HELLER

Crankshaft/camshaft production systems

RFK/DRZ/RFN

RFK, DRZ and RFN series

Systematic full-service made by HELLER

Building on the knowledge gained throughout more than 130 years, HELLER sees itself not only as a machine manufacturer but also as a solutions provider catering to the complex requirements of modern manufacturing and with the ability to respond to the questions and challenges of its customers.

With its high-quality machine tools and manufacturing systems for the manufacturing industry HELLER has been a leading system supplier to the automotive industry and its suppliers for many years. As a full-service partner, HELLER also offers all the services required for the operation of the machinery.

One of the core competencies of HELLER is the development of solutions for the complete machining of crankshafts and camshafts – from single process machines and manufacturing sections through to entire manufacturing lines.

HELLER is among the few manufacturers worldwide providing extensive experience throughout the entire process chain. With the RFK/DRZ/RFN production systems and a host of machining centre models, we offer all core technologies for the pre-machining of crankshafts and camshafts. The powerful special-purpose machines can be equipped for stand-alone operation or for linkage to a manufacturing line.

Thanks to customised process engineering and project management, customer care and support are guaranteed throughout the entire course of a project. Already in the planning phase, simultaneous engineering helps to optimise the process capability and productivity of the systems, resulting in valuable time savings.

For more information go to:
www.heller.biz/en/crankshaft-camshaft-production-systems

DRZ

Turn-chasing of crankshafts

_cutting speed is generated by workpiece

_tool generates the feed rate

_plunge turning using standard inserts in combination with a chasing operation, specifically developed for this purpose and patented by HELLER, enables cost-effective and highly precise machining of any diameters and surfaces, positioned concentric to the rotary axis

_extended tool operation times due to the use of duplicate cutting edges

_fast indexing of inserts results in extremely short chip-to-chip-times

_automatic tip probing of inserts in two directions

_all concentric diameters (mains, undercuts, grooves, flange and stub-end) can be machined in a single set-up

_robust machine design also allows heavy-duty cheek face cutting or cutting of the cheek outer diameter

_workpieces are clamped using two hydraulic, electronically synchronised clamping chucks; retractable clamping jaws are available as an option

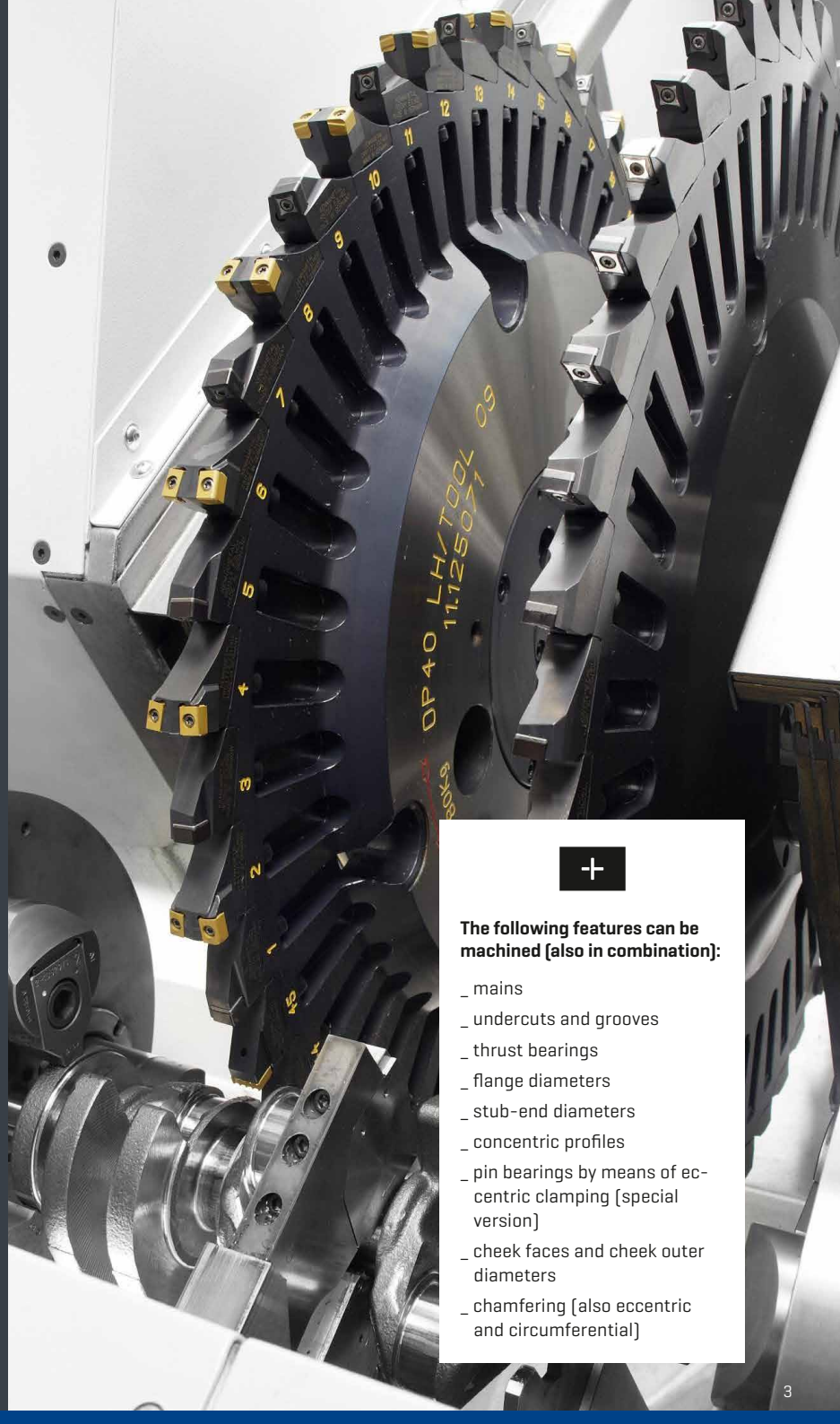
_to absorb cutting forces, workpieces can also be supported by an optional mobile steady rest, which can be positioned via NC programming

_steady rest travels on a separate guideway to ensure unrestricted positioning within the travel path

_machining using either one or two turn-chasing units is possible

_high precision of the machined surfaces eliminates the need for rough grinding

Production system		DRZ 10	DRZ 15	DRZ 30
Max. workpiece dimensions **Length** **Swing diameter**	 mm mm	 500 200	 600 200	 1,250 290
Tool diameter	mm	700	700	700
Max. power	kW	30	48	48



The following features can be machined (also in combination):

_ mains

_ undercuts and grooves

_ thrust bearings

_ flange diameters

_ stub-end diameters

_ concentric profiles

_ pin bearings by means of eccentric clamping (special version)

_ cheek faces and cheek outer diameters

_ chamfering (also eccentric and circumferential)

RFK

External milling of crankshafts

_tool generates the cutting speed

_workpiece generates the feed rate

_use of external cutters

_tool profile is designed according to the profile to be milled

_for crankpin machining, 2 interpolating NC axes are used which are positioned eccentrically to the workpiece centre and/or the concentric main bearings of crankshafts

_rotary feed is generated by the rotary axis of the workpiece, with the milling unit(s) following as required using one/two linear axis/axes

_the plunge cut to the journal diameter is performed either by the linear axis of the milling unit alone, with the rotary axis stationary, or by a spiral motion with interpolation of the two axes – during plunge cutting, the cheek faces can be fully or partially machined

_to withstand the cutting forces, workpieces are clamped and supported by two hydraulic clamping chucks with electrically synchronised rotation and an additional steady rest that can be positioned using NC programming

_steady rest travels on a separate guideway below the milling slides to ensure unrestricted positioning within the traverse path

_enables machining using one or two milling units

_bearing diameters and undercuts can be machined in a single operation

_enables simultaneous machining of mains and pin profiles

_enables use of gang cutters

_high precision of the machined surfaces eliminates the need for rough grinding

Production system		RFK 10	RFK 15	RFK 30
Max. workpiece dimensions **Length** **Swing diameter**	 mm mm	 500 200	 600 200	 1,250 290
Tool diameter	mm	700	700	800
Max. power	kW	30	60	80

The following features can be machined (also in combination):

_ mains

_ pin bearings

_ main and pin bearings in a single set-up

_ cheek faces and cheek outer diameters

_ undercuts

_ cheek profiles

RFK

External milling of large crankshafts and eccentric shafts

_tool generates the cutting speed

_workpiece generates the feed rate

_use of external cutters

_tool profile is designed according to the profile to be milled

_for crankpin machining, 2 interpolating NC axes are used which are positioned eccentrically to the workpiece centre and/or the concentric main bearings of crankshafts

_rotary feed is generated by the rotary axis of the workpiece, with the milling unit(s) following as required using one/two linear axis/axes

_the plunge cut to the journal diameter is performed either by the linear axis of the milling unit alone, with the rotary axis stationary, or by a spiral motion with interpolation of the two axes – during plunge cutting, the cheek faces can be fully or partially machined

_to absorb cutting forces, workpieces are clamped and supported by two hydraulic clamping chucks with electrically synchronised rotation, plus one (RFK 30-2-2000) or two (RFK 30-2-4500) steady rests which can be positioned using NC programming

_steady rest travels on a separate guideway below the milling slides to ensure unrestricted positioning within the traverse path

_enables machining using one or two milling units

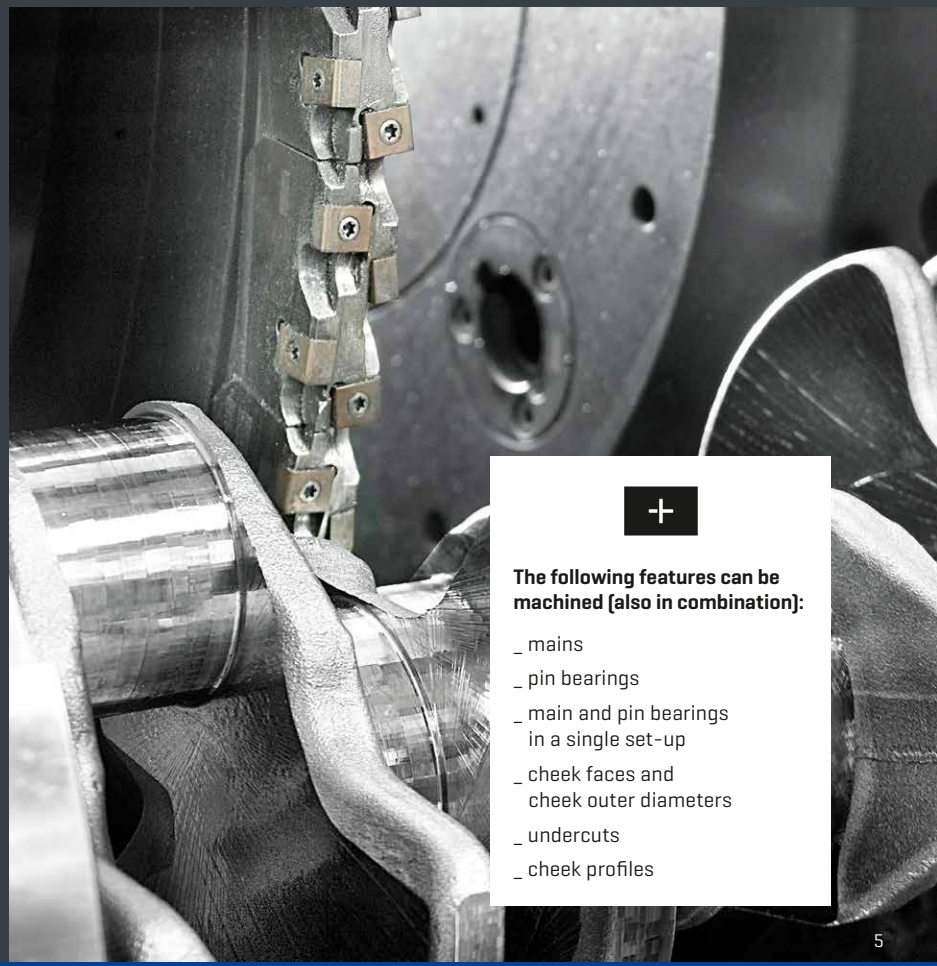
_bearing diameters and undercuts can be machined in a single operation

_enables simultaneous machining of mains and pin profiles

_enables use of gang cutters

_high precision of the machined surfaces eliminates the need for rough grinding

Production system		RFK 30-2-2000	RFK 30-2-4500
Max. workpiece dimensions **Length** **Swing diameter**	 mm mm	 2,000 350	 4,500 485
Tool diameter	mm	800–870	960
Max. power	kW	60	60



The following features can be machined (also in combination):

_ mains

_ pin bearings

_ main and pin bearings in a single set-up

_ cheek faces and cheek outer diameters

_ undercuts

_ cheek profiles

RFK

Internal milling of crankshafts

_tool generates the cutting speed

_workpiece generates the feed rate

_use of internal cutters

_tool completely surrounds the workpiece, i.e. inner tool diameter exceeds the maximum workpiece swing diameter and the clamping chuck diameter

_tool profile is designed according to the profile to be milled

_for crankpin machining, 2 interpolating NC axes are used which are positioned eccentrically to the workpiece centre and/or the concentric main bearings of crankshafts

_rotary feed is generated by the rotary axis of the workpiece, with the milling unit(s) following as required using one/two linear axis/axes

_plunge cut to the journal diameter is either carried out using the linear axis of the milling unit while the rotary axis is stationary, or using a spiral motion with interpolation of the two axes – during plunge cutting, the cheek faces can be fully or partially machined

_to withstand the cutting forces, workpieces are clamped and supported by two hydraulic clamping chucks with electrically synchronised rotation and an additional steady rest that can be positioned using NC programming

_steady rest travels on the guideway below the milling slides and is positioned between the two milling units on twin-spindle machines

_enables machining using one or two milling units

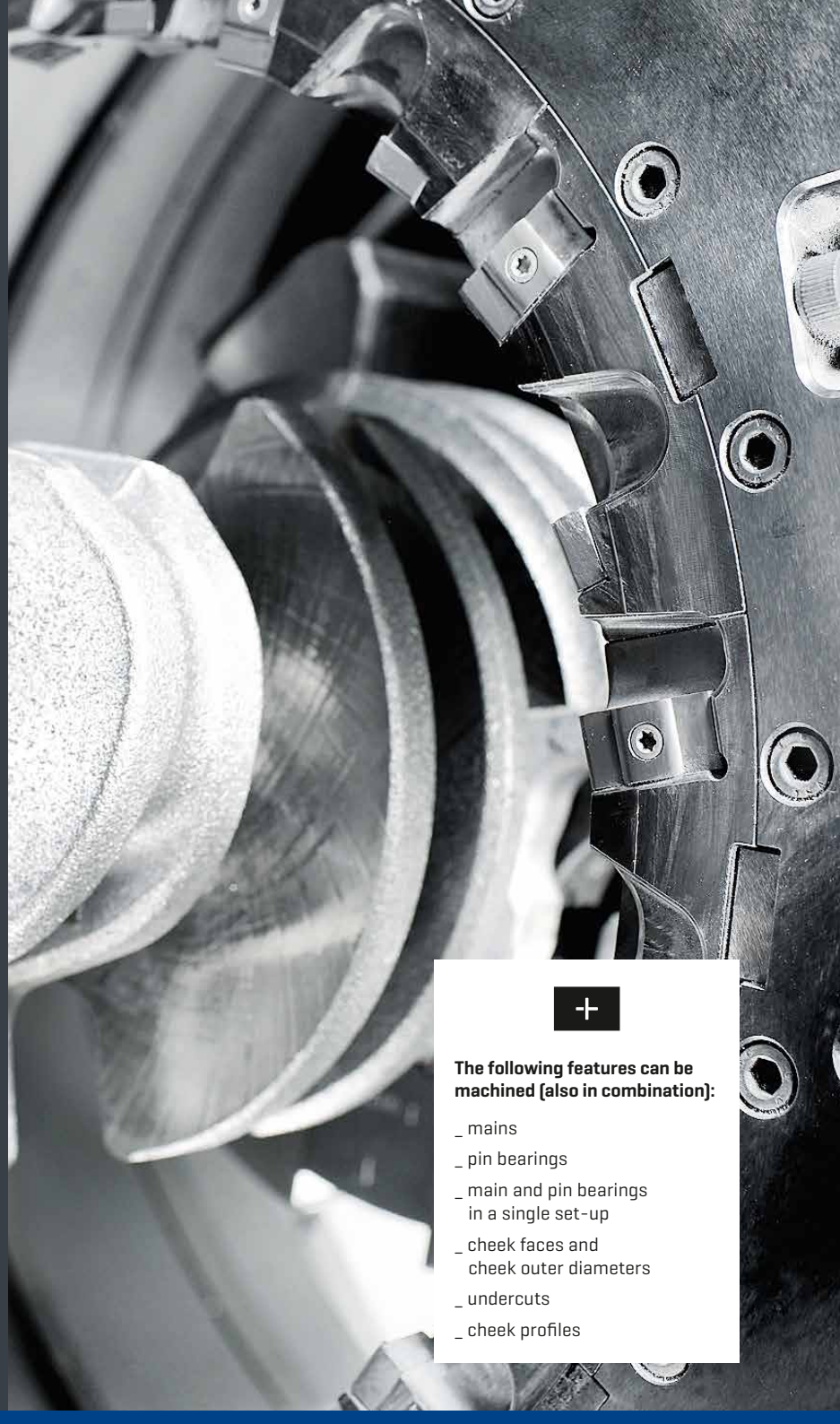
_bearing diameters and undercuts can be machined in a single operation

_enables simultaneous machining of mains and pin profiles

_enables use of gang cutters

_high precision of the machined surfaces eliminates the need for rough grinding

Production system		RFK 100	RFK 150	RFK 300
Max. workpiece dimensions **Length** **Swing diameter**	 mm mm	 500 200	 600 200	 1,250 290
Tool diameter	mm	230	275	310
Max. power	kW	30	60	80



The following features can be machined (also in combination):

_ mains

_ pin bearings

_ main and pin bearings in a single set-up

_ cheek faces and cheek outer diameters

_ undercuts

_ cheek profiles

RFN

External milling of camshafts

_tool generates the cutting speed

_workpiece generates the feed rate

_use of external cutters

_cutter diameter can also be used for most hollow cam profiles

_tool profile is designed according to the profile to be milled

_2 interpolating NC axes are used for the machining of cam profiles

_rotary feed is generated by the workpiece rotary axis while the milling unit(s) is/are following as required using one/two linear axis/axes

_plunge cut to the cam profile is either carried out using the linear axis of the milling unit while the rotary axis is stationary or using a spiral motion with interpolation of the two axes

_to absorb cutting forces, workpieces are clamped and supported by two hydraulic clamping chucks with electrically synchronised rotation and by one or two additional steady rests which can be positioned using NC programming

_steady rests travel on a separate guideway below the milling slides to ensure unrestricted positioning within the travel path

_enables machining using one or two milling units

_allows machining of cam profiles and chamfers in a single operation

_enables use of gang cutters

_allows radial alignment by means of bore or groove

_high precision of machined contours eliminates the need for rough grinding

Production system		RFN 10
Max. workpiece dimensions **Length** **Swing diameter**	 mm mm	 1,250 100
Tool diameter	mm	450
Max. power	kW	37

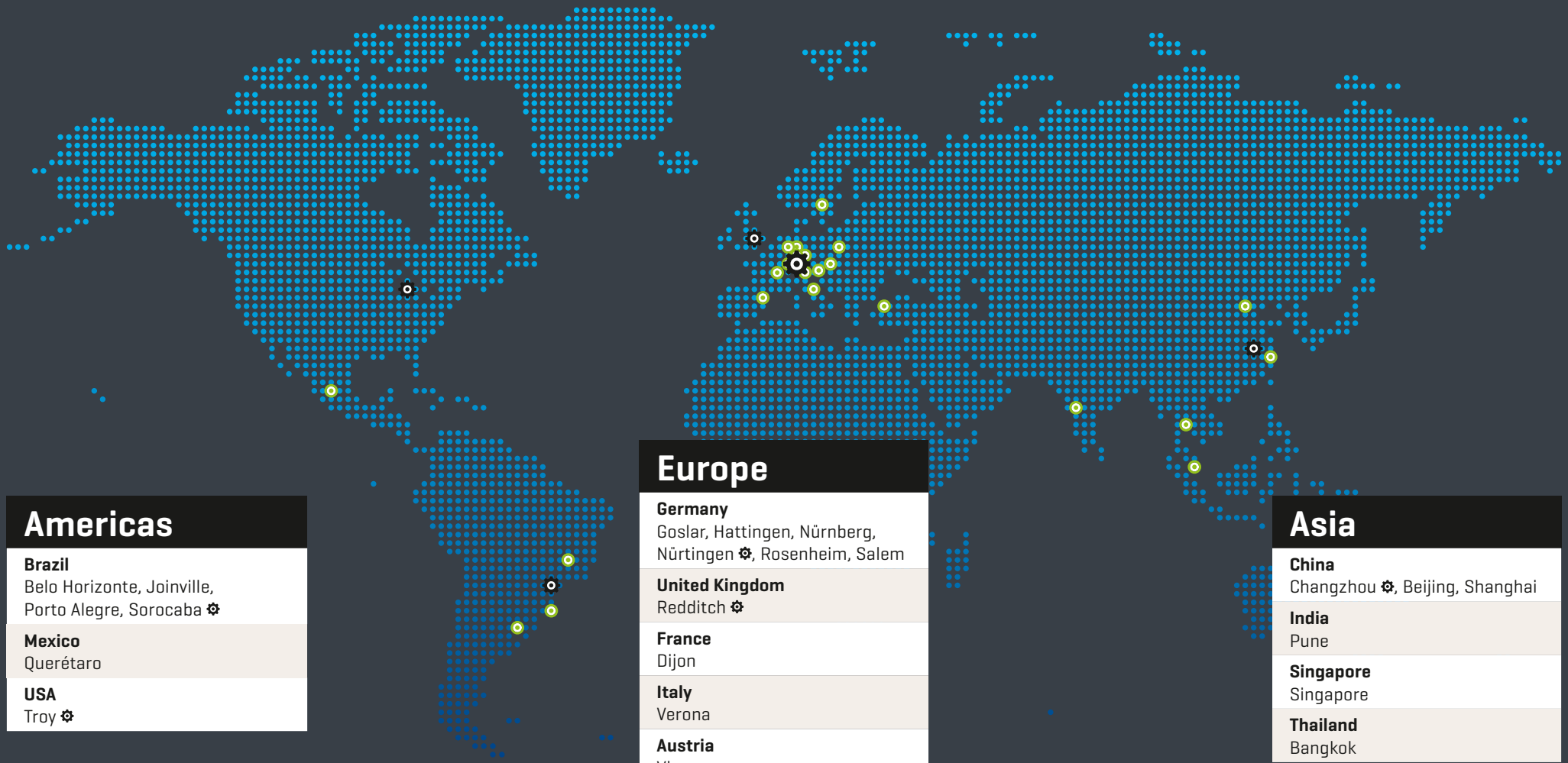
The following features can be machined (also in combination):

_ cam profiles made of cast and forged camshafts

_ cam profiles made of bar stock

_ cam profiles with circumferential chamfers/ profiles

_ cam interspaces (special application)



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