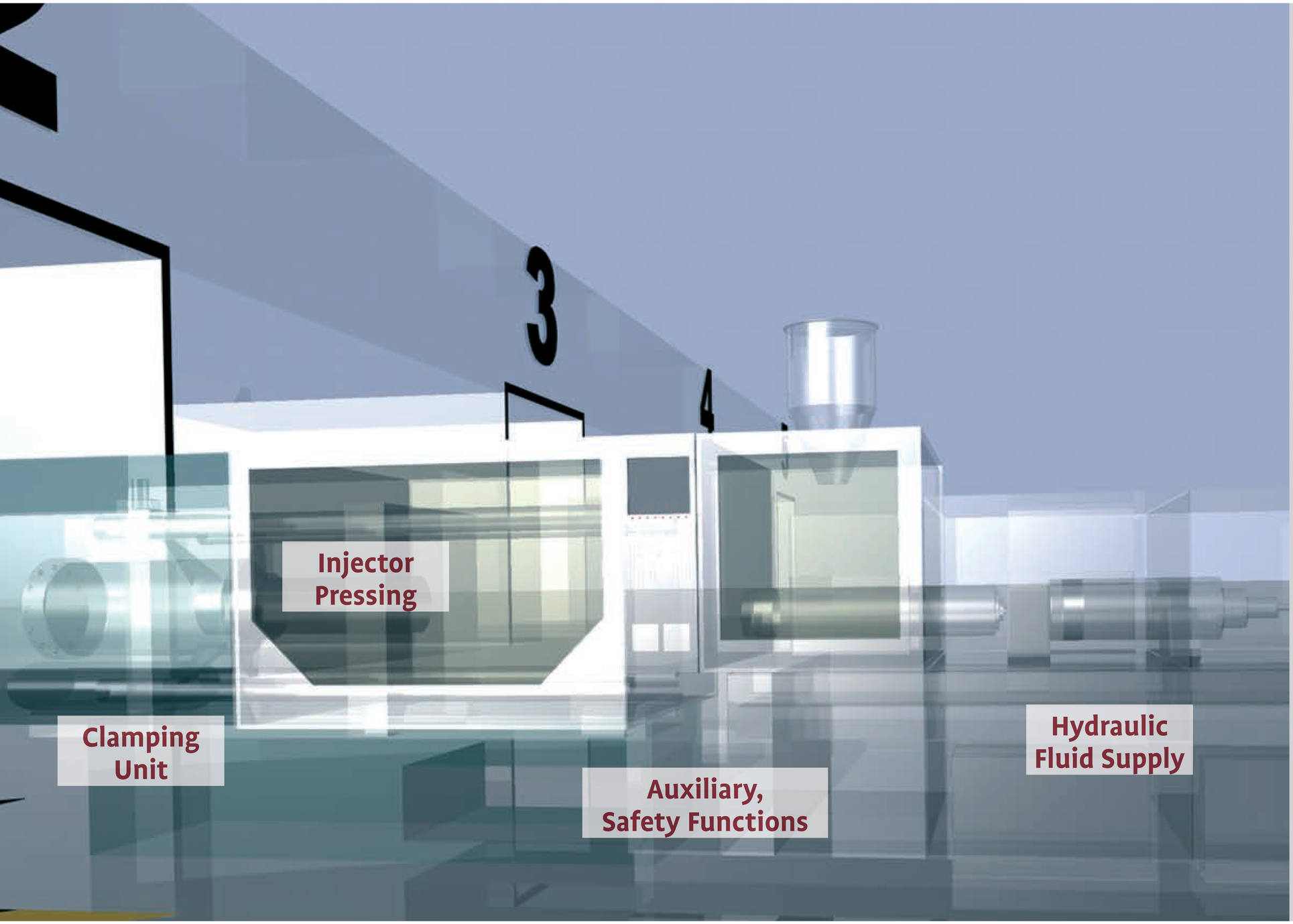
Energy Efficiency in Industrial Processes

Injection Molding Machine



Solutions for

Hydraulic Fluid Supply

- Internal Gear Pumps
  (Series QXEH for Variable Speed Drive, Open Centre)
- Valves, System Solutions
  (Directional, Pressure, Flow-Control and Check Valve W / D / M / R, System Manifold Block)

Clamping Unit

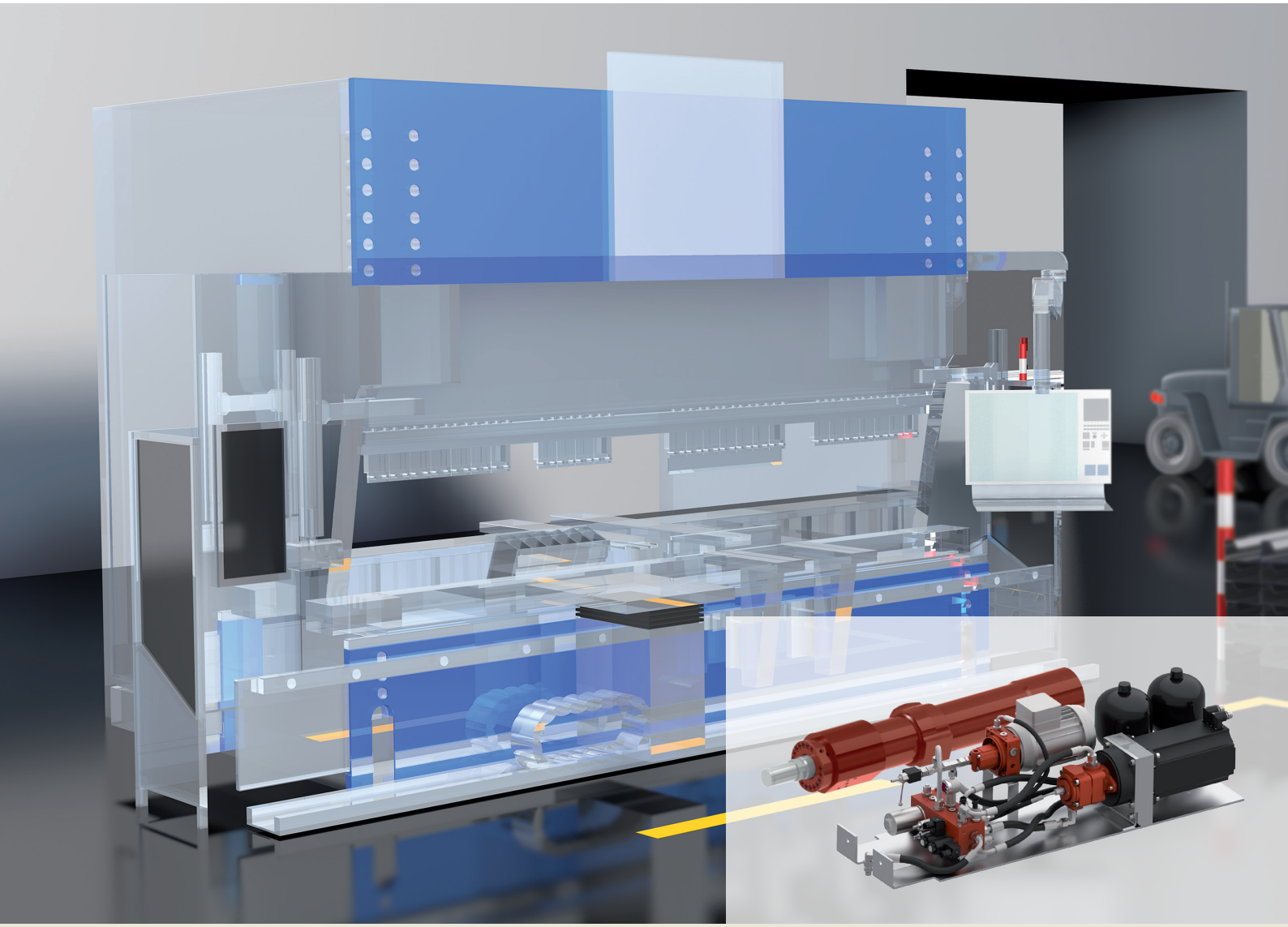
- Internal Gear Units
  (Series QXM for Variable Speed Drives in 4-Quadrant Operation, Closed Centre)
- Valves, System Solutions
  (Directional, Pressure, Flow-Control and Check Valve W / D / M / R, System Manifold Block)
- Cylinders
  (Double Action Cylinder DDWD, Locking Cylinder DWF, Dosing Unit PFD)

Injector Pressing

- Internal Gear Units
  (Series QXM for Variable Speed Drives in 4-Quadrant Operation, Closed Centre)
- Hydraulic Valves
  (Directional, Pressure, Flow-Control and Check Valve W / D / M / R)

Auxiliary, Safety Functions

- Valves, System Solutions
  (Directional, Pressure, Flow-Control and Check Valve W / D / M / R, System Manifold Block)



Added value from smart systems architecture

Servo-Hydraulic Axes

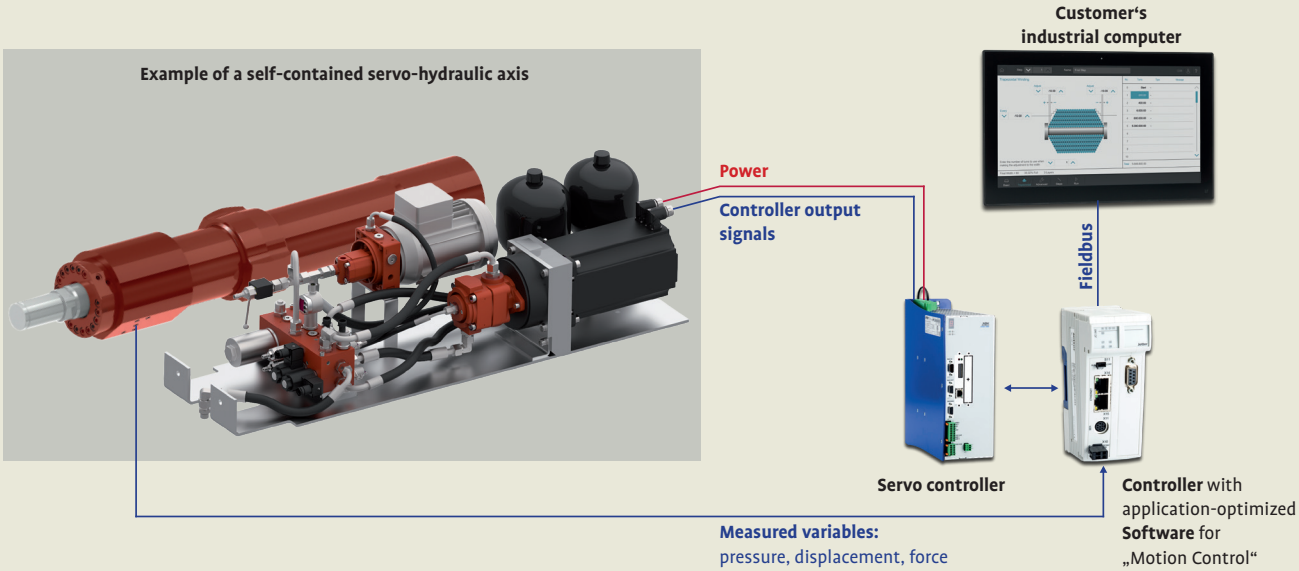
Smart solutions at the systems-architecture level

Reducing Total Operating Costs

Servo-hydraulic axes – combining the advantages of two technologies

Servo-hydraulic axes combine the advantages of an electrical servo drive with those of a robust, powerful and efficient hydraulic drive.

The customer's machine control system communicates via fieldbus with the subsystem controller, where the firmware, developed specifically for the application, ensures that the target values for the cylinder (position, speed, force) are controlled by the servo pump unit. The hydraulic characteristics are already programmed in the firmware.



Modular servo-hydraulic axis

Self-contained servo-hydraulic axis consisting of proven Bucher Hydraulics and Jetter components combined to form one module in a building-block system:

- Cylinder designed for the application
- Variable speed 4-quadrant drive unit
- Equalising tank
- Valve block (with safety functions)
- Precharge and filling unit
- Servomotor with servo controller
- Subsystem controller with application-optimised software
- Sensors for pressure and temperature
- Stroke-measurement system

The detailed design is driven by the particular requirements of the application and is based on established Bucher Hydraulics and Jetter components. This makes it possible to achieve lowest-cost / maximum-benefit solutions even for medium-sized quantities.

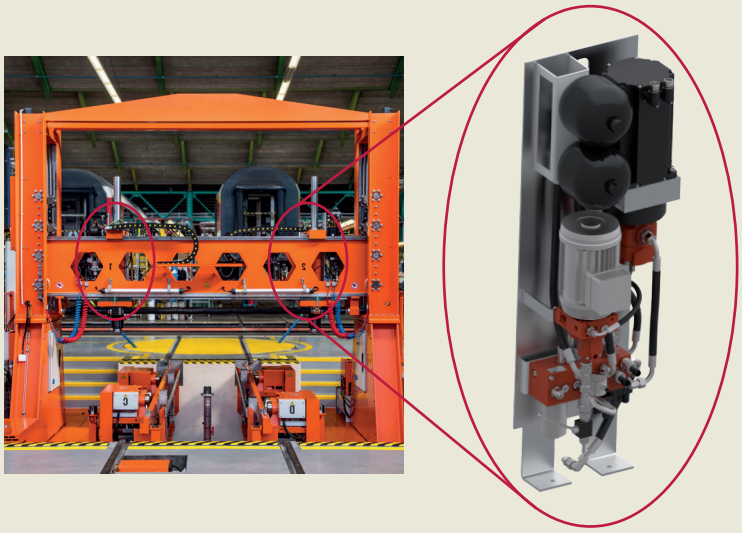
Applications

- Forming machines
- Testing machines
- Simulators
- Oscillating axes
- Packing machines and conveyor systems
- Lifting devices
- Transport equipment
- Cutting machines in the food sector
- Special-purpose machines

Servo-hydraulic axes in the example of a railway-bogie test rig

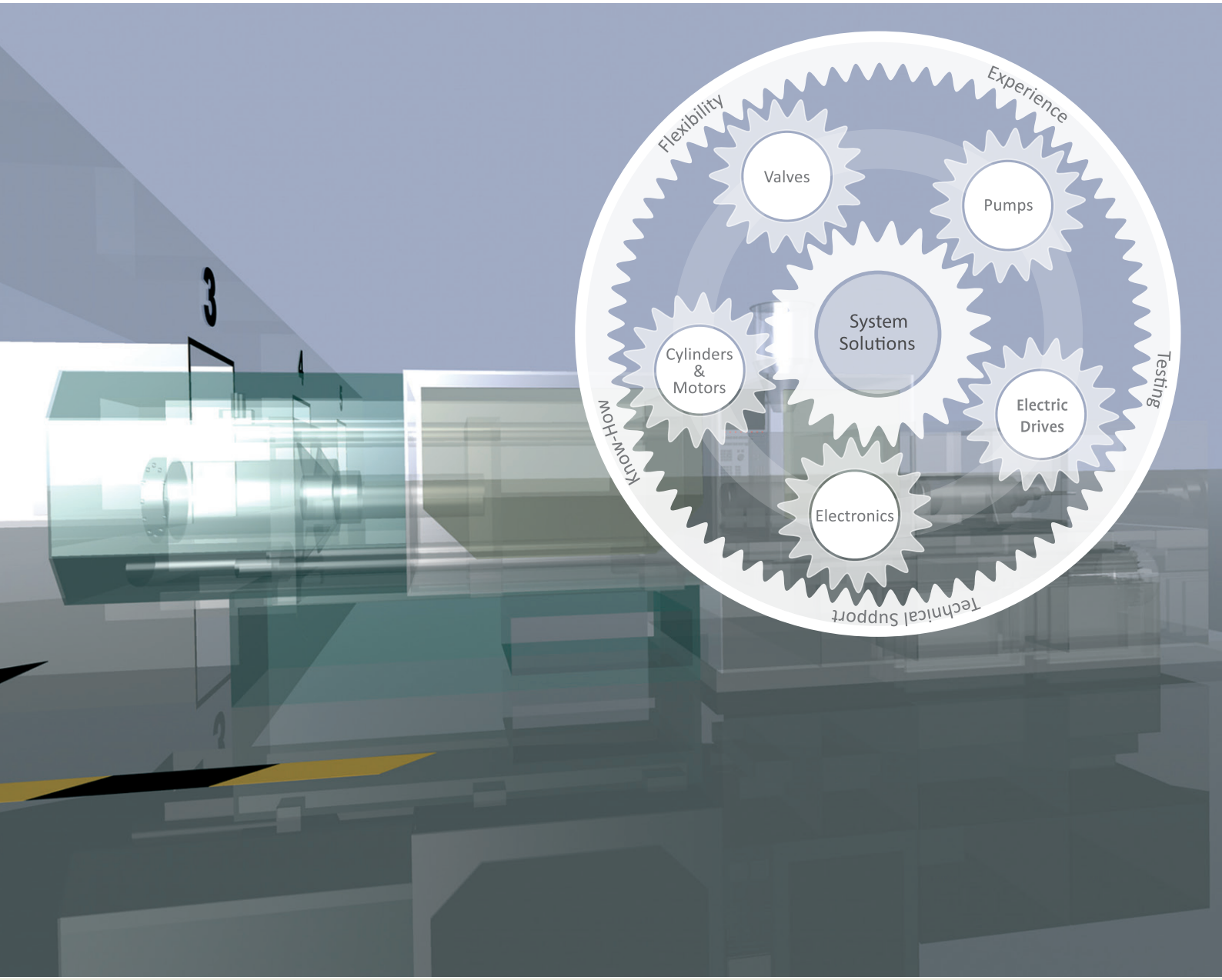
Advantages:

- Efficient system with up to 70 % energy saving
- Very quiet drive
- Large, central hydraulic power unit is eliminated
- Space requirement is reduced
- Long hydraulic lines to the cylinders are not needed any more
- Quick “plug and play” setup: fine-tuning of the hydraulics is unnecessary
- The user does not need in-depth hydraulics knowledge
- Subsystem controller with firmware developed specifically for the application
- Control and communications via Fieldbus to the customer‘s industrial computer (e.g. Modbus/TCP, Profibus, Profinet, etc.)
  > a foundation for industry 4.0



Benchmark technical data	
Nominal force	up to 1 000 kN
Stroke length	up to 1 500 mm
Working speed Rapid-traverse speed	up to 100 mm/s up to 400 mm/s
Drive power	up to 30 kW
Positioning accuracy	Dependent on the measuring system used and the working speed required
Controller	Standard Jetter product range
Servo controller	Standard Jetter product range
Software & “motion control”	Application-optimised software, fieldbus interface to customer‘s industrial computer (e.g. Modbus/TCP, Profinet, etc.)
Ambient temperature	0° C to 40° C

The above figures are benchmark technical data: the crucial information is in the individually-agreed specifications.



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