RSE

SMART ENERGY – STRONG FUTURE

Brno, Czech Republic

Modern energy is no longer just about generation. It's about reliability, sustainability, adaptability, and resilience in a rapidly changing world.

Organizations worldwide are rethinking their infrastructure – and for good reason:

$ rising energy costs

instability of centralized grids

new expectations for uninterrupted power supply

CO_2 increasingly stringent decarbonization requirements

In this environment, flexible local solutions are no longer a "bonus" – they're a strategic necessity.

RSE helps you stay ahead with solutions that work today and scale for tomorrow's challenges.

RSE = REAL-TIME ENERGY + REAL-WORLD RESILIENCE

We don't just supply cogeneration modules. We build adaptive, decentralized energy infrastructure that performs where other systems fail.

- **900+ MW** installed capacity
- **150+** clients
- **30+** modules/month
- **40%** in-house components
- **99%+** uptime / **5–12 day** installation

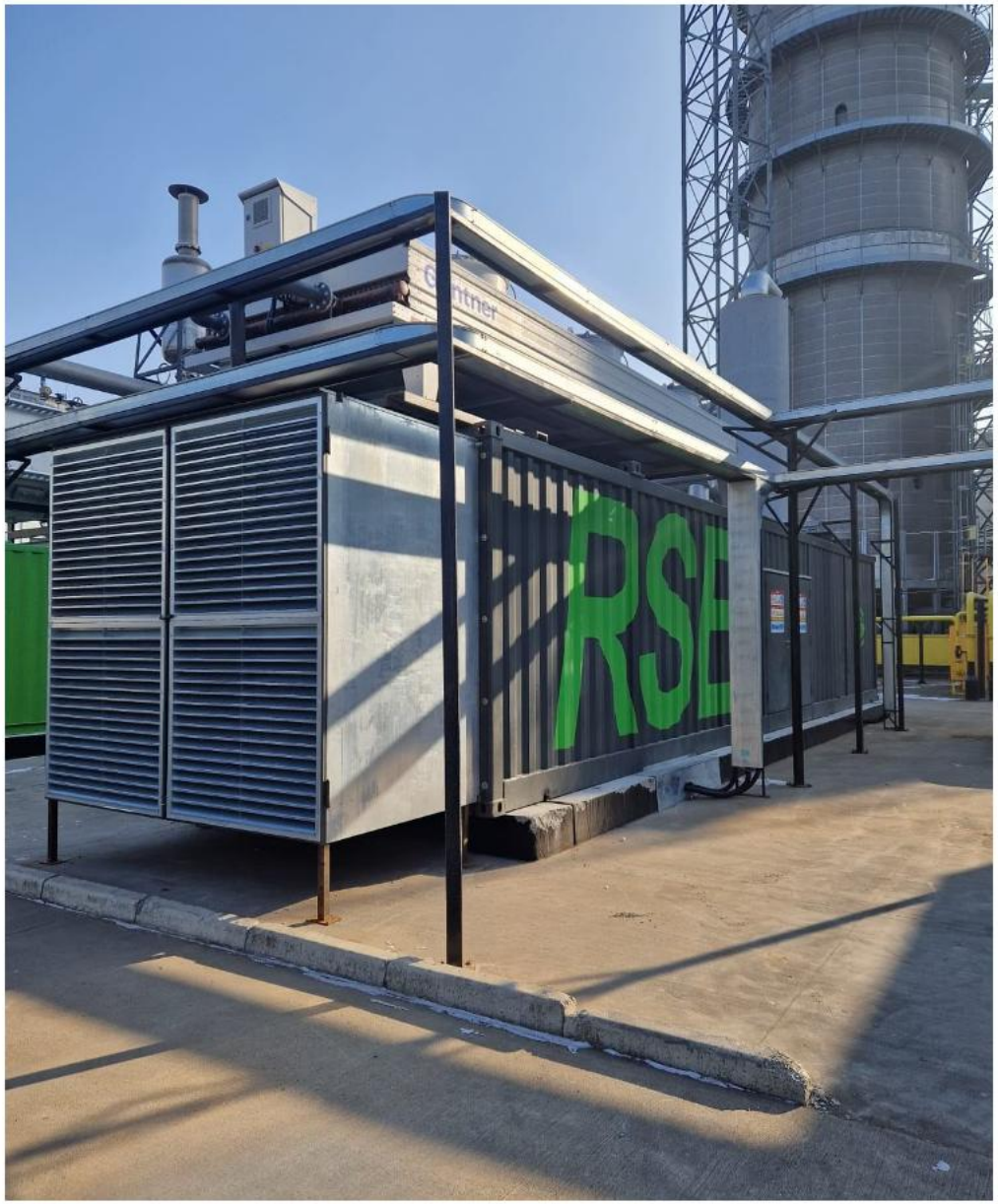
OUR APPROACH

Rapid deployment:
5 – 12 day commissioning depending on the solution

Flexible modularity:
scalable for sites, communities, or regions

Integrated heat, power, and storage: a seamlessly coordinated system

Engineering heritage + modern solutions: we continue the technical legacy of PRŮMYSLOVÉSTA. Our team brings over 15 years of engineering experience and hundreds of completed projects across Europe. We combine deep expertise with modern modularity and rapid deployment.



RSE PORTFOLIO

Cogeneration Modules (CHP)

Heat Recovery Boilers

Industrial heat pumps and refrigeration units/chillers

Battery Energy Storage Systems (BESS)

With our own EU manufacturing facility (Brno, Czech Republic), experience operating in conflict zones, and turnkey approach, RSE is already delivering what will become the new norm – energy resilience in days.

KEY FEATURES

Operate independently from the grid

Ready for connection in 5 – 12 days

Provide 24/7 electricity and heat

Capacity: 10 kW to 4.5+ MW

Built on MWM gas or FG Wilson diesel engines (Caterpillar Energy Solutions)

RSE's solutions are already powering hospitals, logistics hubs, municipalities, and critical infrastructure – even in conflict zones.

RSE PRODUCT LINES IN DETAIL

Cogeneration Modules (CHP) up to 4.5 MW

Heat Recovery & Steam Boilers

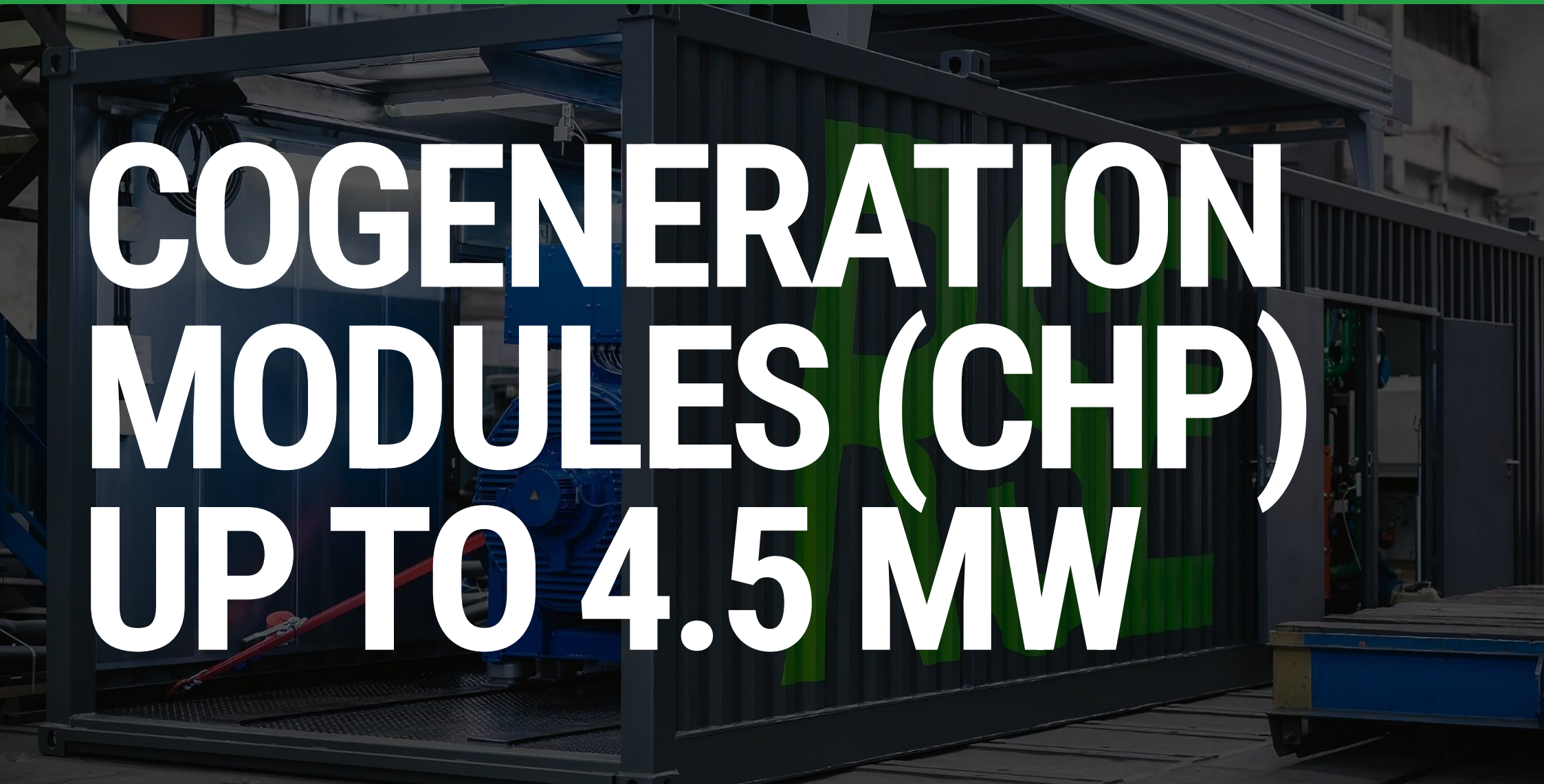
Industrial heat pumps and refrigeration units/chillers with COP up to 7.2

Battery Energy Storage Systems (BESS)

Mobile Solutions (Energy Train, containerized units)

RSE Product Line

01



COGENERATION MODULES (CHP) UP TO 4.5 MW

TURNKEY MODULAR SOLUTIONS

RSE manufactures modular cogeneration units based on **MWM** gas engines **(Caterpillar Energy Solutions)**. Our modules are complete solutions with full engineering integration: from engine and cooling system to control module and protection systems. Efficiency up to 95%.

We also offer SCR (Selective Catalytic Reduction) system integration, which reduces NOx levels to 100 mg/m³ and ensures compliance with environmental standards.

Our Modules Configuration:

- MWM gas engines from 400 kW to 4.5 MW
- Generator
- Fuel system
- Exhaust system
- Automated control
- Automatic oil replenishment system
- Control cabinet
- Grid synchronization system
- Alarm system
- Lubrication system
- Ventilation system
- Cooling system

Additional Options:

- Individual Heat Substation (IHS)
- Packaged Transformer Substation (PTS)
- Gas equipment
- Heat recovery boiler

PRODUCTION CAPACITY

30+ cogeneration modules per month, fully ready for operation.

Approximately 40% of components are manufactured in-house in the Czech Republic, ensuring quality and control at every stage.

Every unit undergoes complete testing before shipment.

Ready to operate immediately after installation.

Modular solutions = Energy without construction

RSE CHP IS AN ALTERNATIVE TO CONSTRUCTION WORK

Pre-assembled containerized and modular block solutions.

Integrated modules undergo full factory testing → significantly reducing installation time.

Compact design minimizes on-site construction, facilitates transportation, and accelerates commissioning.

Customized Solutions

Our engineers create custom solutions for unique conditions: enhanced sound insulation, extreme weather protection, integration in challenging environments (–35°C to +65°C).

European Standards

RSE gas power plants are manufactured in the Czech Republic in compliance with EU directives.

RSE is an official key partner of MWM gas engine manufacturer

MWM
Energy. Efficiency. Environment.

INSPIRED BY A CLEAN FUTURE

MWM engines are future-ready: they run on up to 25% hydrogen blend without modifications. Beyond reducing emissions, hydrogen use provides better efficiency, lower investment and maintenance costs, and longer service life.

MWM Gas Engines: Performance. Reliability. Economy.

Range

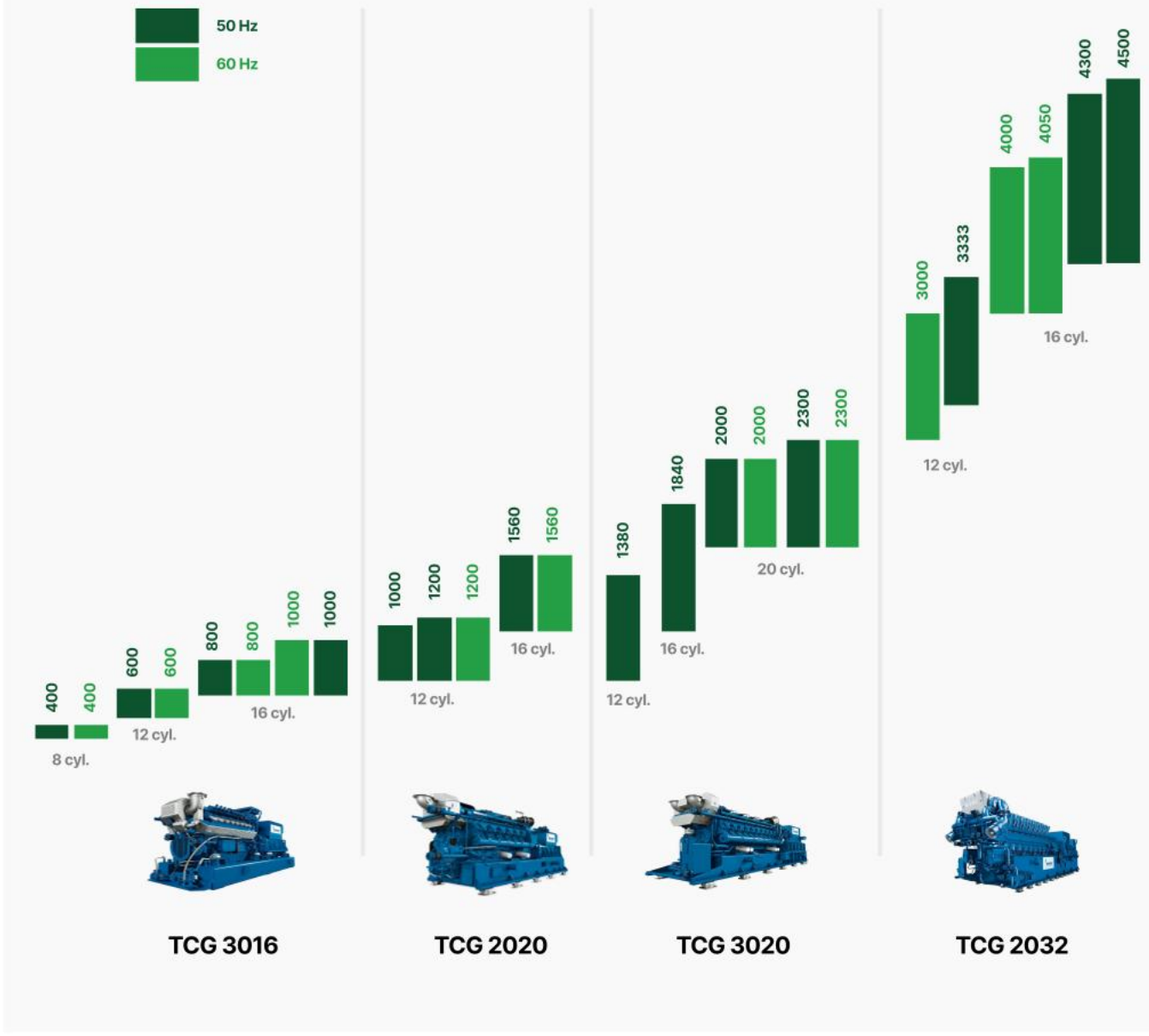
- Power output from 400 to 4,500 kWe
- Power plants of 100+ MW are possible.

Gas Types

- natural gas
- shale gas, mine gas
- biogas, landfill gas, sewage gas
- syngas, flare gas, associated petroleum gas (APG).

Key Features

- Electrical and thermal efficiency >90%.
- Low operating and service costs.
- High reliability and availability.



What's the Advantage?

LOWER EMISSIONS

- Low NOx/CO_2 levels.
- No SOx or particulates.

RAPID START-UP

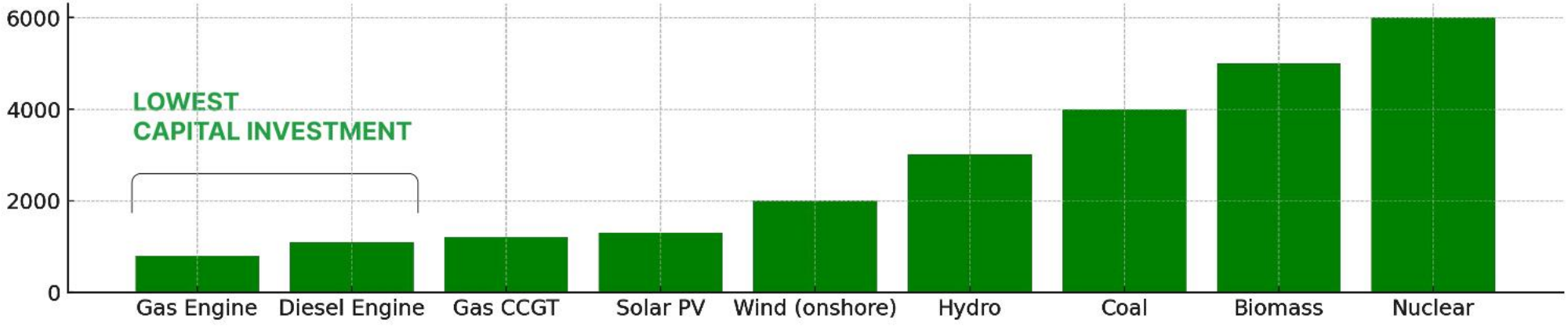
- 2 – 5 min vs. 15 – 40 min for turbines.

STABLE POWER OUTPUT

- No power loss at extreme temperatures (compared to gas turbines and cogeneration modules from other manufacturers).
- Superior performance at partial load.

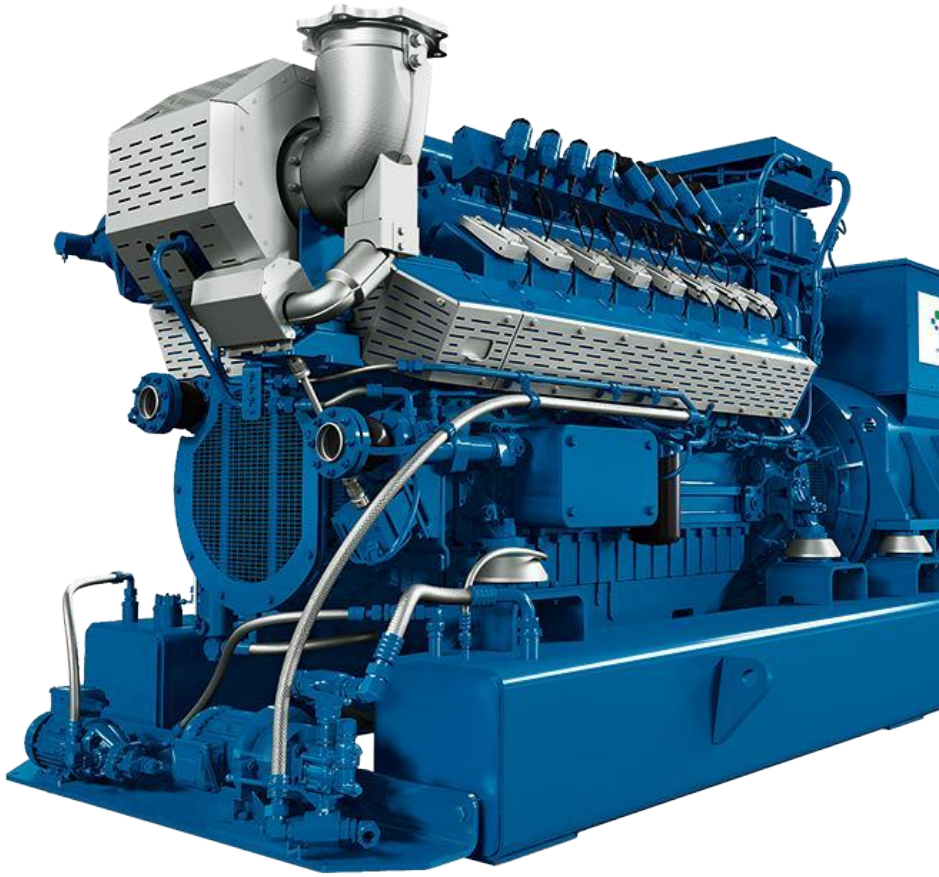
COST EFFICIENCY

- Lower service costs.
- Lower electricity costs compared to the grid.



0.4 to 1 MW – best-in-class efficiency

MWM TCG 3016



KEY FEATURES:

- Electrical efficiency up to 43.6%
- Optimized combustion and turbocharger → low losses, high efficiency
- Lowest oil consumption in class: 0.1 g/kWh
- Extended oil change and maintenance intervals
- Anti-vibration base frame → reliable operation and easy installation
- Extended intake air temperature range
- Operates in island mode, high availability

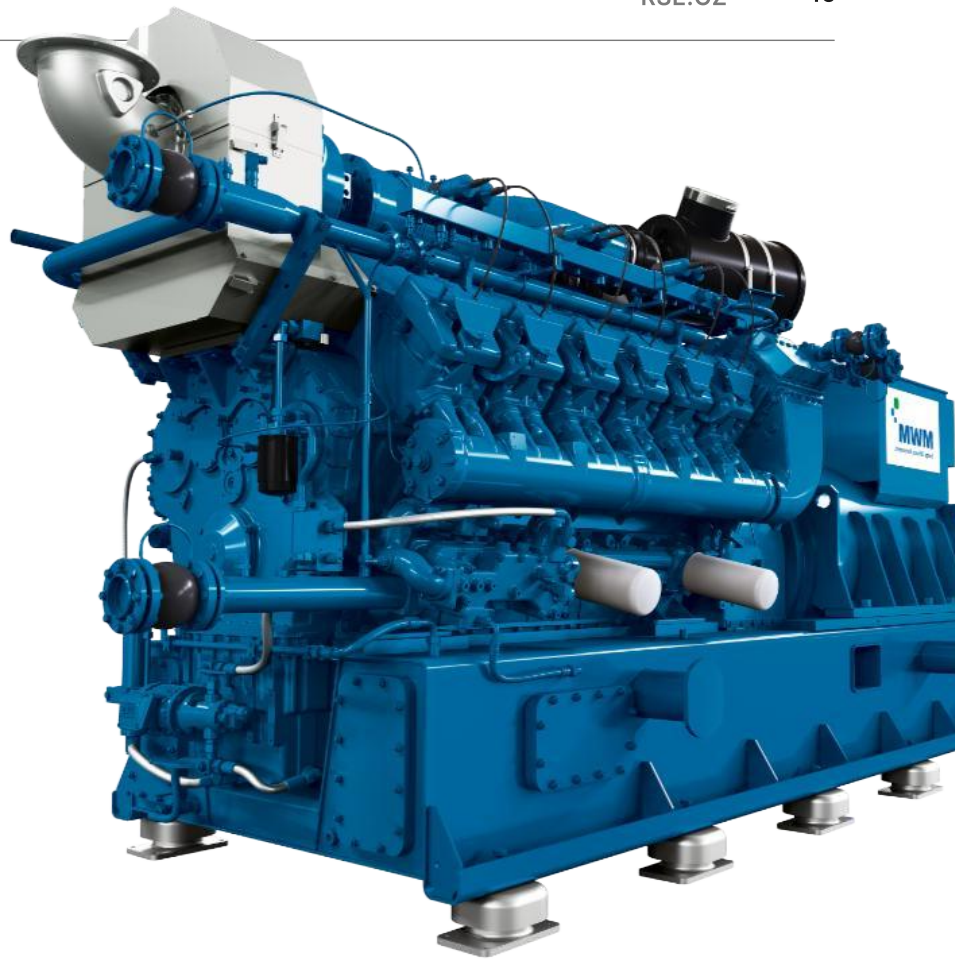
CUSTOMER BENEFITS:

- Maximum profitability through low operating costs
- Longer service life and high reliability
- Compliant with ISO 8528 standards (classes G1, G2, G3)

Engine type TCG 3016	V08p	V12p	V16p	V16S
E.power (kW)	400	600	800	1000
Average effective pressure (bar)	18.9	18.9	18.8	23.5
Thermal power ±8 (kW)	404	617	819	1123
Electrical efficiency (%)	43.1	43.4	43.6	41.5
Thermal efficiency (%)	43.6	44.6	44.6	46.6
Overall efficiency (%)	86.7	88.0	88.2	88.1

From 1.0 to 1.56 MW. Higher profit, lower costs.

MWM TCG 2020



KEY FEATURES:

- Optimized intake system, combustion chamber, and spark plugs → high efficiency.
- Fuel savings up to 15% annually.
- Oil consumption 50% lower than comparable units.
- Long service life, low operating costs.
- TEM / TPEM: intelligent control of the engine and multi-module systems.
- Individual cylinder temperature monitoring and anti-knock control → stable operation even with changing gas composition.

FLEXIBILITY IN USE:

- Suitable for both high-efficiency plants and standalone solutions with load compensation and zero-start capability.
- Operates on a wide range of gases: natural, mine, landfill, sewage, and more.

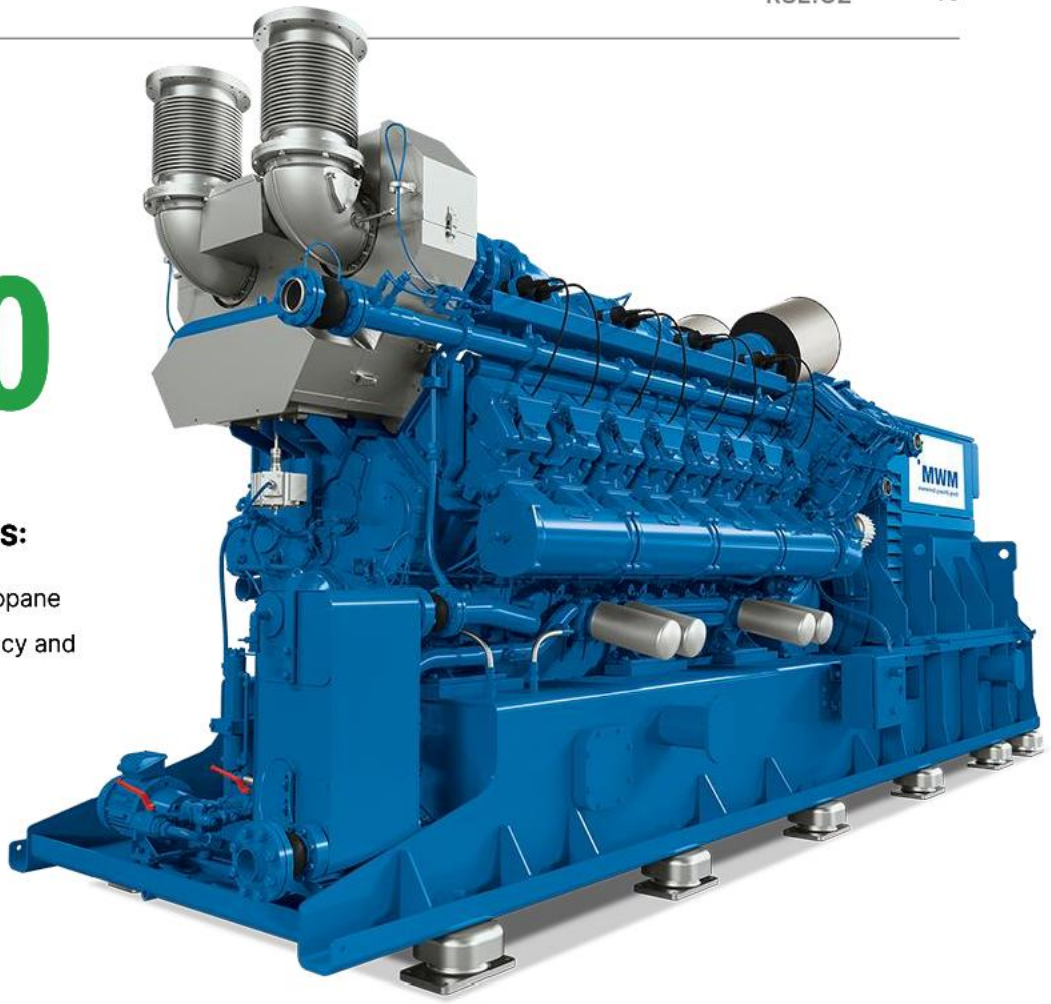
CUSTOMER BENEFITS:

- Higher plant profitability.
- Lower fuel and oil costs.
- Maximum power and efficiency under any conditions.

Engine type TCG 2020	V12	V12 K1	V12 K	V12	V16K	V16
E.power (kW)	1000	1000	1125	1200	1500	1560
Average effective pressure (bar)	15.5	15.5	17.4	18.6	17.5	18.1
Thermal power ±8 (kW)	1056	1191	1267	1189	1688	1576
Electrical efficiency (%)	43.0	40.0	40.7	43.7	40.8	43.3
Thermal efficiency (%)	45.4	47.6	45.8	43.3	45.9	43.8
Overall efficiency (%)	88.4	87.6	86.6	87.0	86.7	87.1

1.38 to 2.3 MW. High Efficiency and Profitability

MWM TCG 3020



KEY FEATURES:

- Electrical efficiency up to 45%
- Electrical power up to 2,300 kW
- Optimal balance between efficiency and reliability
- Reliable base engine enhanced with modern technologies
- Up to 80,000 hours until major overhaul

ECONOMIC BENEFITS:

- Low oil consumption: ~0.15 g/kWh
- High efficiency + long service life = minimal operating costs

GAS TYPES AND APPLICATIONS:

- Runs on natural gas, biogas, and propane
- Optimized solutions for high efficiency and flexibility
- Ideal choice for biogas projects

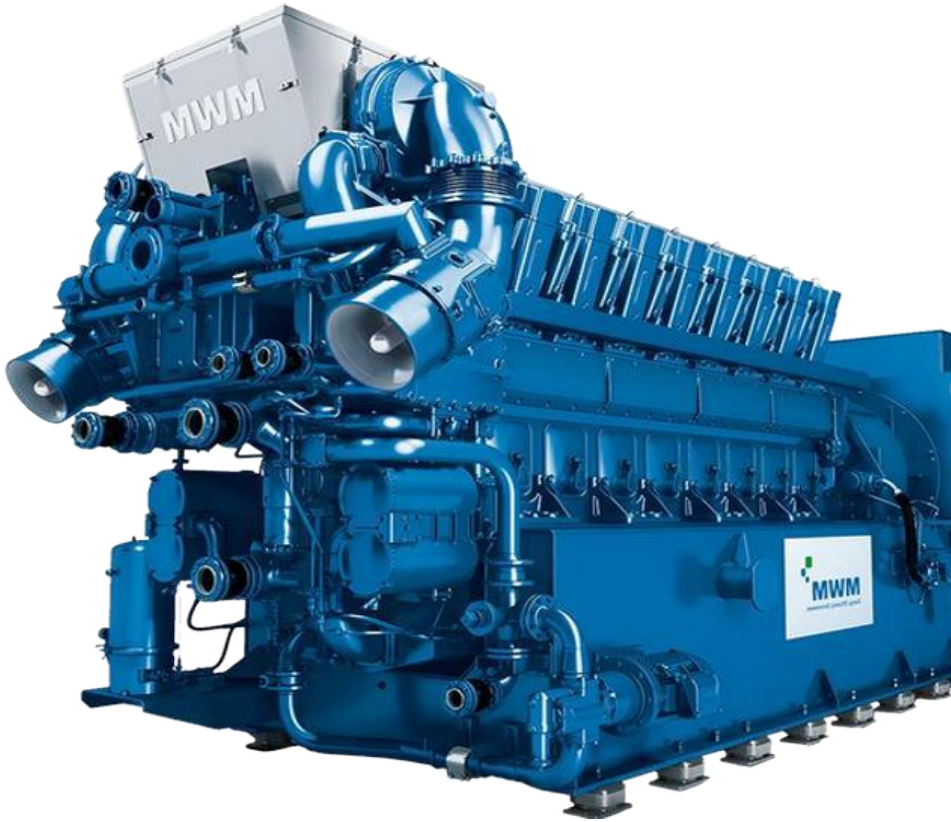
CUSTOMER BENEFITS:

- Best-in-class efficiency
- Flexibility in application and fuel selection
- High profitability and extended service life

Engine type TCG 3020	V12p	V12 R	V16p	V16R	V20P	V20R	V20PV	V20RV
E.power (kW)	1380	1380	1840	1840	2300	2300	2000	2000
Average effective pressure (bar)	21.5	21.5	21.5	21.5	21.5	21.5	18.6	18.1
Thermal power ±8 (kW)	1296	1369	1755	1824	2164	2281	1949	2026
Electrical efficiency (%)	45.0	44.0	44.7	44.0	45.0	44.0	43.4	43.7
Thermal efficiency (%)	42.3	43.6	42.6	43.6	42.3	43.6	43.3	44.2
Overall efficiency (%)	87.3	87.6	87.3	87.6	87.3	87.6	87.7	87.9

3.33 to 4.5 MW. Maximum Power and Efficiency

MWM TCG 2032



KEY FEATURES:

- Power output: 3.33 to 4.5 MW
- Optimized design with cylinder blocks → easier maintenance
- Fewer unique parts → faster service
- Oil consumption reduced 30% compared to equivalents

HIGHER RELIABILITY:

- Particulate-free combustion → longer exhaust heat exchanger service intervals
- Enhanced components (pistons, connecting rods, spark plugs, cylinder heads) for high-power operation
- Greater electrical efficiency compared to previous generations

ECONOMIC BENEFITS:

- Up to 20% maintenance savings
- Extended maintenance intervals → +200 operating hours annually
- Major overhaul only after 80,000 operating hours

CUSTOMER BENEFITS:

- Maximum power in the MWM lineup
- High efficiency and stability in any conditions
- Minimal maintenance costs, long service life

Engine type TCG 2032	TCG 2032 V12R	TCG 2032 V16R	TCG 2032B V16R
E.power (kW)	3333	4300	4500
Average effective pressure (bar)	20	19.4	20.3
Thermal power ±8 (kW)	3238	4164	4361
Electrical efficiency (%)	43.9	44.1	44.6
Thermal efficiency (%)	42.6	42.7	43.2
Overall efficiency (%)	86.5	86.8	87.8

REVOLUTION IN ENERGY TECHNOLOGIES

RSE 4.5 MW COGENERATION MODULE. MAXIMUM EFFICIENCY IN COMPACT FORMAT

With this solution's launch, **RSE opens a new era in energy** – introducing a generation of high-performance modules that combine:

- proven industrial reliability
- modular design for rapid deployment
- high efficiency and long-term resilience

The 4.5 MW cogeneration module based on the MWM TCG 2032 gas engine sets a new benchmark in power, sustainability, and uninterrupted operation.

This module is the result of our engineering expertise and partnership with MWM. Unlike standard installations, **RSE offers a ready-made turnkey containerized product** that combines German technology and Czech manufacturing.

This solution creates a new standard for energy resilience:

- large-scale manufacturing,
- 40% in-house components,
- readiness to operate in the most challenging conditions.

Key Features

- Modular design (4.3 – 4.5 MW capacity)
- Rapid commissioning and mobility (12 days without welding work)
- Integrated auxiliary systems: control, cooling, exhaust management, lubrication, heat recovery
- Designed and manufactured to MWM standards
- Certified installation and service support

RSE Product Lines

02

HEAT RECOVERY & STEAM BOILERS

FLUE GAS HEAT RECOVERY BOILERS (HR BOILERS)

RSE continues the engineering legacy of **PRŮMYSLOVÉSTA**, producing modern heat recovery boilers at our facility in the Czech Republic.

These solutions help **maximize every installation** by converting waste heat into additional steam or electricity.

Using heat recovery boilers

increases energy system efficiency,

reduces fuel consumption,

reduces emissions and makes energy more sustainable

BOILER TYPES

Hot Water Boiler VWKG

Capacity: 410 – 2 150 kW

Steam Boiler VSKG

Output:
600 – 2,000 kg steam/h

Dual Steam Boiler VSKG DOUBLE

Output:
1,480 – 4,500 kg steam/h

Production

- Up to 400 boilers per year
- In-house facilities in the Czech Republic
- PRŮMYSLOVÉSTA brand – over 15 years of experience and hundreds of completed projects across Europe

HOT WATER BOILERS VWKG

FLUE GAS HEAT RECOVERY BOILERS

The automatic VWKG smoke-tube boiler is a fire-tube boiler that utilizes waste heat from internal combustion engines.

Boiler type		VWKG 1000H	VWKG 1500H	VWKG 2300H	VWKG 4300H
Nominal thermal capacity	kW	410	650	890	2150
Boiler efficiency without economizer	%	92-94	92-94	92-94	94-96
Flue gas temperature at boiler inlet	°C	410	400	400	456
Wet flue gas volume	Nm3/h	4260	6686	9320	17800
Steam operating pressure	bar	6	6	6	6
Test pressure	bar	9	9	9	9
Water operating temperature	°C	105	105	105	105
Feed water temperature schedule	°C	70/90	70/90	70/90	70/90
Flue gas side pressure loss	mbar	15	15	18	20
Total boiler volume		600	1100	2230	5625
Transport weight	kg	1500	2200	4000	7000
Flue gas inlet	ø	400	560	630	1000
Flue gas outlet	ø	400	560	630	1000

KEY FEATURES:

- Capacity: 410 – 2 150 kW
- Operates under positive pressure on the flue gas side
- Optimally designed heating surfaces for maximum performance
- High heat recovery efficiency

ADVANTAGES:

- Continuous heat source for industrial and municipal needs
- Increased overall efficiency of cogeneration plants
- Reliability and operational stability

STEAM BOILERS VSKG

MEDIUM PRESSURE. EFFICIENT FLUE GAS HEAT RECOVERY

Automatic medium-pressure VSKG steam boilers utilize waste heat from internal combustion engines. Design features a two-pass configuration with two tube bundles and flue gas inlet/outlet headers.

Boiler type		VSKG 1000H	VSKG 1500H	VSKG 2300H	VSKG 4300H
Steam output (at feed water temperature 105°C)	t/h	0,5	0,7	0,9	2,0
Nominal thermal capacity	kW	375	520	600	1430
Boiler efficiency without economizer	%	90-92	90-92	90-92	90-92
Flue gas temperature at boiler inlet	°C	450	420	380	450
Wet flue gas volume	Nm3/h	4250	6730	9300	17800
Steam operating pressure	bar	10	10	10	10
Maximum allowable steam pressure	bar	13	13	13	13
Test pressure	bar	23	23	23	23
Steam operating temperature	°C	184	184	184	184
Maximum allowable temperature	°C	195	195	195	195
Flue gas side pressure loss	mbar	18	18	18	18
Transport weight	kg	3400	5700	7000	12000
Flue gas inlet	ø	750	840	1024	1000
Flue gas outlet	mm	630*400	710*450	900*480	1000

KEY FEATURES:

- Output: 500 – 2,000 kg steam/h
- Operating pressure: 8 bar
- Steam temperature: 184°C
- Automated operation with high safety level

ADVANTAGES:

- Stable steam source for industrial processes
- Increased overall efficiency of energy systems
- Reliable design for continuous operation

DUAL STEAM BOILERS VSKG DOUBLE

MEDIUM PRESSURE. MAXIMUM ECONOMY AND EFFICIENCY

Automatic medium-pressure **VSKG Double** steam boilers are designed to simultaneously utilize waste heat from two gas engines.
Each engine has a **separate flue gas duct**, while the **evaporator is shared**.

KEY FEATURES:

- Output: 1 500 – 4 500 kg steam/h
- Operating pressure: 8 bar
- Steam temperature: 184°C
- Dual configuration with high heat recovery efficiency

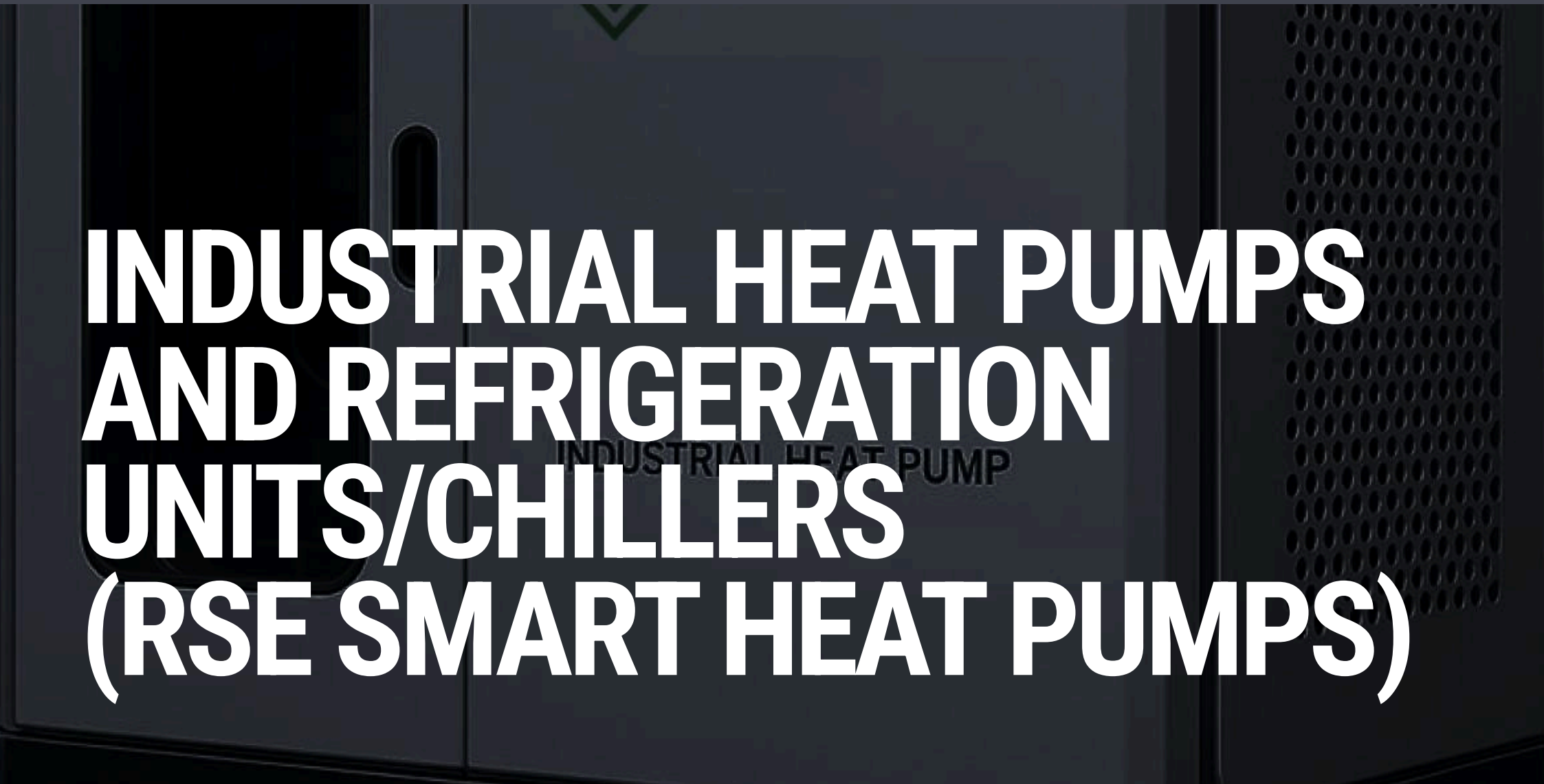
ADVANTAGES:

- Using one boiler for two engines → significant project cost savings
- Smaller boiler room footprint compared to two separate units
- Optimal solution for high-demand sites with limited space

Boiler type		VSKG 1500H Double	VSKG 2300H Double	VSKG 4300H Double
Steam output (at feed water temperature 105°C)	t/h	1500	2400	4500
Nominal thermal capacity	kW	1020	1600	3100
Flue gas temperature at boiler inlet	°C	420	450	450
Wet flue gas volume	Nm3/h	2*6650	2*9300	2*17800
Steam operating pressure	bar	10	10	10
Maximum allowable steam pressure	bar	13	13	13
Test pressure	bar	23	23	23
Maximum allowable steam temperature	°C	184	184	184
Maximum allowable temperature	°C	195	195	195
Flue gas side pressure loss	mbar	18	18	18
Transport weight	kg	8000	13000	24000
Flue gas inlet	ø	2*560	2*630	2*1000
Flue gas outlet	ø	2*560	2*560	2*1000

RSE Product Lines

03



INDUSTRIAL HEAT PUMPS AND REFRIGERATION UNITS/CHILLERS (RSE SMART HEAT PUMPS)

MAXIMUM COP
OIL-FREE TECHNOLOGIES
ULTRA-LOW GWP

10-YEAR WARRANTY

RSE industrial heat pumps are a modern, eco-friendly solution for industry, municipalities, and businesses.

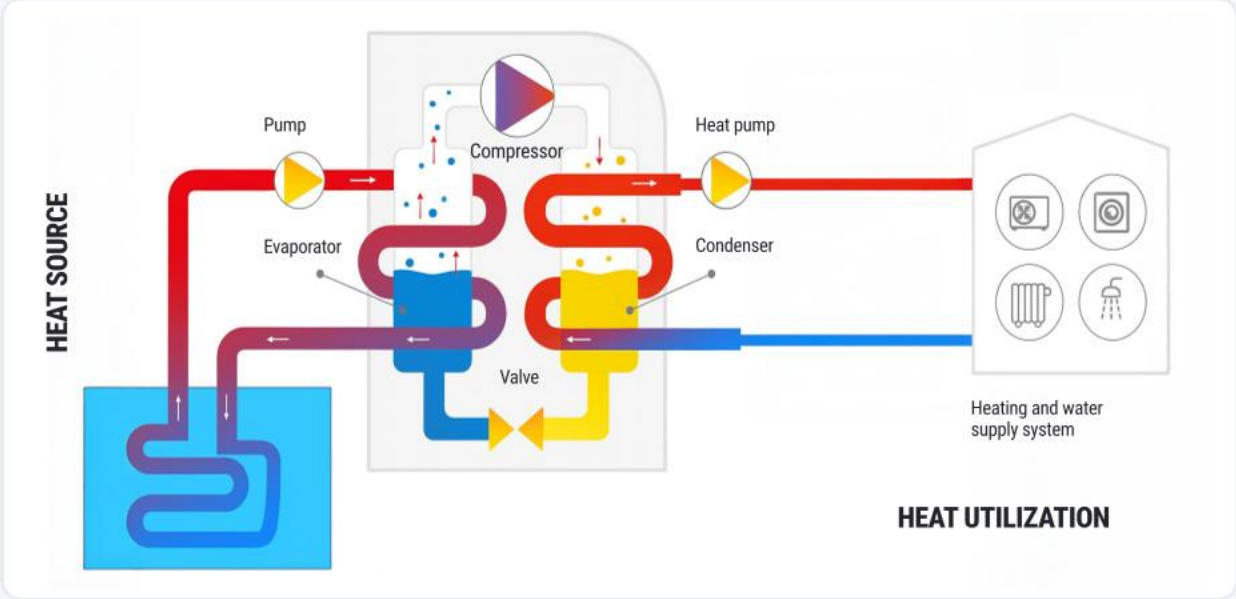
They combine:

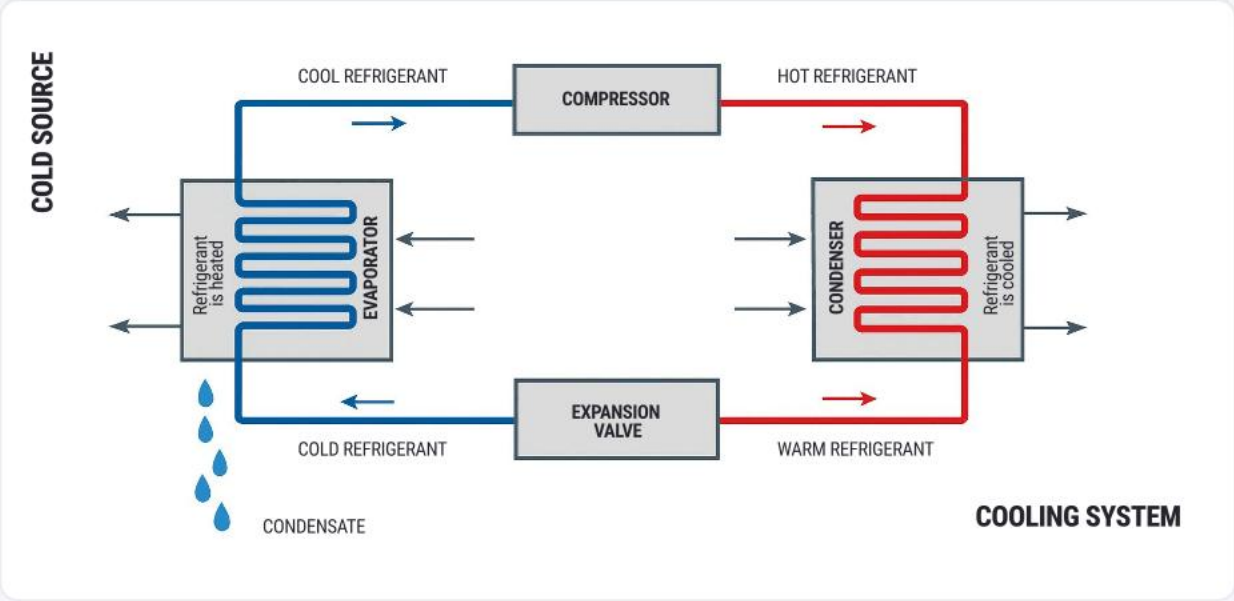
- Scalability (1 to 10 modules in a single system)
- Stable performance
- Easy integration with any energy system

Applications: heating, cooling, hot water.

Compatibility: water-to-water, air-to-water, air-to-air, ground-to-water, cogeneration-to-water.

HOW IT WORKS


HEAT SOURCE
Pump
Compressor
Heat pump
Evaporator
Condenser
Valve
Heating and water supply system
HEAT UTILIZATION


COLD SOURCE
COOL REFRIGERANT
COMPRESSOR
HOT REFRIGERANT
Refrigerant is heated
EVAPORATOR
CONDENSER
Refrigerant is cooled
EXPANSION VALVE
COLD REFRIGERANT
WARM REFRIGERANT
CONDENSATE
COOLING SYSTEM

INNOVATION TRANSFORMING INDUSTRIAL ENERGY GENERATION (HEAT/COOLING)

01 **Intex oil-free turbocompressor** – stable after hundreds of thousands of starts.

02 **Natural refrigerant R290 (propane)** – GWP = 3, full compliance with future standards.

03 **COP up to 7.2** – maximum performance at minimum cost.

04 **Seamless integration** with cogeneration plants and smart grids.

WE BUILD THE ENERGY OF THE FUTURE: CLEAN, EFFICIENT, AND INNOVATIVE.

EQUIPMENT CONFIGURATION

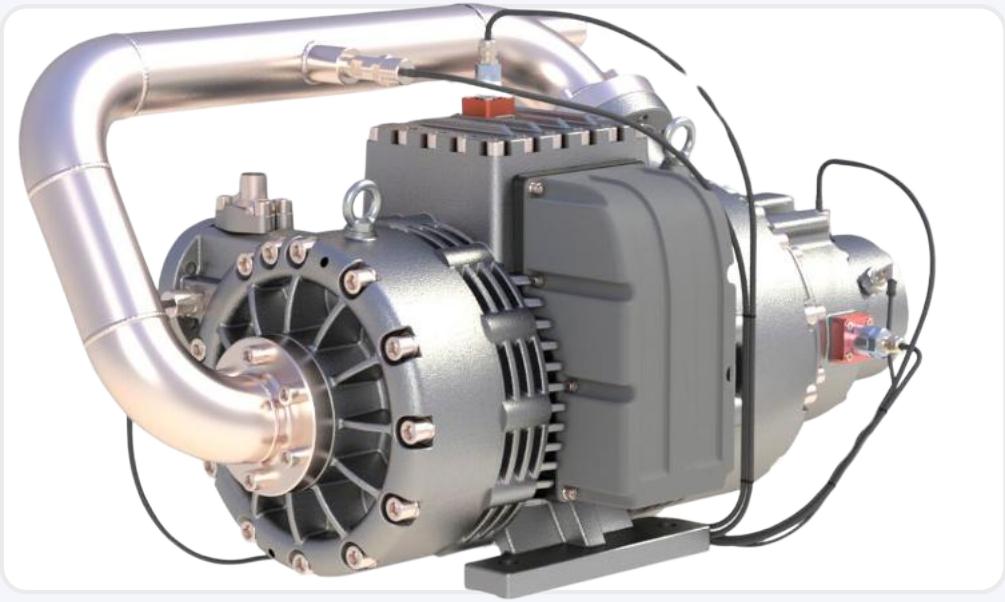
STANDARD CONFIGURATION

- Scalable heat pump: 1 to 10 RSE HP modules in a single system.
- Automatic heat pump control system with operator panel.
- Automatic safety and propane leak detection system.

ADDITIONAL EQUIPMENT

- Automatic heat source selection system (water/air)
- Heat exchanger for energy extraction from heat source
- Pump unit on heat extraction side
- SCADA system for remote monitoring and control

TURBOCOMPRESSOR: THE HEART OF RSE SMART HEAT PUMPS



- Completely oil-free – no wear, no maintenance
- High efficiency even at partial load (3-stage compression, IGV, inverter)
- Minimal energy losses – no friction, no mechanical losses
- Reliability and durability – over 500,000 starts
- Low noise and vibration levels
- High environmental responsibility. R290 refrigerant – GWP = 3, ODP = 0

450-870 KW
Nominal capacity

150 KW
Motor power

WHY PROPANE TURBO TECHNOLOGY SETS NEW MARKET STANDARDS

	Turbo compressor	Screw compressor	Reciprocating compressor
Maintenance	Minimal, oil-free	Frequent, with oil and filters	Very frequent, daily oil checks, regular replacement, condensate drainage
Design	Oil-free turbocompressor	Screw compressor with oil filling	Reciprocating compressor, with many moving parts (pistons, rings, valves)
Efficiency loss	Consistently high efficiency	Up to –25% over 5 – 10 years	Significant efficiency loss (20–30%) due to friction and wear of moving parts
Noise level	Very low, no vibrations	High, requires soundproofing	Very high (up to 95 dB) with heavy vibrations
Energy efficiency	High at all load levels	High only at rated load	Low, efficient only in narrow range
Environmental impact	R290, GWP 3	R410A / R134a, GWP up to 2000	Oil emissions, R410A/R134a, GWP up to 2000

KEY TECHNICAL SPECIFICATIONS OF RSE SMART HEAT PUMPS

Module	RSE HP 450	RSE HP 550	RSE HP 850
Nominal thermal capacity	450 kW	550 kW	870 kW
Low-grade heat source temperature		5-10 °C	
Heat transfer medium temperature	65-70 °C	53-58 °C	48-53 °C
COP at 100% load	3,0	3,7	5,8
COP at 50% load	3,7	4,6	7,2
Turbocompressor motor power		150 kW	
Voltage		~3 PE, 400 V/440 V/460 V/480 V, 50Hz/60Hz	
Load range		20%-100%	
Number of RSE HP modules in one heat pump		1-10*	

* A heat pump can consist of multiple RSE HP modules

KEY TECHNICAL SPECIFICATIONS OF REFRIGERATION UNITS (CHILLERS)

Module	RSE HP 450	RSE HP 550	RSE HP 850
Nominal cooling capacity	300 kW	400 kW	700 kW
Heat transfer medium temperature		5-10 °C	
Heat source temperature	65-70 °C	53-58 °C	48-53 °C
COP at 100% load	2,0	2,7	4,7
COP at 50% load	2,5	3,4	5,8
Turbocompressor motor power		150 kW	
Voltage		~3 PE, 400 V/440 V/460 V/480 V, 50Hz/60Hz	
Load range		20%-100%	
Number of RSE HP modules in one heat pump		1-10*	

* A heat pump can consist of multiple RSE HP modules

COGENERATION + HEAT PUMPS: MAXIMUM EFFICIENCY

Integrating cogeneration systems with industrial heat pumps delivers maximum efficiency and reliability, setting a new standard for decentralized energy solutions.

+95%

KEY BENEFITS

Efficiency – overall energy project efficiency up to 95%

Payback – payback period reduced by over 50%

Stability – stable operating temperatures eliminate shutdown risk from overheating or detonation

Reliability – extended equipment life through advanced cooling systems

Thermal output – up to 20% increase in usable thermal energy

Ecology – lower carbon footprint per unit of energy produced

Extended cycle – 10+ years of operation without major overhaul

Service – installation and maintenance performed by certified technicians trained for R290 refrigerant and RSE equipment

RSE Product Lines

04

MORE THAN JUST BACKUP. ENERGY UNDER CONTROL.

RSE Battery Energy Storage Systems (BESS) are a versatile solution for stable and efficient operation of energy facilities at any scale.

They integrate into modern infrastructure and unlock new opportunities for business, communities, and industries.

WHAT ARE THEY USED FOR?

Compensating power plant fluctuations → increased efficiency and stability

Backup power + load management and cost optimization

Reliable power supply where stable grid is unavailable

Emergency power source

Savings and revenue through tariff arbitrage

SOLUTIONS FOR ANY SCALE

We offer a flexible range of energy storage systems.

Capacity: 3.44 – 5.016 MWh

Capacity: 125 kW – 2.5 MW

Features: integrated PCS with transformer

Flexibility: scalable to customer needs

Model	RSE 3.44	RSE 3.85	RSE 5
Battery type	LFP 280 A·h	LFP 314 A·h	LFP 314 A·h
Nominal energy	3.44 MW·h	3,85 MW·h	5,016 MW·h
Nominal power	1,725 MW	2 MW	2,5 MW
Nominal DC voltage	1228,8 V	1228,8 V	1331,2 V
DC voltage range	1075,2 В - 1382,4 V	1075,2 В - 1382,4 V	1164,8 В - 1497,6 V
Maximum system efficiency		> 89%	
IP protection rating		IP54	
Weight, kg	33 000	36 000	45 000
Cooling type		Liquid cooling	
Noise level		<65 dB (At 1m from system)	
Communication interface		LAN, CAN, RS485	
Communication protocol		Modbus TCP	
System certification		IEC/EN 62477, NFPA855, IEC/EN 62619, IEC/EN 60730, IEC/EN 63056, UL 1973, UL 9540A	

RSE BESS TECHNICAL SPECIFICATIONS

From 100 kWh to 50 MW – solutions for your needs.

EU-certified RSE energy storage systems deliver reliability, efficiency, and confidence for years to come.

INTEGRATION AND CONTROL

RSE integrated BESS are easy to install and compatible with any equipment

Advanced BMS + cloud management platforms

Easy connectivity

Convenient and secure user experience

RSE Product Lines

05

MOBILE SOLUTIONS (ENERGY TRAIN, CONTAINERIZED UNITS)

ENERGY TRAIN – MOBILE POWER PLANT

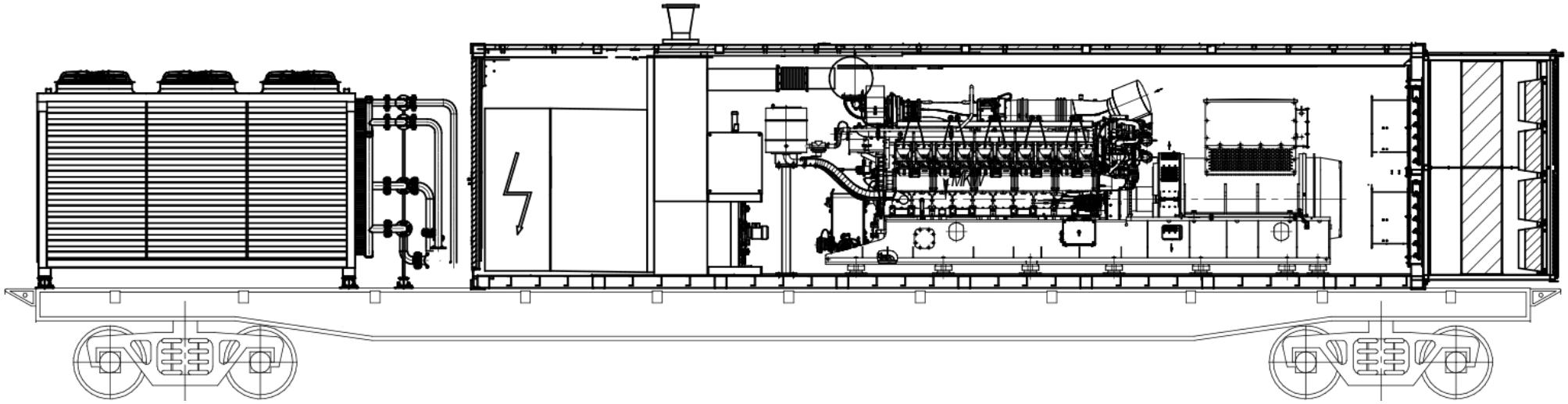
Gas or diesel: based on **2.3 – 2.5 MW engines (MWM TCG 3020 V20 / FG Wilson P2500-3)**

WHAT IS ENERGY TRAIN?

Energy Train is a mobile power plant in railway train format, combining powerful cogeneration and diesel modules into a single system. It's designed for rapid power supply to industrial facilities, infrastructure, and critical consumers in any conditions.

CORE CONCEPT:

- 2.0 – 2.3 MW modules based on MWM engines (gas, 2.3 MW) and FG Wilson P2500-3 (diesel, 2.0 MW)
- Mobile containerized format, easily transported by rail
- Flexible scaling: from one module to an entire train with tens of megawatts
- Rapid deployment: operational within hours
- Based on standard railway platforms (load capacity up to 70t, speed up to 120 km/h, maintenance interval 210,000 km, service life 32 years)



Following a similar concept, RSE is also developing the RSE 1000 M mobile cogeneration unit on a road platform. It's built on the MWM TCG 3016 V16 50Hz engine and is a fully autonomous power source suitable for rapid transport and deployment.

ENGINES FOR DIFFERENT CONDITIONS: MWM GAS OR FG WILSON DIESEL

MWM TCG 3020 V20 (gas engine)

Capacity: 2.3 MW

Fuel: natural gas / biomethane / LPG

Efficiency: up to 87.6% with heat recovery

Benefits: low emissions, compliance with international eco-standards, high cost-efficiency

MWM
Energy. Efficiency. Environment.

FG Wilson P2500-3 (diesel generator)

Capacity: 2.0 MW

Fuel: diesel

Efficiency: optimized fuel consumption for continuous operation

Benefits: independence from gas networks, rapid start-up, reliability in field conditions

FG WILSON

KEY BENEFITS OF ENERGY TRAIN

Mobility

Railway transport, operates from rails

Scalability

From one module to tens of megawatts

Continuity

Stable power supply in crisis conditions

Flexibility

Gas and diesel configurations

Efficiency

High fuel economy and efficiency

Reliability

Service support from RSE + partners (MWM, FG Wilson)

APPLICATIONS

- Railway hubs and transport infrastructure
- Industrial facilities
- Military bases and mobile operations
- Restoration or replacement of critical infrastructure after accidents or attacks
- Power supply for cities and communities during blackouts

HYBRID SOLAR SOLUTIONS

RSE

RSE OFFERS A HYBRID MODULAR ENERGY SOLUTION

Components of One Module:

Solar Panels (PV): 30 kW of clean renewable energy

BESS: 150 kWh of reliable backup storage

FG Wilson diesel engine: 40 kVA backup for maximum reliability

Smart Energy Management: automatic RES priority to minimize diesel usage

Mobility and modularity: deployment in under 12 hours

Adaptability: scalable to growing needs

Uptime: >99%

Independence from gas networks, rapid start-up, reliability in field conditions

Solar Container Dimensions

Parameter	Min	Max
Solar panels (PV) on container	10 kW	100 kW
Battery packs (LiFePO4)	14 kW	300 kW
Inverter	6,8 kW	27,2 kW
Voltage	120/240 V	120/208 V
Phase type	Single-phase	Three-phase
Generator (optional)	8,5 kW	50 kW

Standard Solar Container Features

Permit-Ready	full compliance with regulations for fast permitting.
Safety	fire suppression system (chemical or water-based), protection against electrical faults and overloads.
Battery Backup Power	provides power when solar generation is unavailable and enables peak shaving.
Smart Bidirectional Inverters	increase efficiency, extend battery life, and provide access to remote monitoring.
Containerized	reliable, secure, and weatherproof construction withstands the harshest conditions.
Convenient Mounting System	Solar panels can be quickly installed, removed, and relocated.
Remote Monitoring	online monitoring software enables diagnostics, reporting, and maintenance alerts.
Warranty	manufacturer's warranty on all components, plus BoxPower workmanship warranty.

Additional Solar Container Options

Diesel or Propane Generator	full integration for 100% reliability during daily and seasonal solar generation fluctuations.
Ventilation and Climate Control	maintain stable temperature for batteries and inverters, extending their lifespan and efficiency.
Additional Ground-Mounted or Rooftop Panel Array	provides additional solar generation, reducing the need for backup generator operation.

COMPREHENSIVE SOLUTION

Advanced n-type solar panels	Mobile containerized solution with deployment time <12 hours	Best-in-class energy storage systems
Hybrid inverters	Universal backup generator	Intelligent control system

TECHNOLOGY READINESS

01

PROVEN TECHNOLOGY

TRL 9 – ready for commercial deployment

02

INTEGRATED SOLUTION

RES + battery + diesel backup

03

SCALABILITY

Modular design, expandable to meet business and infrastructure needs

Smart Synergy: Combining RSE Technologies for Maximum Efficiency

CHP → HEAT RECOVERY → HEAT PUMP → STORAGE

- **CHP** → Electricity + heat
- **Heat Recovery** → Waste heat utilization
- **Heat Pump** → COP 7,2 additional heat
- **Storage (BESS)** → Flexible energy use

Our product portfolio is designed for synergistic operation and maximum efficiency – combining cogeneration modules, heat recovery boilers, heat pumps, and battery energy storage systems (BESS) into a unified energy ecosystem.

Integrating a heat pump with a cogeneration module and heat recovery boiler increases overall system efficiency to 95%, enabling recovery and utilization of even more low-grade waste heat.

Connection to an energy storage system provides flexibility: stored energy can be used during peak demand hours or temporary cogeneration shutdowns, ensuring continuity of supply and cost savings.

95% OVERALL EFFICIENCY

RSE is a European manufacturer of modular energy systems with its own facility in the Czech Republic.

900+ MW installed capacity in Europe and Ukraine.

150+ clients across industry, municipalities, and business.

Mobile and hybrid solutions based on MWM and FG Wilson engines. Manufacturing of BESS and industrial heat pumps.

In-house engineering teams in the EU and Ukraine.

Unique plug-and-play architecture: **installation in 5 – 12 days and uptime over 99%.**

150+ TRUSTED CLIENTS

RSE

info@rse.cz
www.rse.cz

Holandska 854/1, Styrice 63900
Brno, Czech Republic

+420 602 482 867

RSE S.R.O.

All technical specifications and parameters are provided for informational purposes and may be changed by the manufacturer without prior notice. Actual performance depends on operating conditions.

brochure version (rse2025.09)