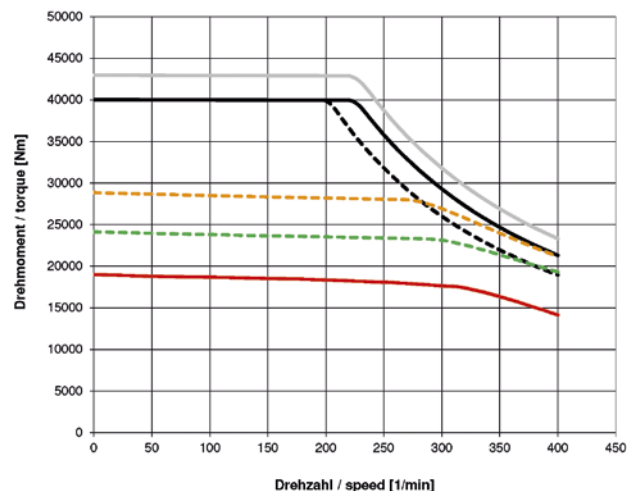
**DST2-560KO54W-030-5**

Drehmoment-Drehzahl-Kennlinien / torque-speed-characteristics



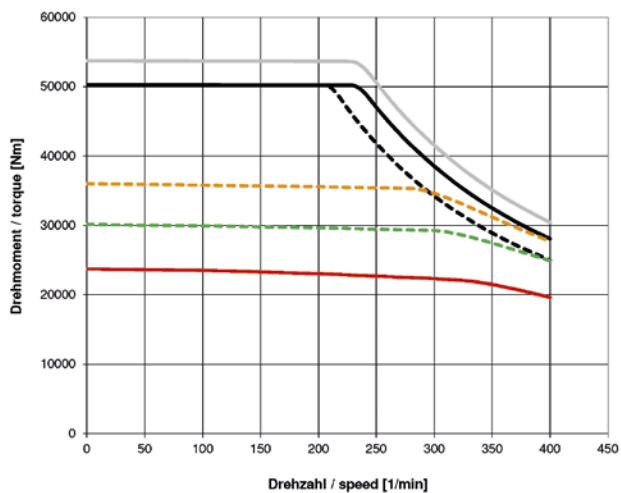
**DST2-560MO54W-030-5**

Drehmoment-Drehzahl-Kennlinien / torque-speed-characteristics



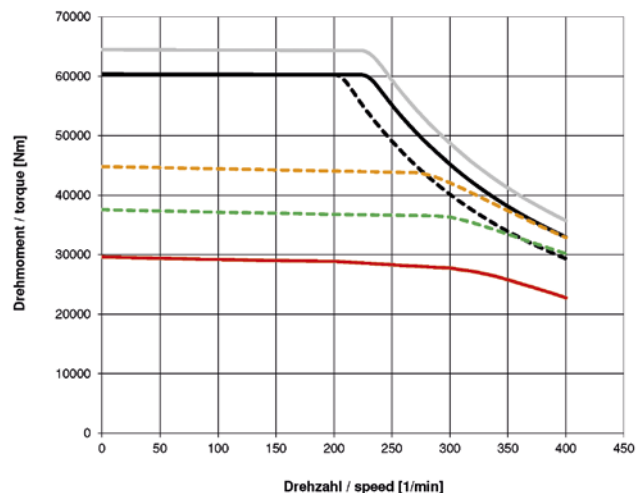
**DST2-560LO54W-030-5**

Drehmoment-Drehzahl-Kennlinien / torque-speed-characteristics



**DST2-560BO54W-030-5**

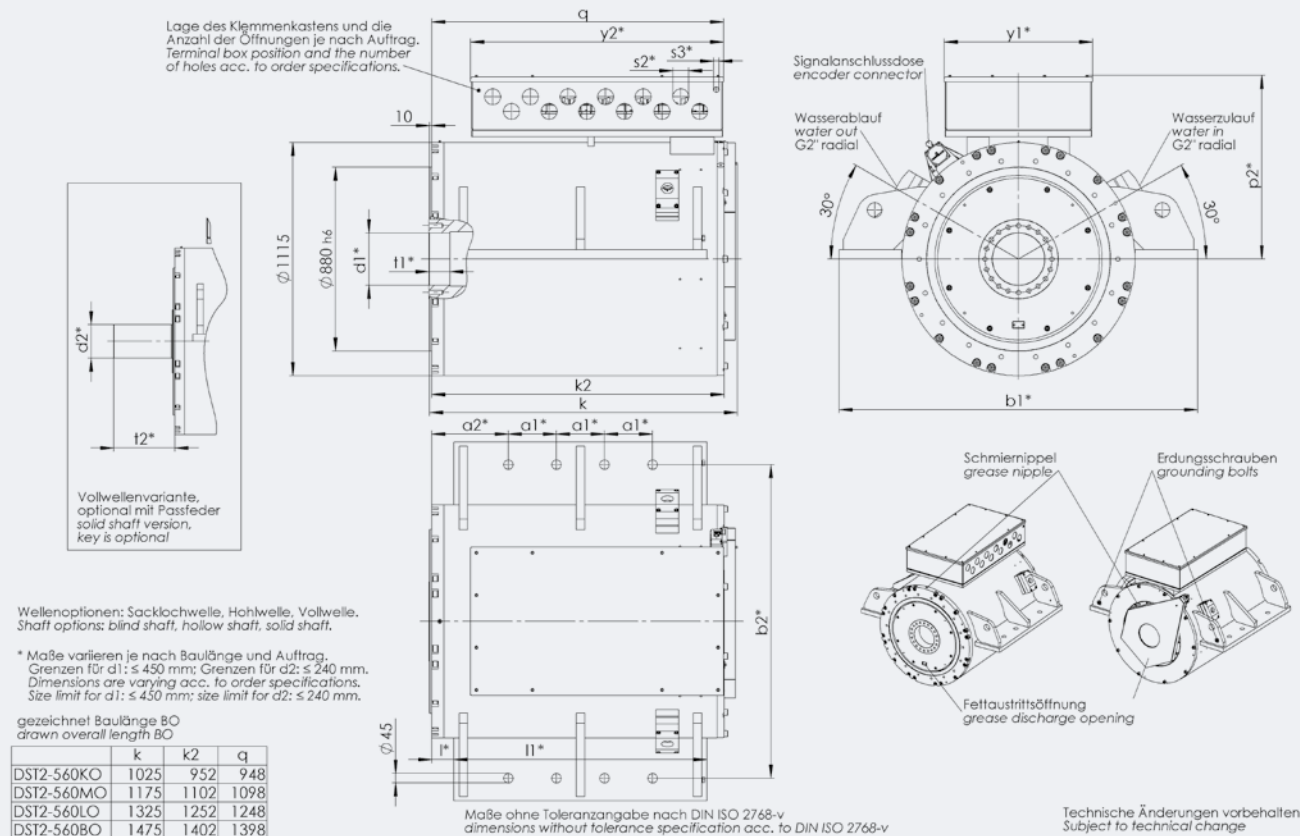
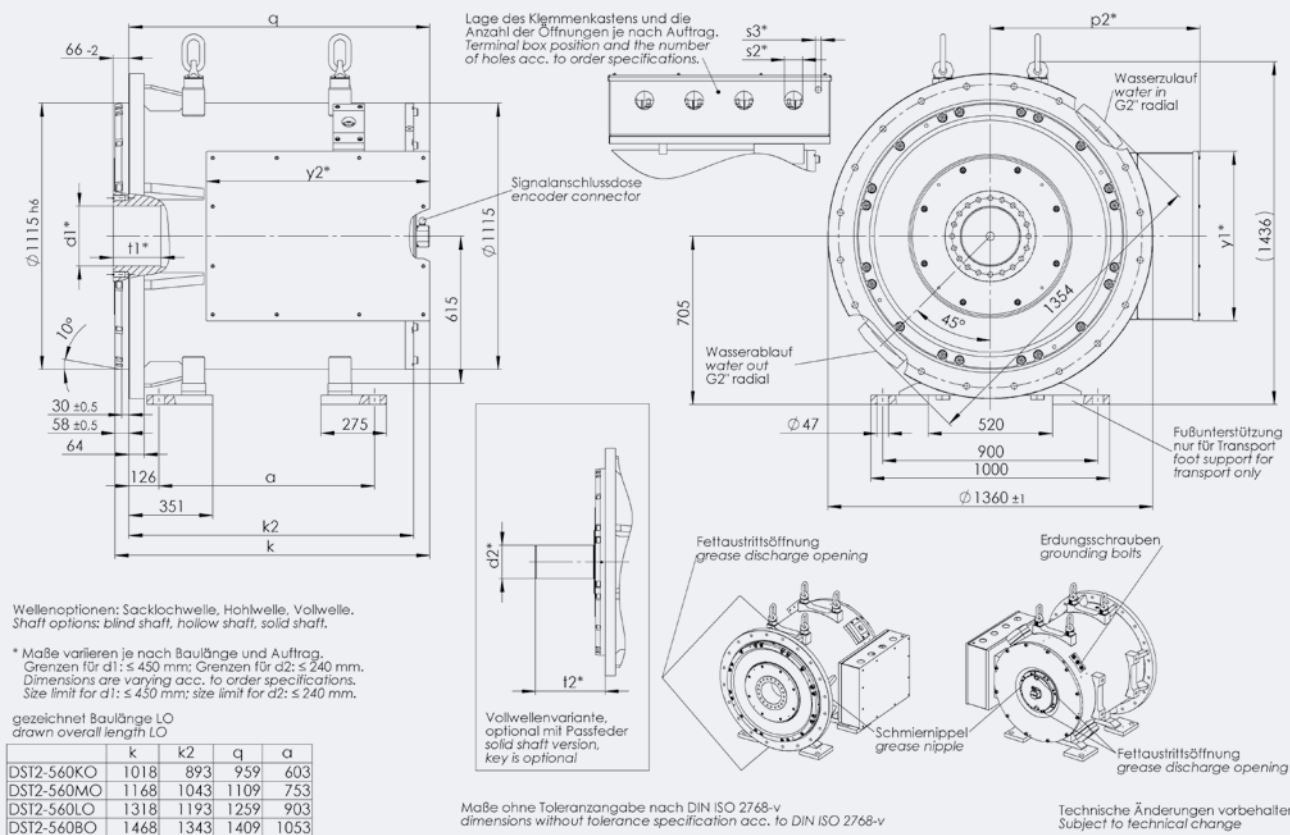
Drehmoment-Drehzahl-Kennlinien / torque-speed-characteristics



The motors are also available with nominal speeds of 100 min<sup>-1</sup> or 200 min<sup>-1</sup>

- Grenzkennlinie / Kalter Motor  
torque limit / cold motor  
365V / I<sub>max</sub>
- Grenzkennlinie / Betriebswarmer Motor  
torque limit / motor at operation temp.  
365V / I<sub>max</sub>
- - - Grenzkennlinie / Betriebswarmer Motor  
torque limit / motor at operation temp.  
365V - 10% / I<sub>max</sub>
- Betriebsart / duty type: S1
- Betriebsart / duty type: S3-60%, 1 min
- Betriebsart / duty type: S3-40%, 1 min

## Dimensional drawings DST2-560





## The automation solution for your press



Compared with conventional hydraulic or mechanical presses, servo presses provide considerable advantages, such as increased productivity and product quality. Furthermore they offer more flexibility.

Consisting of both control and drive technology, the Baumüller system solution gives you the advantages of servo presses while at the same time providing an instantly usable and flexible solution

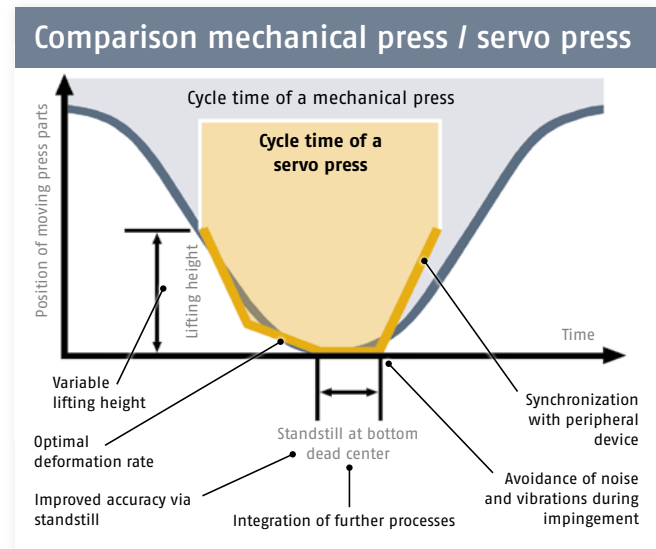
for your machine. On request, Baumüller can provide long-term life cycle management for presses that meet your individual needs and those of your customer. On request we will also support you with the installation and commissioning of your system anywhere in the world.

Whether remanufacturing or new equipment – Baumüller provides the perfect solution for your press.

## Innovative press drives

Compared to conventional presses, servo presses are a superior solution in terms of productivity, product quality and flexibility.

With high-performance direct drives and the compatible control unit, the processes of servo presses can be optimized with regard to cycle time, tool wear and tear, energy use and environmental compatibility.



## Benefits of servo presses compared to hydraulic and mechanical presses

### Greater flexibility

- Greater product diversity possible
- Movement profile can be freely defined: Optimal adaption to the tool process
- Generation of the traversing profiles directly on the b maXX PCC-04 with an intuitive menu layout

### Lower operating costs

- Low maintenance requirements by eliminating cost-intensive wear parts (e.g. coupling unit)
- Time-saving compilation of optimal press profiles thanks to a user-friendly technology library
- Tryout – tool run-in at different speeds
- Production and tryout possible in the same machine (no testing machines required)
- No subsequent processes thanks to the option of adding special functions to the tool (e.g. joining, thread-cutting)
- Protection of the mechanical parts
- Longer tool life

### Higher product quality

- Production of complex and sophisticated moldings
- Speed control, positioning and direction of the moving parts of the press
- Greater reproducibility and precision
- Continuously configurable processing speed

### Energy efficiency

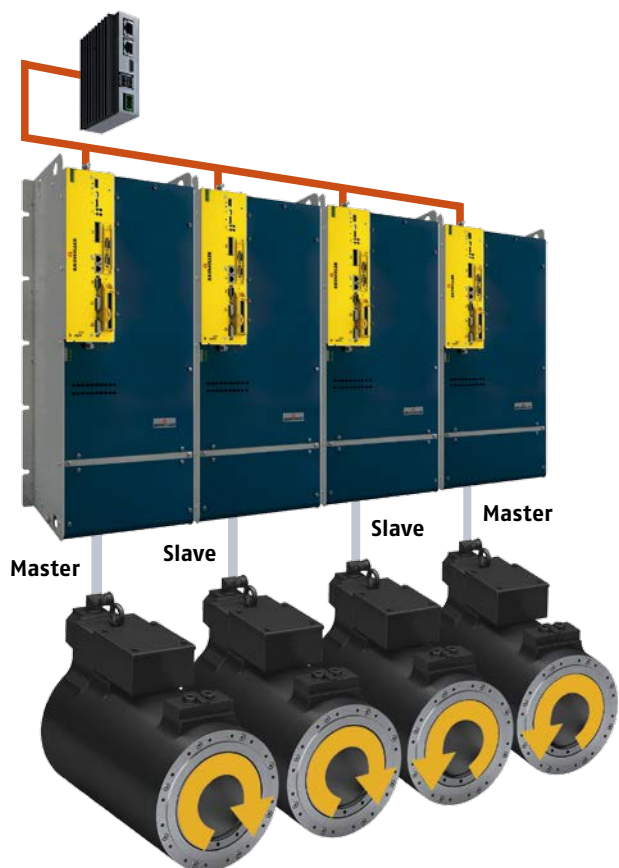
- Higher overall efficiency of the system due to accurate dosing of the forming energy
- Energy use only during the actual pressing procedure
- Electrical power rating is significantly lower and considerably cheaper than conventional solutions because of the option of an intermediate circuit feed to the capacitor unit

## Strong servo drives for recycling

Source: RS150 – UNTHA-brand four-shaft shredder



Baumüller set the standard in the early 90s with the introduction of direct drive technology for printing machines. With direct drives, we now offer the most technologically and economically advanced solution on the market for the recycling industry as well, in particular for shredders. Our torque motors can power the wheels of the grinders either directly or through internal gears – both solutions are well established on the market.



### Higher product quality and productivity

- Different movement profiles depending on the material
- Steering of the drives controlled by torque (torque distribution) for mechanically coupled motors with the required precision and dynamics
- Very smooth running characteristics with load balancing

### Lower lifecycle costs and high flexibility

- Significantly lower energy costs through efficient servo technology and direct drives
- Lower service costs with the use of direct drive technology
- Controlled speed changeover in case of clogged media
- Large supply voltage range for use anywhere in the world



## DST motors for extruders



Image source:  
[www.kraussmaffei.com](http://www.kraussmaffei.com)

Many market leaders rely on Baumüller high-torque motors with an integrated pressure bearing to power an extrusion screw. This optimally satisfies the requirements of extrusion technology and offers numerous advantages to the machine maker.

### Lower operating costs

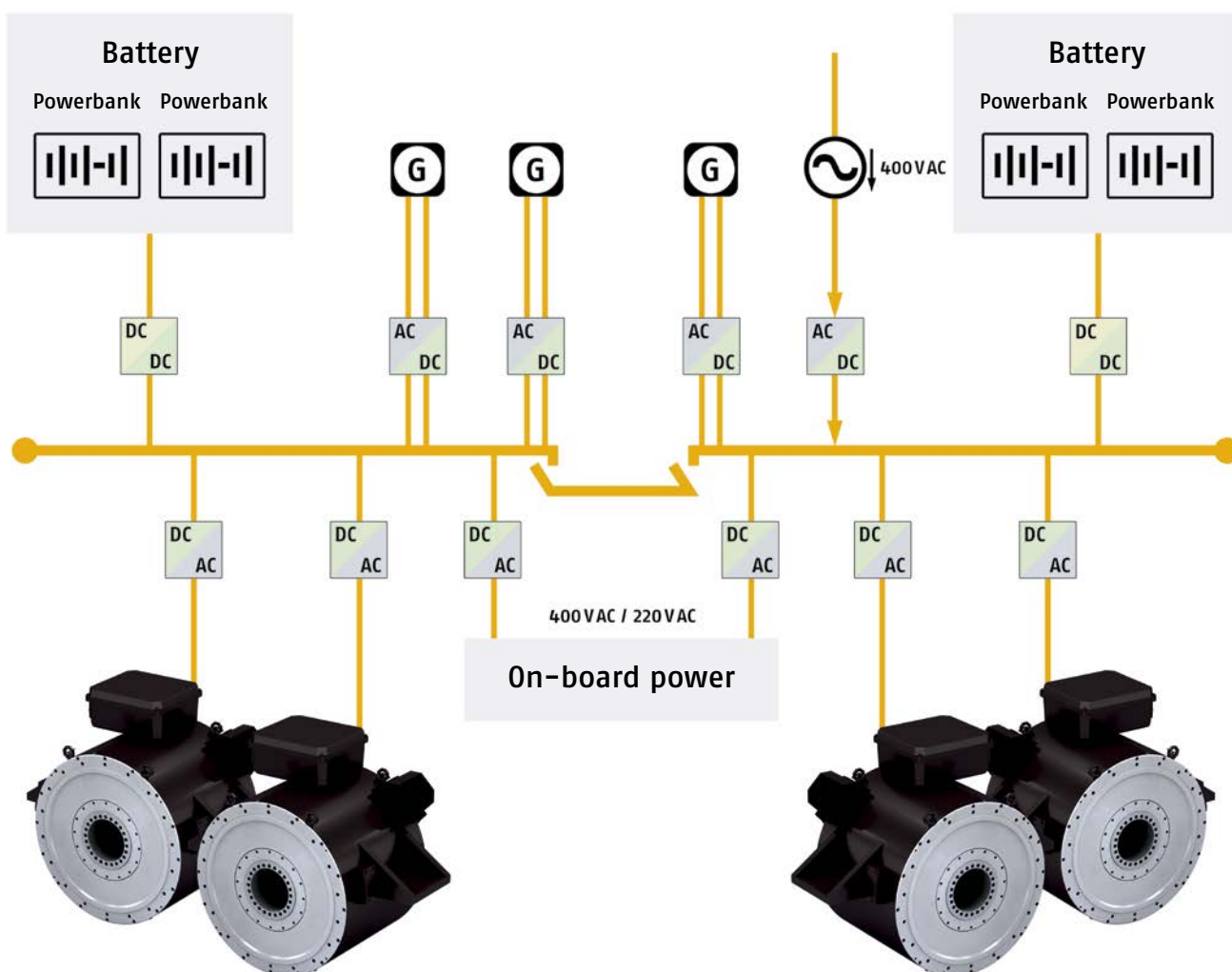
- No transmission losses
- No service on the transmission
- Greater machine density and thus less use of production area
- Higher overall effectiveness, especially with high material mix and operation at partial load
- High precisions for extruders and chill-roll applications



# Ships

With a hybrid drive, the ship's propellers are powered electrically by converter-fed synchronous motors which receive their energy from battery and diesel generators, e.g. LNG, diesel, fuel cells, etc. Many benefits make the combination of combustion motor and electric motor particularly attractive for shipping. Along with a significant reduction in fuel consumption in moving bodies of water, this system also reduces noise and vibrations by up to 28 percent.

## Example of hybrid-electric system construction



Video and case study for the project are available at [www.baumueller.com](http://www.baumueller.com)

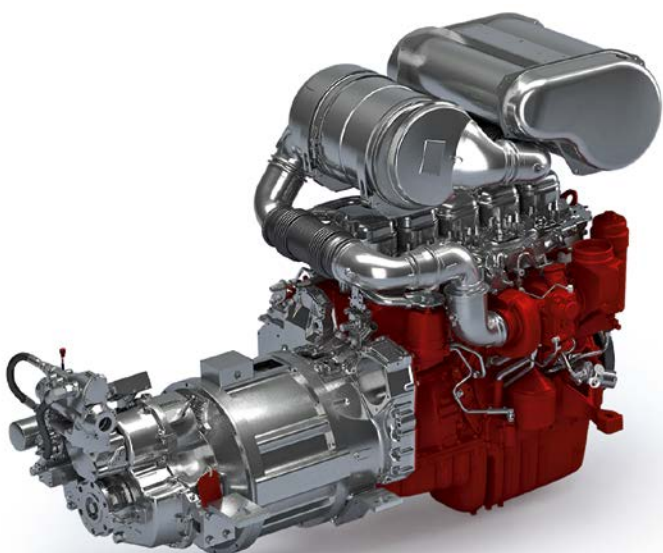
## Maximum efficiency

An additional advantage is the improvement in overall efficiency through an output reduction feature on the diesel engine, ensuring travel within the optimal speed range. Ships that maneuver precisely on the open sea or have to remain within a set application location, for example, only require minimal output. With a pure diesel drive, the speed in these cases is massively reduced compared to the previous, faster moving journey.

## DST2 – Powerful motors

The high-torque motors DST2 are certified by the Lloyd's Register and meet the specific requirements for shipping. The water-cooled direct drives are constructed with protection class IP 54, are not susceptible to dirt accumulation and run with low noise. With their compact and robust construction, the motors take up minimal space in the engine room and are well suited for rough conditions on the water. Powerful direct drive technology with up to 60,000 Nm improves the performance of the ship drive and positively affects the reverse thrust and bollard pull.

This means the motor is not running inside of its ideal efficiency range. When an electric drive is used in these situations, by contrast, the frequency converter directly controls the propeller speed via the synchronous motor, which allows it to run much more slowly. Since synchronous motors achieve high efficiency even at low speeds, the electric mode saves fuel.



## Parallel hybrid

Electric motor and combustion engine simultaneously affect the drive train. The torque of the individual drives is cumulative.

# House of Automation



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