

■■■■■■ Pumps.

KRAL



Screw Pumps for Marine Applications.
Efficient and reliable for many years.

Green Shipping
Technology by KRAL. 

Welcome to KRAL.

About us.

With headquarters in Austria, KRAL GmbH was founded in 1950 and has been an independent family enterprise ever since. We therefore think and invest long-term so that we can remain a stable and reliable business partner for our customers.

KRAL develops and produces screw pumps and flow measurement technology. In addition, we offer customer-specific solutions for systems, from the initial engineering process through to commissioning. And of course our After Sales Service is available to help you after purchase. Our primary business sectors include marine, power generation, oil and gas, mechanical engineering, and chemicals. Our customers include local businesses as well as global industrial concerns.

What you can expect from us.

Since the company was founded, KRAL has established itself as a manufacturer of quality products with a fair price/performance ratio. In order to live up to our standard, we continuously invest in our employees, our manufacturing processes, and our methodological expertise. A commitment to Total Quality Management (TQM) is a key component of our company philosophy. Furthermore, we are increasing the levels of automation and digitization in our company. Our customers claim that we can meet special needs. What's more, KRAL is greatly appreciated for its reliable partnerships and the fact that working together with us is professional and very straightforward. This

makes us quite proud. We will continue to strengthen these values in the future. That's why we continuously invest in innovations, both for products as well as methodology and processes.

A key component in our approach to customer-orientation is that you can rely on excellent care from our Customer Center as well as our After Sales Service. This includes both expertise and reaction speed.

We have summarized what you can expect as a KRAL customer in our company vision:

"KRAL is quality, innovation and quick response, anytime and anywhere around the world."

Check out our services and see for yourself. We will be happy to help you.



DI Otmar Kräutler
CEO





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Applications.

KRAL pumps – a wide range of applications.

 Applications.	 Type.
1 Booster module.	K*
2 Boiler.	DKC DLC*
3 Engine and gear lubrication.	K*
	C*
4 Cargo, tank transfer and bunkering.	Z
5 Hydraulic steering system. 6 Hydraulic propeller adjustment.	C*
7 Hydraulic anchor windlass.	W*



 Delivery rate.	 Pressure.	 Temperature.
5 to 2,900 l/min. 0.3 to 174 m ³ /h.	16 bar.	-20 to +180 °C.
5 to 200 l/min. 0.3 to 12 m ³ /h.	40 bar.	-20 to +180 °C.
5 to 2,900 l/min. 0.3 to 174 m ³ /h.	16 bar.	-20 to +180 °C.
5 to 3,550 l/min. 0.3 to 213 m ³ /h.	100 bar.	-20 to +180 °C.
1,300 to 11,000 l/min. 80 to 660 m ³ /h.	25 bar.	-40 to +300 °C.
5 to 3,550 l/min. 0.3 to 213 m ³ /h.	100 bar.	-20 to +180 °C.
15 to 290 l/min. 0.9 to 17.4 m ³ /h.	120 bar.	-20 to +180 °C.

* available with magnetic coupling.



1 Booster Module – K Series.

The KRAL K series is ideally suited for use in booster modules due to its high power density and compact design.

The booster module is the heart of a ship's fuel supply. It filters fuel and sets the correct pressure and viscosity. The properties of the fuels used place high demands on the booster module pumps. Heavy fuel oil must be pumped at high temperatures. Critical substances may be present in the fuel. Despite extensive filtering, abrasive foreign particles are not completely removed.

KRAL screw pumps from the K series are self-priming positive displacement pumps. They convey fuel over a wide pressure range with high efficiency, even if the viscosity changes.








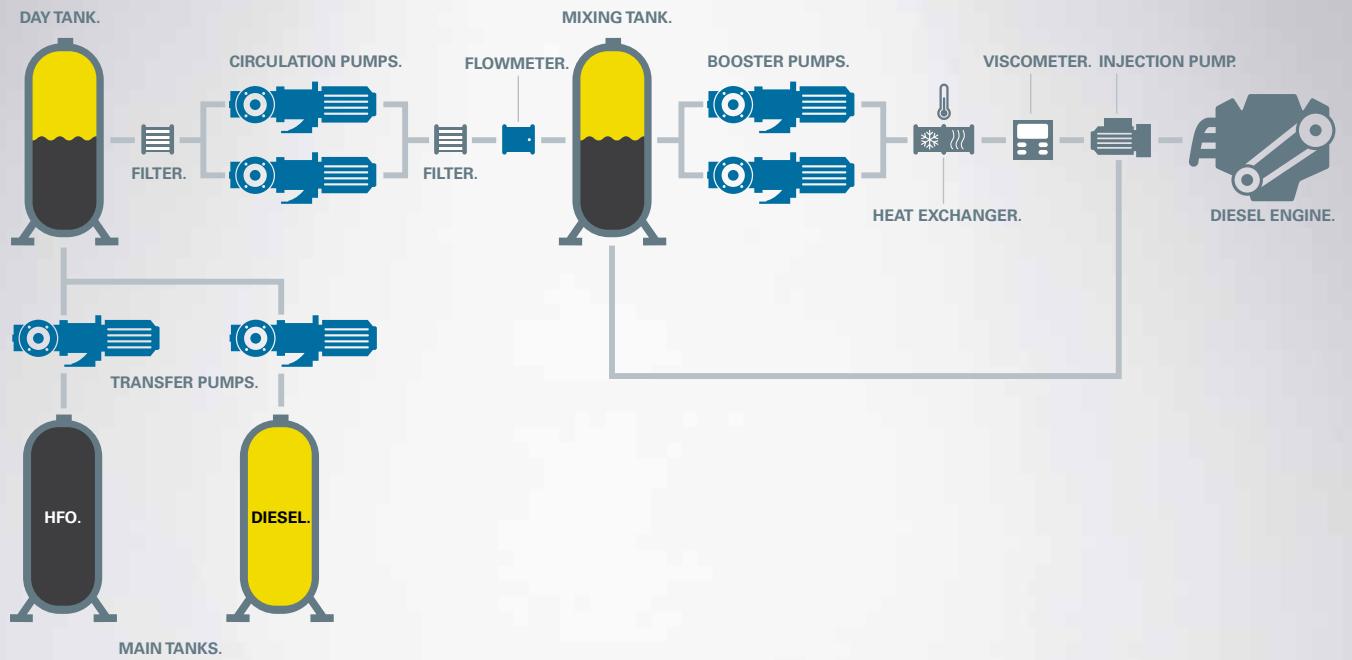
Product information.

- Housing: Spherulitic graphite iron EN-GJS-400.
- Screws: Nitride steel.
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.

Green Shipping Technology by KRAL.

- ✓ Available with magnetic coupling.
- ✓ Fit for low sulfur.
- ✓ Up to 1.1 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Booster module.	K	5 to 2,900 l/min. 0.3 to 174 m ³ /h.	16 bar.	-20 to +180 °C.



2 Boiler – Double Station DKC | DLC Series.

When uninterrupted oil supply must be guaranteed.

The double stations of the KRAL DKC | DLC series are characterised by their ready-to-connect, compact design. The two mounted KRAL screw pumps are self-priming, low in pulsation and operate quietly.

The optional switchover from the operating to the reserve screw pump can be carried out electrically or manually on the device. Pump maintenance and filter cleaning are possible without interrupting operation.








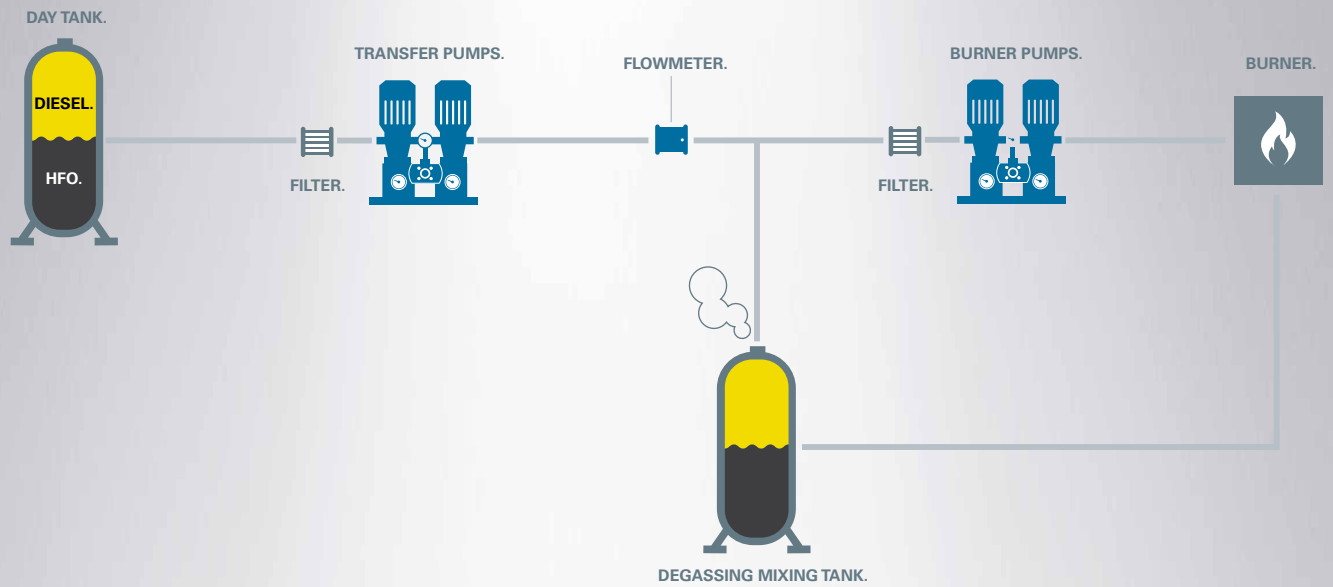
Product information.

- Housing: Spherulitic graphite iron EN-GJS-400.
- Screws: Nitride steel.
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.

Green Shipping Technology by KRAL.

- ✓ Available with magnetic coupling.
- ✓ Fit for low sulfur.
- ✓ Up to 1.1 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Transfer.	DKC	5 to 280 l/min. 0.3 to 16.8 m ³ /h.	16 bar.	-20 to +180 °C.
Boiler.	DLC	5 to 200 l/min. 0.3 to 12 m ³ /h.	40 bar.	-20 to +180 °C.



3 Engine and Gear Lubrication – K | C Series.

For efficient, reliable and long-lasting operation.

Compared to other pump designs, KRAL screw pumps offer a high delivery rate and take up less space. The pumps feed product-conservingly. The pumped liquid is not pressed, there are

no pressure pulses that damage the pipeline and other components or cause vibrations. KRAL screw pumps are also very quiet.

Product information K series.






- Housing: Spherulitic graphite iron EN-GJS-400.
- Screws: Nitride steel.
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.

Product information C series.

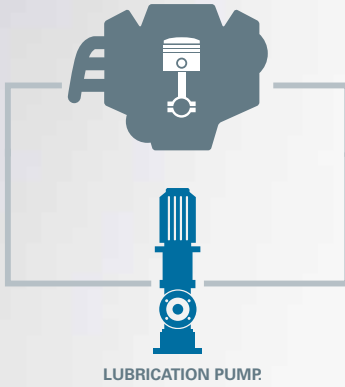
- Housing: Spherulitic graphite iron EN-GJS-400, steel (welded).
- Screws: Nitride steel.
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.



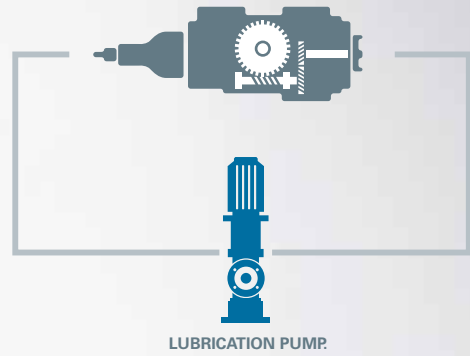
- Available with magnetic coupling.
- Fit for low sulfur.
- Up to 1.1 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Engine and gear lubrication.	K	5 to 2,900 l/min. 0.3 to 174 m ³ /h.	16 bar.	-20 to +180 °C.
	CK	5 to 1,750 l/min. 0.3 to 105 m ³ /h.	70 bar.	-20 to +150 °C.
	CL	5 to 1,750 l/min. 0.3 to 105 m ³ /h.	70 bar.	-20 to +180 °C.
	CG	5 to 3,550 l/min. 0.3 to 213 m ³ /h.	100 bar.	-20 to +180 °C.

DIESEL ENGINE.



GEARS.



4 Cargo, Tank Transfer and Bunkering – Z Series.

KRAL Z series is dry-run safe in all areas and offers optimum operating performance.

The KRAL series Z is a synchronised two screw pump with a double-flow design. Due to the synchronised and thus non-contact operation of the screws, aggressive, contaminated and low to non-lubricating liquid can also be conveyed reliably and with low pulsation. Dry running times are also possible. The

double-flow design also enables very high delivery rates and axial pressure compensation in the pump housing, which ensures long service life for the pump. In this series, the connection arrangement are unlimitedly variable.








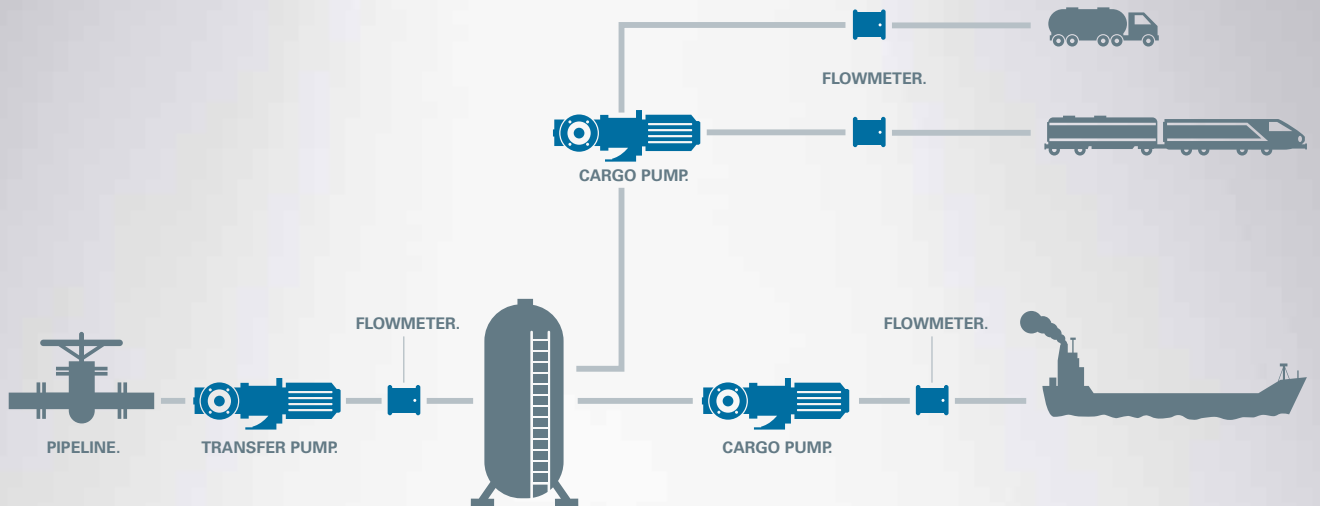
Product information.

- Housing: Spherulitic graphite iron or steel (welded).
- Screws: One-piece (solid) or multi-piece (engineered).
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, DNV/GL, LRS, RINA.
- Higher delivery rates.
- Pumps low-viscosity medium from 0.7 mm²/s.
- Pumps medium with up to 80 % gas content, light chemicals.



- Fit for low sulfur.
- Up to 0.7 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Cargo, tank transfer and bunkering.	Z	1,300 to 11,000 l/min. 80 to 660 m ³ /h.	25 bar.	-40 to +300 °C.



5 6 7 Hydraulics – Steering System, Propeller Adjustment, Anchor Windlass – C | W Series.

KRAL C | W series are the optimal solution for hydrodynamic know-how on deep-sea vessels.

KRAL screw pumps of the C | W series operate according to the displacement principle and are therefore ideal for hydraulic applications with high system pressures. The KRAL screw pumps feed product-conservingly and constantly without pressing the

liquid. In contrast to many other functional principles, KRAL screw pumps have a linear delivery rate characteristic. They can thus be controlled easily and cost-effectively with a frequency converter.

Product information C series.

- Housing: Spherulitic graphite iron EN-GJS-400, steel (welded).
- Screws: Nitride steel.
- ATEX: Ⓜ II 2 GD b/c group II, category 2.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.
- Tank design possible.






Product information W series.

- Housing: Spherulitic graphite iron EN-GJS-400 or other material options.
- Screws: Nitride steel.
- Heating: Electrical, media or steam.
- Approvals: ABS, BV, CCS, DNV/GL, KR, LRS, MRS, NK, RINA.
- Tank design possible.

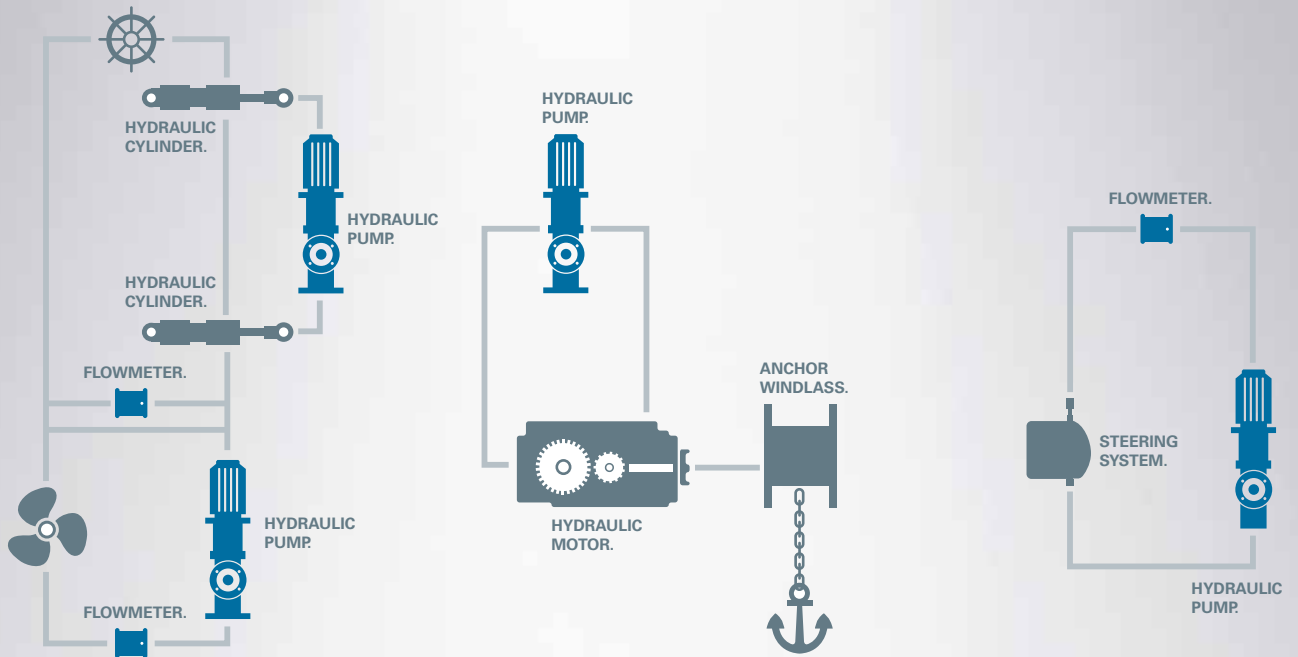


Green Shipping Technology by KRAL.

- Fit for low sulfur.
- Up to 1.1 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Hydraulics.	CK *	5 to 1,750 l/min. 0.3 to 105 m ³ /h.	70 bar.	-20 to +150 °C.
	CL *	5 to 1,750 l/min. 0.3 to 105 m ³ /h.	70 bar.	-20 to +180 °C.
	CG	5 to 3,550 l/min. 0.3 to 213 m ³ /h.	100 bar.	-20 to +180 °C.
	W *	15 to 290 l/min. 0.9 to 17.4 m ³ /h.	120 bar.	-20 to +180 °C.

* tank design possible.



KRAL Screw Pump With Magnetic Coupling.

Optimum safety and significantly reduced operating costs.

Reduced lifecycle costs.

Spare part and maintenance costs for mechanical seals increase lifecycle costs. Mechanical seals in KRAL screw pumps have a high technological standard. Even when properly operated, however, they are a wearing part. This results in spare parts and maintenance costs. KRAL magnetic couplings are maintenance free. Magnetically coupled pumps pay for themselves after just a few years.

Prevent pump failures.

Heavy oil residues can cause a pump failure. In order to reduce friction, the sealing faces require lubrication through the pumped liquid. The liquid comes into contact with air at the sealing surfaces. Heavy oil reacts with atmospheric oxygen and forms coking in pump carriers and ball bearings that goes unnoticed. Damaged ball bearings are hot. The elastomer coupling melts. The pump fails. KRAL magnetic couplings are hermetically sealed. The fuel has no air contact and forms no residues.








Product information.

- Leakage-free – no accumulation of residues.
- Wear-free – no maintenance, no wear.
- Hermetically sealed – prevents contact of the liquid with the atmosphere.
- Temperature resistance up to 300 °C.
- High delivery rates for all motor sizes.



- With magnetic coupling.
- Fit for low sulfur.
- Up to 1.1 mm²/s.

 Applications.	 Type.	 Delivery rate.	 Pressure.	 Temperature.
Booster module and boiler.	K L C	5 to 3,550 l/min. 0.3 to 213 m ³ /h.	100 bar.	-20 to +300 °C.



Service From a Single Source.

Short reaction times. Fast and competent.



Installation and commissioning.

We can help you install and commission your KRAL products upon request. Professional installation and optimal deployment of the pumps are prerequisites for error-free operation. Our technicians not only know our products; they also know how the system affects the pump and can configure the latter accordingly for optimal performance. As a customer, you benefit from our wealth of experience, because we've commissioned large numbers of KRAL pumps at our customers' premises.

Training.

KRAL training provides you with in-depth knowledge on installing, commissioning, and maintaining your KRAL product. You receive expert information from the manufacturer on how to install and commission your KRAL product properly, and you learn about various applications and utilization limits. You also learn to identify and rectify faults based on actual damage profiles. We lead you through a professional maintenance routine and show how you can reduce your product's operating costs. The training can be held either at our headquarters in Lustenau or at your premises, upon request.



Maintenance and repair.

Downtime can generate substantial costs. Increase the operational safety and minimize the life-cycle costs of your KRAL product through the preventative maintenance services provided by our competent service team. When a breakdown occurs, our service technicians react quickly and arrive at your premises in no time. When you make a repair shipment, confirmation of receipt is sent to you as soon as the shipment arrives. Each time a repair is made, we send you a comprehensive technical report together with detailed images. We perform maintenance work and repairs at our headquarters in Lustenau or at your premises, upon request. And the genuine KRAL parts we use guarantee the highest standards of quality.

Spare parts.

KRAL pumps meet the highest quality standards. To ensure those standards are maintained, you should only use genuine KRAL parts as spare parts. They guarantee that your pumps maintain a high level of quality, continue to operate smoothly, and last a long time.



Headquarters.

KRAL GmbH

Bildgasse 40, Industrie Nord
6890 Lustenau, Austria
e-mail: kral@kral.at
Tel.: +43/5577/86644-0

Further locations.

KRAL Deutschland GmbH

88131 Lindau
Germany

KRAL Polska Sp. z o.o.

40-668 Katowice
Poland

KRAL SAS

69100 Villeurbanne
France

KRAL-USA, Inc.

28105 Matthews, NC
USA

KRAL (Wuxi) Machinery Technology Co., Ltd.

214100 Wuxi
China