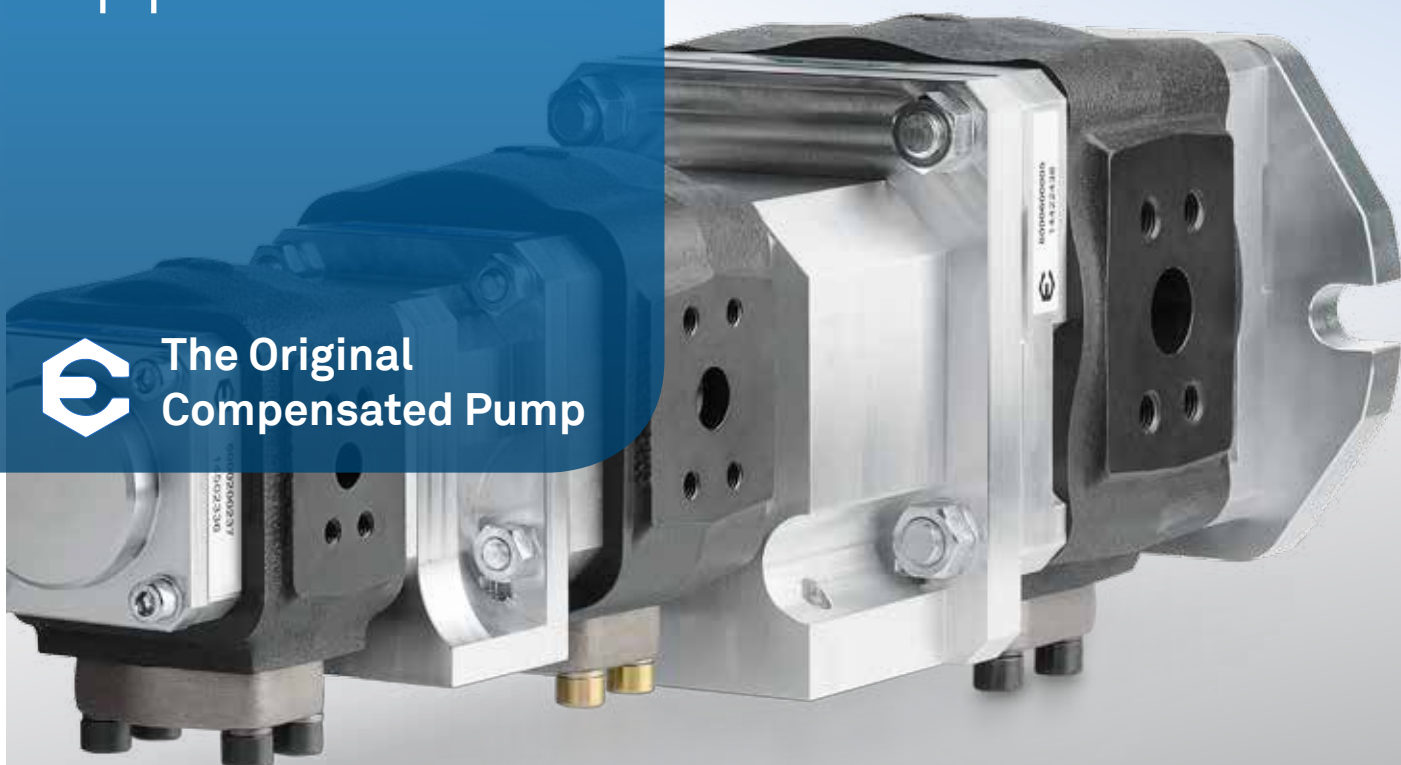


suitable for
every industrial
application

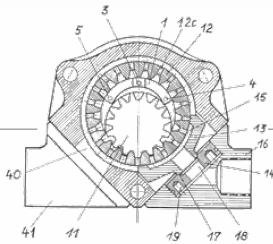


The Original
Compensated Pump



Our diversity at a glance

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Eckerle – an experienced partner

Innovative solutions by experts for experts.

Premium quality ensures our customers success – Otto Eckerle's credo still holds true today as our prime value more than 80 years after he founded his company. As one of the pioneers of oil hydraulics, Otto Eckerle built the company with inventive spirit, commitment, courage and hard work. The company's development into one of the world's leading names in hydraulics is paved with his revolutionary ideas and path-breaking innovations.



Over 200 filed patents and consistently high quality standards are and remain the decisive guarantee of our company's success under the future aegis of the founder's son, Otto Michael Eckerle. He is of the firm conviction that success can only be achieved in partnership with our customers.

With you, for example.

Profit from the genius of the man who invented the compensated internal gear pump

*1968

IPH

SOLID FILLER PIECE
3.5 – 16 CCM/REV.
ECKERLE GAP COMPENSATED
HIGH PRESSURE PUMP
UP TO 320 BAR

Since its development in 1968 the ECKERLE system split gap compensated high pressure internal gear pump has tread a triumphant path. For good reason, as this system is unrivalled in its combination of exceptional efficiency and best value for money.

Eckerle does not believe on resting on its laurels. We are committed to the continuous development of our pump technology. Our foremost aim: to offer you the best solution technology can supply so you can work even more efficiently.

The basis of this excellent performance is innovative design. The teeth of the outer gear engage with the teeth of the eccentrically mounted inner gear. The medium, hydraulic fluid for instance, is pumped between the gaps in the teeth of the two gears, while the split filler piece seals the teeth.

EIPH – the consistent development of an innovative product

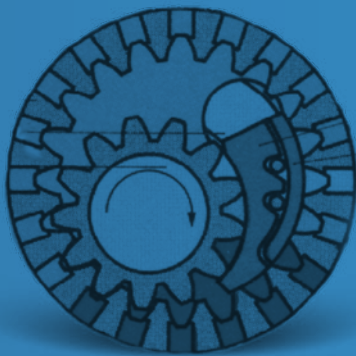
The EIPH series was specially developed for use in industrial application and its high hydraulic standards. The pumps in this series are the product of decades of experience in the development of internal gear systems. They are distinguished by their exceptional quietness, very good levels of efficiency and long life span while being exposed to high pressure.

Gain a decisive leading edge over your competitors by using these unique benefits over traditional hydraulic pumps to your advantage.

Making a good thing better is our byword

1980: IPR

SPLITTED FILLER PIECE,
3:5 – 16 CCM/REV.
ECKERLE GAP COMPENSATED
MIDDLE PRESSURE PUMP
UP TO 210 BAR



1997: EIPH

SEGMENT PUMP, REV. PATENTED.
CAN BE USED FOR ENERGY
REGENERATION SYSTEMS.
4 – 250 CCM/REV.
ECKERLE GAP COMPENSATED
MIDDLE PRESSURE PUMP
UP TO 400 BAR



2001: EIPQ

REVERSING PUMP FOR
4 QUADRANT OPERATION
UP TO 300 BAR



Committed to the environment – right from the start

Eckerle industrial pumps are distinguished by their exceptionally high level of efficiency. This major factor brings not one, but two benefits:

Firstly, it helps you to use less energy on a day-to-day basis while achieving targets with greater efficiency; and

Secondly, it helps us conserve our natural resources.

A firm upholder of this belief, Eckerle has been environmentally certified to ISO 14001 for many years.



Our multi-flow pump combinations can be tailored to your specific requirements

Modular in design, versatile in use



Whatever your individual needs may be – our multi-flow pumps satisfy them reliably, thanks to their modular design. Eckerle industrial pumps can be combined appropriately as the situation demands.

Whatever your wish or need, from efficiency-optimised modular hydraulic systems or inputs for servo applications over a bypass circuit to stand-alone pumps, you can depend upon Eckerle to put together exactly the system that suits your needs.

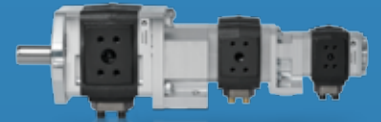
EIPH6



2 x EIPH6



EIPH6 / H3 / H2



5 x EIPH2



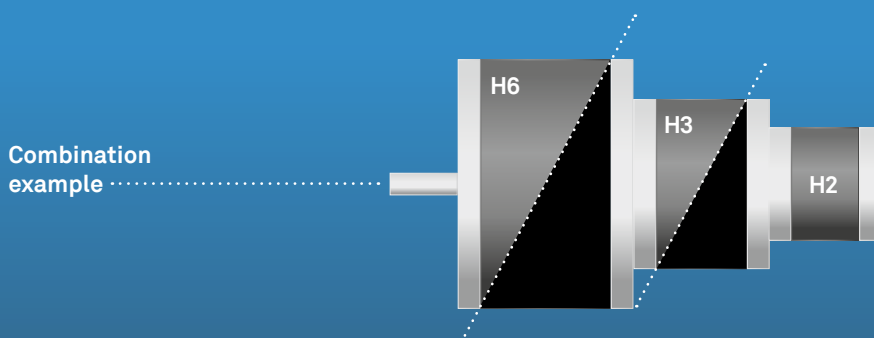
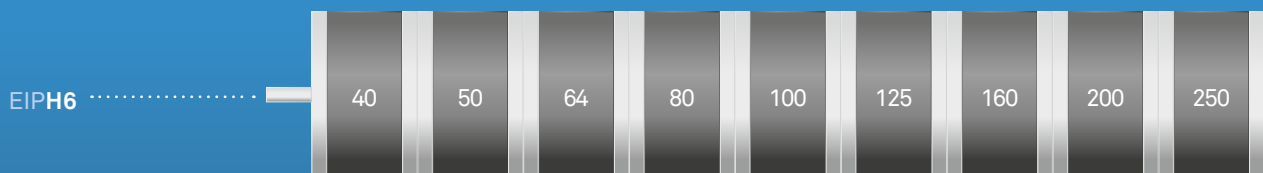
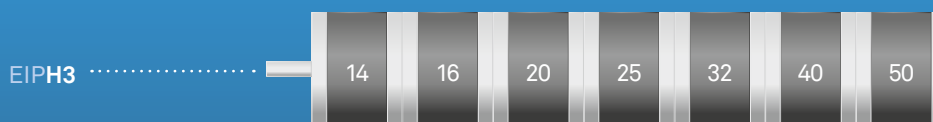
Type H and Type C series
can also be combined:
EIPH6 + EIPC6 + EIPH6



Combine as you require

Your task dictates the combination

Spec. volume V_{th} [cm³/rev] by pump series

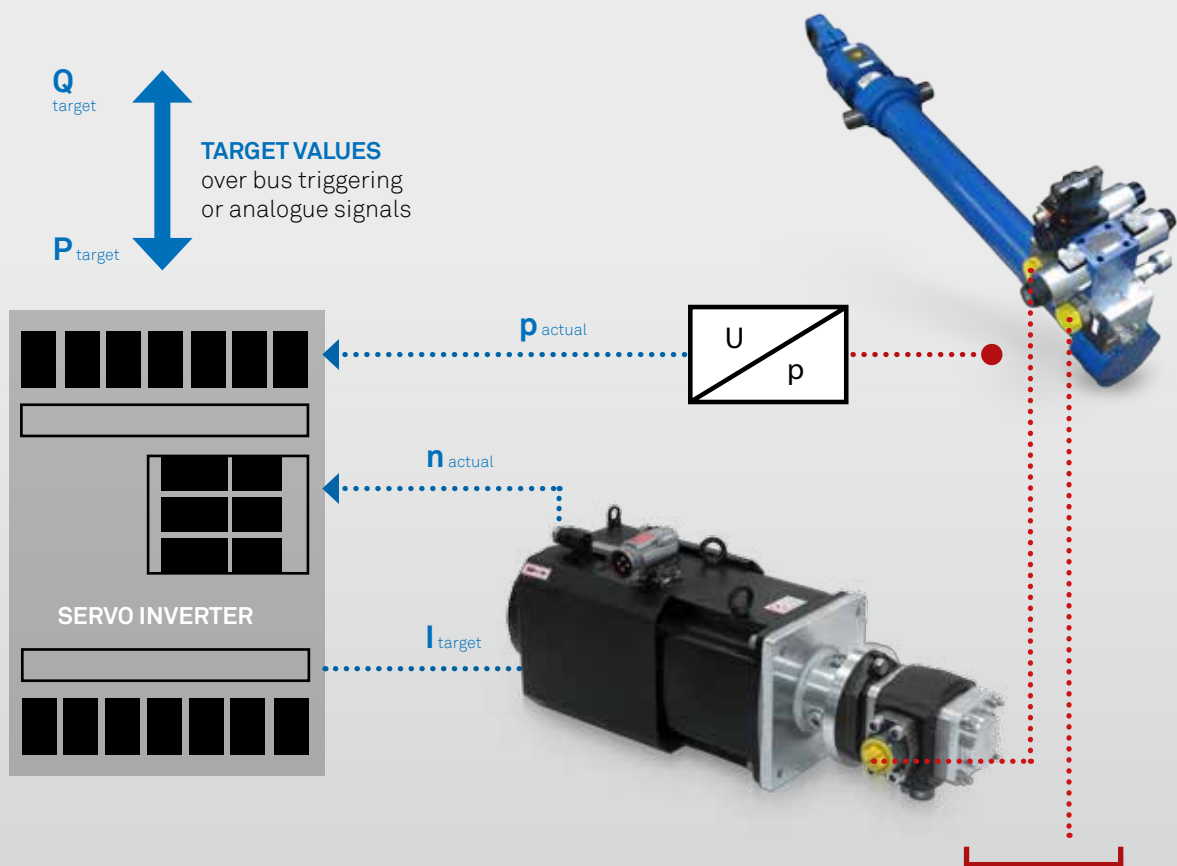


DVA – highly dynamic and energy-efficient at any speed

The internal gear pump as the centrepiece

Minimum energy consumption and top performance – this is the principle on which a revolutionary and powerful drive package for hydraulics was developed.

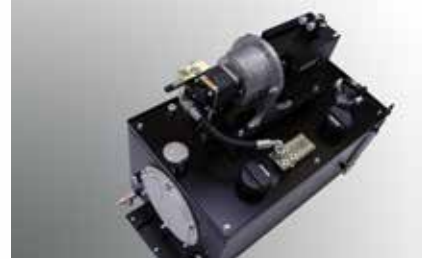
Efficient technology – remarkable benefits



The DVA is an internal gear pump driven by a servo inverter, powered in turn by a synchronous servo or asynchronous motor depending on the implementation field. Experts optimally tailor and scale the performance and function of pump drive, software and motor to suit the customers' needs.

As an innovator in the industry we offer a unique concept, the variable speed drive system, which is subject to continuous development and improvement.

Typical implementation areas of variable speed drives include plastic injection machines, presses and general mechanical engineering and any general machine application that can benefit from on-demand flow and/or pressure capabilities, as well as retrofits of existing hydraulic systems.



**An article by
Dorninger Hytronics**

DVA CHARACTERISTIC



Reduction of pump speed in partial load range or outside the machine cycle



Constant flow internal gear pump replaces a sophisticated variable axial piston pump



Reduction of fluid tank volume



Highly dynamic pressure and flow control with servo pumps without proportional valve system

YOUR BENEFIT

- Energy saving of up to 70 % for machines with process-related cycle intervals
- Noise reduction of up to 20 dB (A) during cycle, 100 % in cycle intervals

- Size reduction by up to 60 % through speed increase
- Exact pressure and flow control

- Hydraulic unit takes up to 80 % less space

- Thanks to actuator processes initiated directly from the pump hydraulic power loss in the system is reduced
- Exact information on current pump delivery volume from sensors on the motor and stored volumetric efficiency characteristics
- Soft highly dynamic control of all actuators

YOUR PROFIT

- Significant reduction of overall operating costs
- Fewer noise insulation measures necessary Occupational guidelines are satisfied faster and less expensively
- lower heat generation

- Reduction of pump costs
- Reduction in additional proportional valves

- Less cost for fluid
- Easier system integration

- No or simpler cooling system
- Lower investment and operating costs
- Extended life span of components
- Cost saving on fluid management
- Reduction in measuring systems
- Reduction in safety functions
- Simpler system due to controlling without proportional valve system
- Shorter cycle times

Success is best practice

Our partners share their experiences

WATER JET
CUTTER AGGREGATE



BHD Servotron® high pressure pumps – environmentally friendly aggregates for water jet cutting

By deploying variable speed drive technology – a highly dynamic frequency-controlled hydraulic drive consisting of a servo motor and an internal gear pump – unwanted pressure fluctuations have been practically eliminated compared to the previously used pressure-controlled axial piston pump and asynchronous motor. In this application the water pressure is read in and controlled directly over a high-pressure sensor in the servo inverter. High-precision water pressure control is thus achieved. Besides excellent cutting results, energy efficiency is also increased by 15 percent thanks to the use of the DVA.

Calibrating press 1500kN with faceting work station 50kN

The calibrating press and faceting work station are each equipped with top and bottom pistons. In all, eight servo pump sets are used: five sets with a double internal gear pump 50+22 ccm/rev., three sets with one internal gear pump 22 ccm/rev.

Per component the new system saves up to 70 % energy compared to conventional presses of this design, which were previously run with constant pressure systems (accumulator fed by axial piston pumps).

The outstanding performance is based on position control of the top and bottom calibrating piston, which is performed entirely over the speed of the servo pumps with no need for sensitive servo valves – to achieve positioning accuracy of 0.005 mm.

Aside from rugged servo pumps (the press runs in three-shift operation in 3-second cycles), the control of the servo drive is the centrepiece of the system. When the top piston makes contact with the bottom piston, the latter responds exactly to the increasing pressure of top piston to a thousandth of a second and can thus hold the position precisely during component calibration.



CALIBRATING PRESS



ENGEL victory 160

Servo pumps are ideally suited for energy-saving implementation on plastic injection moulding machines for the sequential driving of all operations like dosaging, closing, injecting, discharging, core pulling units.

PLASTIC INJECTION
MOULDING MACHINE

More compact, more performance

Eckerle reversing pumps

↳ Customer request:

HIGH DYNAMICS

VERY HIGH VOLUMETRIC
EFFICIENCY AT LOW SPEED

COMPACT DESIGN

REVERSIBILITY [4 Q-READY]

REDUCTION OF VALVE SYSTEMS



EIPQ5

Your benefits:

- 2 or 4 quadrant operation possible
- very low hysteresis
- energy recovery
- Exceptionally compact design
easy to integrate

Our reversing pumps can run as pump and motor in each direction. Ideally, they are used in a closed circuit.

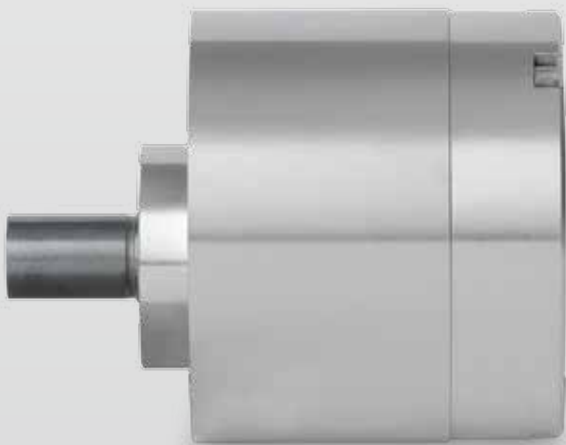
Combined with speed-controlled electric motors hydraulic actuators can be run without valves. Since flow is zero on reversal, a smooth switch-over is achieved.

Higher dynamics, lower costs

Eckerle cartridge pumps



Available as EIPRO and EIPR1 annular pump
lowest capacities at high pressure,
e.g. 0.18 ccm/rev. at 200 bar



**Available as
EIPS2 and EIPS3 segment pump**

We offer you compact highly integrated industrial solutions, as annular or segment pumps. The great advantage of cartridge pumps is unimpeded access to the aggregates. The motor can thus be easily removed from the housing at the turn of a hand, e.g. for inspection and maintenance. The pipe connections on the housing does not need to be removed, thus saving you more time.

Your benefits:

- High dynamics
- Greatly reduced noise generation
- Higher energy efficiency due to direct coupling
- No piping
- Easy integration

We are driven by top quality

Experience and know-how supply the fuel



3D MICROSCOPE



Quality has always taken first priority at Eckerle. This factor is not only of vital importance for our development, production and sales, but also of course our customers success. This is why we are scrupulous about maintaining consistently high standards of quality. Innovative engineers, excellent, keen and skilled employees are the best guarantee that the name Eckerle will continue to stand for premium quality in Germany and around the world in the future.

3D MEASURING MACHINE



FATIGUE TEST



CONTOUR TESTING

FUNCTION TEST

NOISE MEASUREMENT



Find out more:
eckerle.com

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