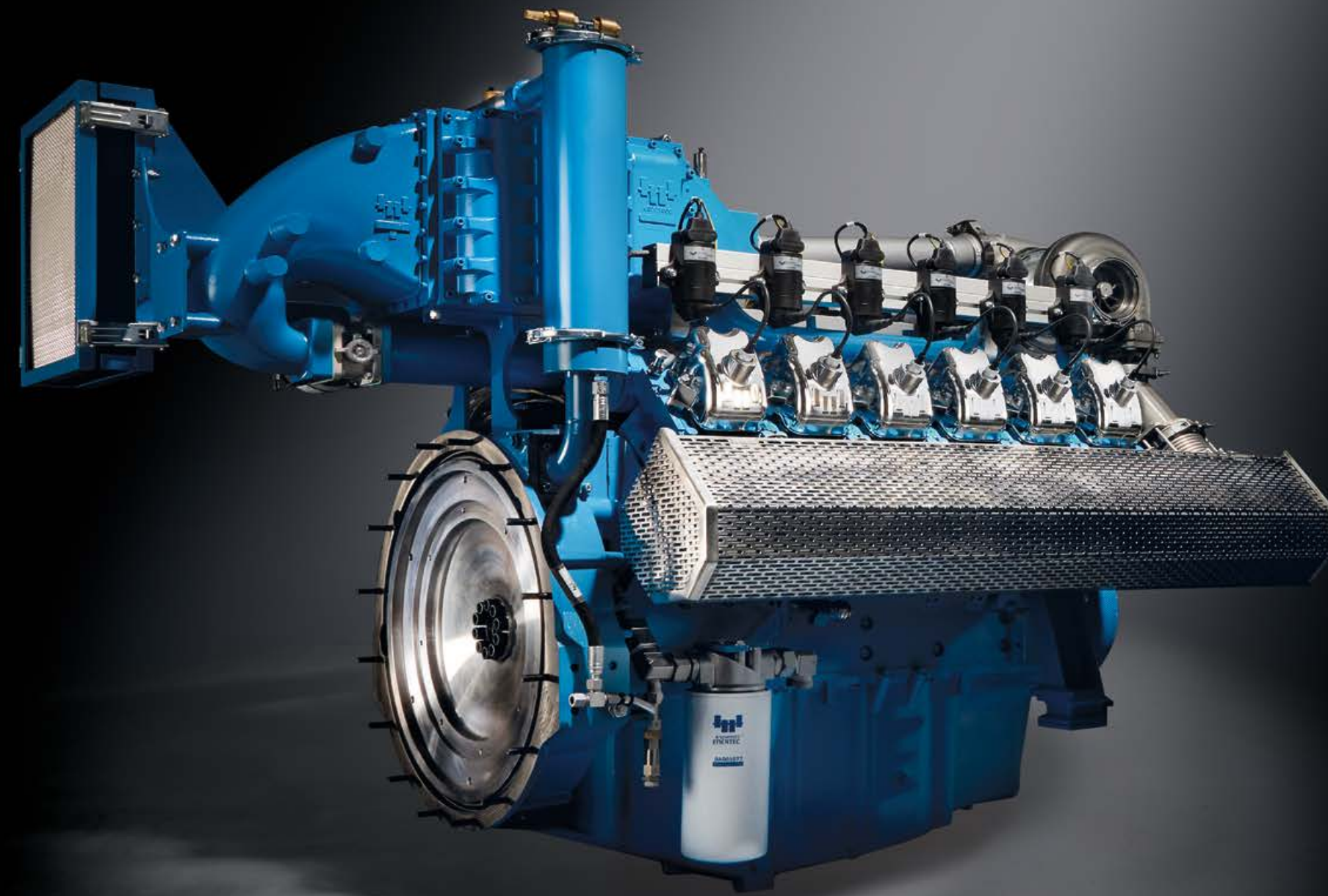


R SCHMITT®
ENERTEC

Committed to Performance





// Who is R Schmitt Enertec® GmbH?

R Schmitt Enertec® GmbH, in short RSE, is one of the few gas engine manufacturers worldwide with a real focus on producing innovative gas engines. Unlike many other manufacturers in this segment, RSE exclusively specialises in gas engines. You will find our state of the art, multipurpose factory accommodating our in-house research and development, sales, service and manufacturing departments located in the scenic town of Mendig, Germany.

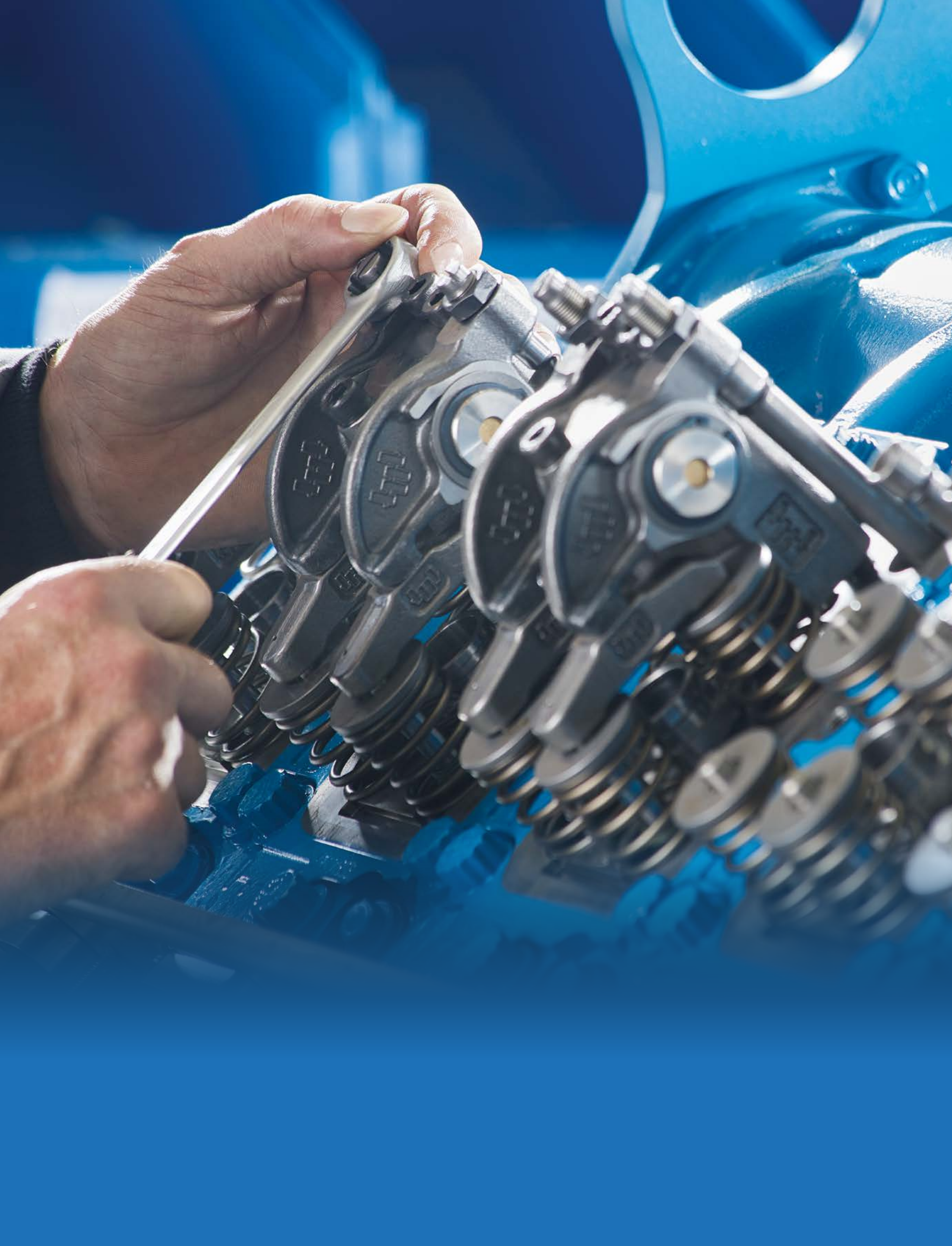
But we do much more than just manufacture engines there. With over 40 years of commitment to this cause, our heart and soul is invested in the design, development and production of the engines that we install in our combined heat and power plants (CHP) and generator sets. Starting from raw castings and their processing up to assembly and the final test run, we build engines of the highest quality here in our factory in Mendig. This is how RSE ensures that we design our ENERGIN® gas engine power plants flexibly and tailored according to the specific requirements of our customers from all over the world.

Our long history in this specialised sector began with the manufacturing of internal combustion engines in 1976. At that time, we repaired, maintained, overhauled and even optimized stationary or mobile diesel and gasoline engines from various manufacturers. Our first combined heat and power plant was commissioned back in 1981, and since then we have assembled („packaged“) CHP units with gas engines from various manufacturers. We have seen first-hand how, through self-responsibility, things can be done differently, more efficiently and with more flexibility.

So in 1996, RSE began to develop and produce its own gas engines that would enable a flexible and tailored, individual response to market and customer requirements. And that's not all. As the manufacturers, we also provide the direct point-of-contact for all aspects of operation and service.

Today RSE manufactures the third generation of our ENERGIN® engine series, including V - engines with 6, 8 and 12 cylinders, equipped with turbochargers and 4 - valve cylinder heads. We will always aim for the highest electrical efficiencies in our performance class.





// Production

For decades, we at R Schmitt Enertec® have preferred in-house production prior to subcontracting as it allows us maximum flexibility with full product responsibility towards our customers. Our ISO 9001 certified quality management system outlines the individual work processes and commits us to be and do the best.

This all starts from the cutting of raw steel, the welding of the base frames, the production of exhaust gas heat exchangers and the CNC machining of engine components. The control part including its programming is a key technology we manage in-house.



**ENERGIN® gas engine power plants
at 50 Hz (60 Hz data on request)**

ENERGIN® GEN

ENERGIN® GEN+

ENERGIN® CHP

	ENERGIN® type	Engine type	Fuel power (LHV)	Electrical power	Electrical efficiency		Electrical power	Thermal power	Thermal efficiency	Electrical power	Thermal power	Thermal efficiency
natural gas	G140	M06-GT0D41	363 kW	140 kW	38,6 %		140 kW	111 kW	30,6 %	140 kW	187 kW	51,5 %
	G200	M06-GTID41	488 kW	200 kW	41,0 %		200 kW	131 kW	26,8 %	200 kW	241 kW	49,4 %
	G250	M06-GT2D41	598 kW	250 kW	41,8 %		250 kW	128 kW	21,4 %	250 kW	272 kW	45,5 %
	G260	M08-GTID41	634 kW	260 kW	41,0 %		260 kW	173 kW	27,3 %	260 kW	315 kW	49,7 %
	G333	M08-GT2D41	795 kW	333 kW	41,9 %		333 kW	174 kW	21,9 %	333 kW	364 kW	45,8 %
	G400	M12-GTID41	973 kW	400 kW	41,1 %		400 kW	264 kW	27,1 %	400 kW	483 kW	49,6 %
	G500	M12-GT2D41	1187 kW	500 kW	42,1 %		500 kW	255 kW	21,5 %	500 kW	539 kW	45,4 %
biogas	B140	M06-BT0D41	356 kW	140 kW	39,3 %		140 kW	98 kW	27,5 %	140 kW	165 kW	46,3 %
	B200	M06-BTID41	479 kW	200 kW	41,8 %		200 kW	120 kW	25,1 %	200 kW	213 kW	44,5 %
	B250	M06-BT2D41	587 kW	250 kW	42,6 %		250 kW	120 kW	20,4 %	250 kW	238 kW	40,5 %
	B260	M08-BTID41	623 kW	260 kW	41,7 %		260 kW	159 kW	25,5 %	260 kW	280 kW	44,9 %
	B333	M08-BT2D41	781 kW	333 kW	42,6 %		333 kW	162 kW	20,7 %	333 kW	320 kW	41,0 %
	B400	M12-BTID41	955 kW	400 kW	41,9 %		400 kW	241 kW	25,2 %	400 kW	427 kW	44,7 %
	B500	M12-BT2D41	1170 kW	500 kW	42,7 %		500 kW	241 kW	20,6 %	500 kW	477 kW	40,8 %
LPG	P115	M06-PT0D41	375 kW	115 kW	30,7 %		115 kW	148 kW	39,5 %	115 kW	225 kW	60,0 %
	P173	M06-PTID41	495 kW	173 kW	34,9 %		173 kW	171 kW	34,5 %	173 kW	277 kW	56,0 %
	P205	M06-PT2D41	573 kW	205 kW	35,8 %		205 kW	174 kW	30,4 %	205 kW	301 kW	52,5 %
	P233	M08-PTID41	666 kW	233 kW	35,0 %		233 kW	233 kW	35,0 %	233 kW	375 kW	56,3 %
	P260	M08-PT2D41	725 kW	260 kW	35,9 %		260 kW	224 kW	30,9 %	260 kW	382 kW	52,7 %
	P350	M12-PTID41	997 kW	350 kW	35,1 %		350 kW	348 kW	34,9 %	350 kW	561 kW	56,3 %
	P450	M12-PT2D41	1251 kW	450 kW	36,0 %		450 kW	376 kW	30,1 %	450 kW	657 kW	52,5 %
woodgas	H122	M06-HT2D41	351 kW	122 kW	34,8 %		122 kW	102 kW	29,1 %	122 kW	182 kW	51,9 %
	H166	M08-HT2D41	476 kW	166 kW	34,9 %		166 kW	140 kW	29,4 %	166 kW	248 kW	52,1 %
	H250	M12-HT2D41	715 kW	250 kW	35,0 %		250 kW	208 kW	29,1 %	250 kW	375 kW	51,9 %

Thanks to its modular design, our ENERGIN® gas engine units can be individually adapted to the needs of our customers. Equipped with V6, V8 and V12 cylinder engines, they cover a power range from 115 to 500 kW. The engines are optimized for operation with natural gas, biogas, LPG wood gas or other special gases.

The types GEN, GEN+ and CHP differ in the degree of heat extraction. They all have in common their compact, ready-to-use design.

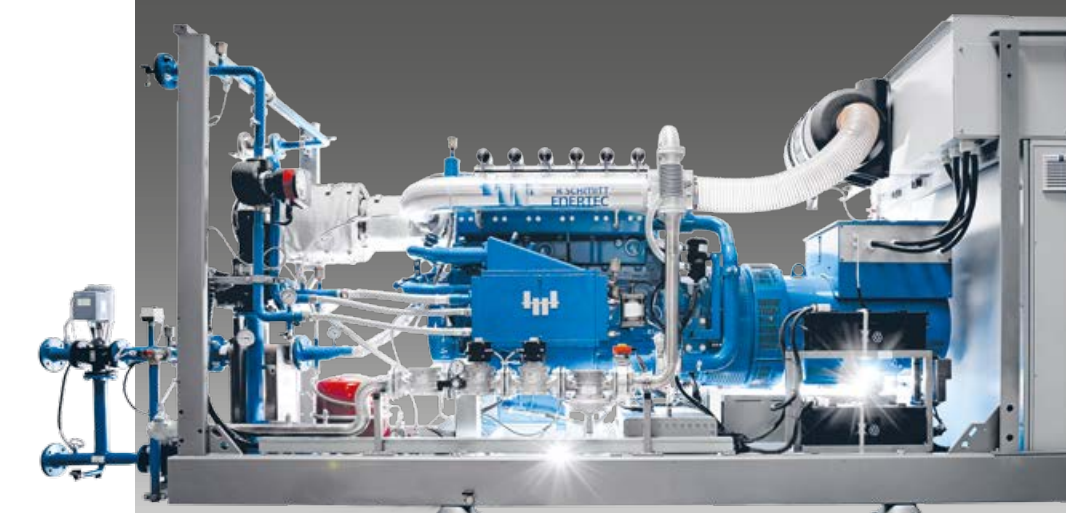
The electric efficiency is the same for GEN, GEN+ and CHP with same electric rating.

ENERGIN® GEN are for power production only. The units are supplied for parallel operation with the public grid as well as for island or island parallel operation without grid connection.



ENERGIN® GEN+ are combined heat and power units with heat recovery from the engine block cooling, lube oil and the first stage of the mixture cooling circuit.

The exhaust gas heat remains unused on the unit or it can be used for direct heating for drying processes or for the generation of steam in a downstream boiler.



Our ENERGIN® CHP are compact combined heat and power plants with highly efficient heat extraction from the engine jacket water, the lubricating oil, the first stage of the mixture cooling circuit and the exhaust gas of the gas engine. Thanks to its compact design, they are easy to install and save space, as all components such as the gas engine, generator, heat exchangers, circulation pumps, primary exhaust silencer, the control and switchgear cabinets are piped and wired on a common base frame. The CHP can be combined with an absorption chiller to even produce chilled water, as CCHP.





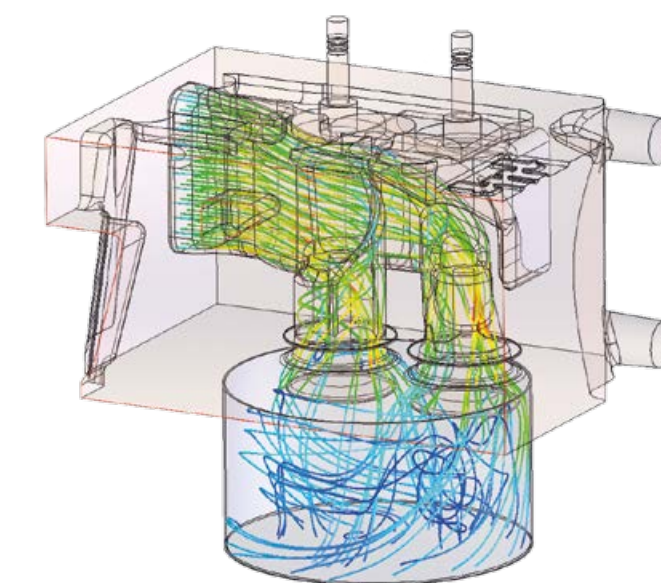
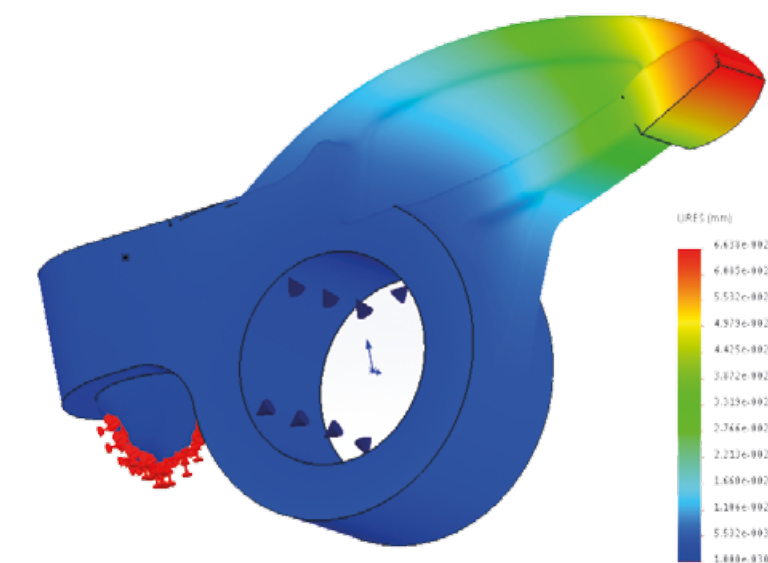
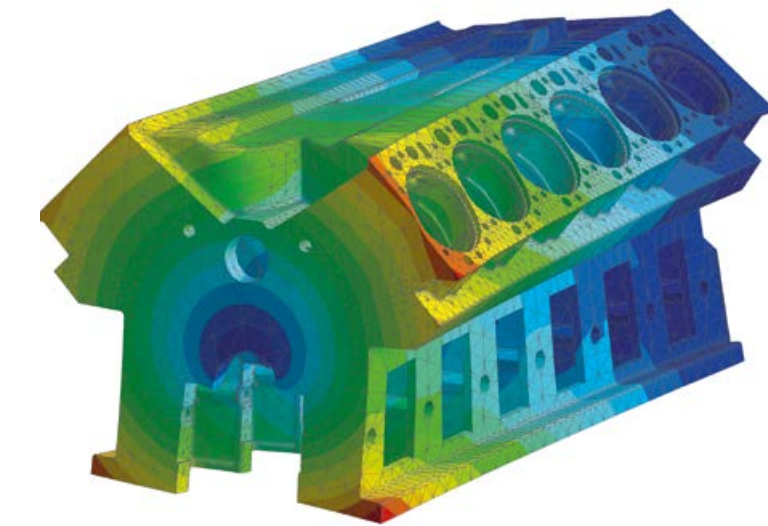
// Gas engine know-how

R Schmitt Enertec® has more than 20 years of experience in the construction of gas engines. As early as 1996, the first in-house produced 8-cylinder engine was installed on a wastewater treatment plant in Germany, where it has performed more than 100,000 operating hours.

Today's ENERGIN® gas engine generation is being continuously developed to be better and better by our R&D department. Our team of experienced mechanical and software engineers closely work together to optimise and expand our engine series to suit customer's changing needs. For the current engine series, 40% of the engine components were redesigned in close cooperation with suppliers and our in-house production department.

As our engines are designed for stationary use only, we do not have to compromise like other mass producers. At RSE, we are focused only on gas engine technology, distinguishing us from other manufacturers who have to ensure that the same engine base can also serve mobile diesel engines.

We use state-of-the-art simulation tools such as CFD or FEM, and extensively test new products on our test benches. We measure and optimize the mechanical, electrical, thermal and thermodynamic properties of our units for later use. Our advanced test benches allow mains parallel operation as well as isolated operation to be tested on a 1 MW load bank. One test cell is equipped for the simulation of network failures including even Low Voltage Ride Troughs (LVRT).



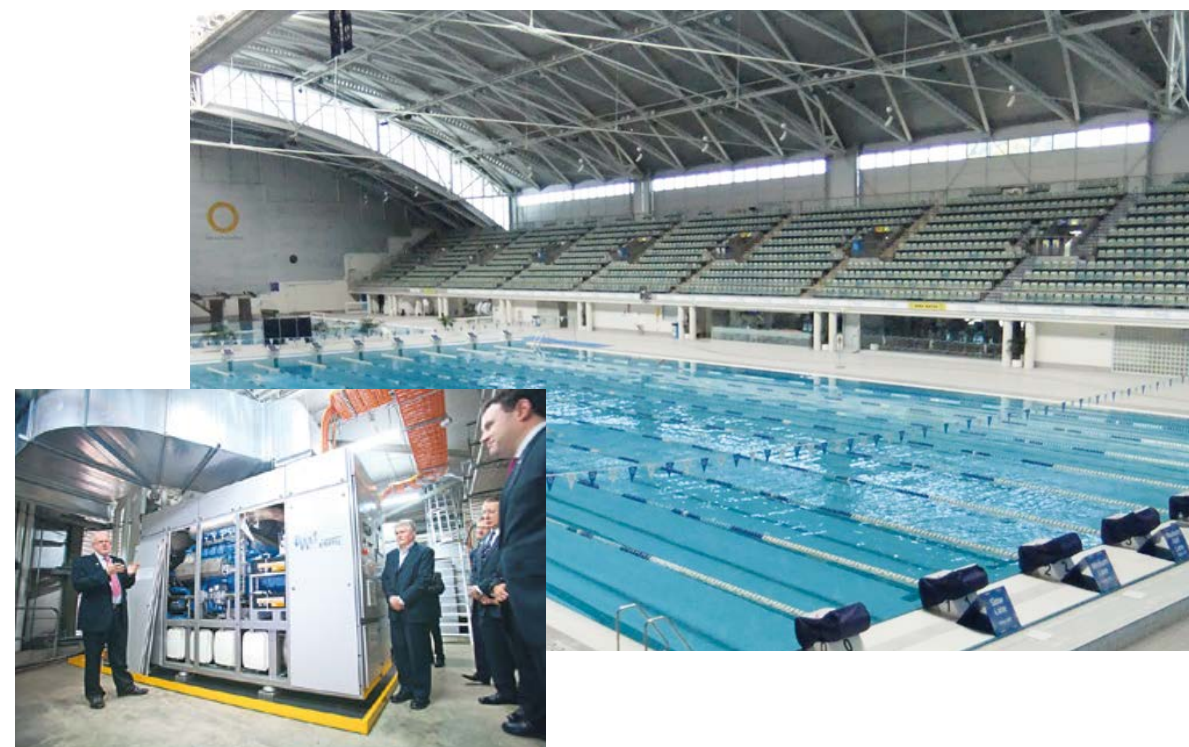
The ENERSCREEN® system takes over the control and monitoring of the engine, the alternator, the system periphery and the grid parallel operation, in externally certified compliance to the BDEW Medium Voltage Directive (Grid code).

Completely developed in-house at RSE, it is precisely tailored to the needs of ENERGIN® engines and units. Using an Intel Atom processor and industrial hardware with a sampling rate of up to 10 kHz, it combines high-precision measurement and control technology on one hand and the Windows-based office world on the other. Remote access is easily handled by connecting to the Internet via Ethernet or USB port. Interfaces for connection to all common bus systems in industry and building control systems are available.



ENERGIN® units are operated globally and across various applications for many successful years.

// 2 x 260 kW CHP to supply the Olympic swimming pool in Sydney, Australia



// 140 kW CHP in an educational institute in Germany



// 400 kW CHP in a Biogas plant with gas cleaning system in Germany



// 5 x 400 kW CHP with emergency operation functionality for an office building in Manhattan, USA



// 5 x 500 kW fully containerized version power plant, operating on associated petroleum gas on a NIS Gazprom site in Serbia





// R Schmitt Enertec® GmbH

R Schmitt Enertec® GmbH is one of the leading manufacturers of gas engines in Europe with distributors spanning the globe. Our manufacturing facility in Mendig, Germany is where we produce gas engines, CHP's and Gensets, and provide around-the-clock maintenance, overhaul and telemonitoring services. Our extensive know-how in gas engine technology has been built upon over 40 long years of operation. This is why RSE gas engines are sold and operated across all the continents of the world. With our presence in the Middle East, our Dubai-based sales office enables us to better serve our customers in Asia and the MENA region better.

// Highly Experienced

It is not surprising that with over four decades of experience in the production of combined heat and power plants and gas engines, R Schmitt Enertec®'s successful operations have been proven through hundreds of installations worldwide.

// Greatest Flexibility

Due to the modular design of the ENERGIN® series, almost every customer requirement regarding system size, heat utilization and gas type can be fulfilled with standardized products. Our solutions are tailor-made to customer's requirements.

// Full Product Responsibility

Due to the high level of vertical integration of development and production of engines and units at RSE, we are the direct point-of-contact in all the matters. This means we react quickly and efficiently in service.

// Highest Quality Standards

All our components meet the highest demands on reliability and longevity - even under extreme conditions. Our in-house processes undergo continuous R&D and quality control according to ISO 9001-2015.

// After Sales Service

At RSE, our customer care does not end with the delivery of the machine. In addition to the on-site start-up & commissioning, we offer comprehensive maintenance and service options including our 24-hour service centre. We can also provide a training program for operators and service partners.

Our extensive in-house production enables the availability of RSE spare parts even beyond the mandatory period of 10 years.



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