Innovative Screw Pump

With hydrostatic load compensation for low- and high-pressure applications

Status quo
There are increasing pump pressure requirements by clients, but existing screw pumps are uneconomical for high-pressure applications (>100 bar). The pressure operation limit is a function of rotating speed, oil viscosity, shape and clearance of the pump.

Our technology: Hydrostatic load compensated screw pump
The presented invention is a screw pump with oil pockets inside the pump casing. Slots are connected to the suction- and discharge side. A channel is always unilaterally closed with the external diameter of the idle spindle. The component load is compensated by a radial-load-balancing-system located in the area of the delivery profile, which is synchronized to the turn angle of the screws.

Benefits
- Complete load compensation.
- Cost-effective production since the hydrostatic load compensation system does not require an external feed.
- Low-pulsation and therefore a low noise conveying characteristic.
- Optimal adaptation of the pump to the operating condition.
- Reduction of energy costs due to an optimal adjustment during the pumping process.

Current stage of development
The functionality of the screw pump was validated by a first prototype. A second prototype provided additional technological improvements.

Application possibilities
Pumps, e.g. for the power energy or injection machinery market.

Intellectual property situation
The presented technology is protected by intellectual property rights.

Commercialization opportunities
We are looking for industry partners who are interested in using the technology. If there is any demand for further development of the technology regarding implementation in products, a close cooperation between the industry partner and Technische Universität Darmstadt is possible.

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