



SAACKE PRODUCT PORTFOLIO.

Innovative and sustainable combustion technology.

SAACKE SETS STANDARDS.

SAACKE is a global market leader in the field of innovative combustion technologies and has been developing and producing combustion plants since 1931. Since the 1980s, SAACKE has been specializing in processes using alternative fuels such as hydrogen, waste, and residues with low heat values efficiently, reliably, and sustainably to generate energy using heat.

Guaranteed future-proof

Support for the plant's entire life is part of our performance promise. A wide range of available spare parts, upgrades, and services ensure continuous functionality and maximum efficiency over the entire service life.

The plants are already operated and monitored with state-of-the-art controls. Any plant malfunctions can generally be resolved quickly and cost-effectively via digital remote functions. The retrofitting and modernization of installed systems are also crucial to keep pace with changing market requirements and remain competitive.

**Efficient.
Reliable.
Sustainable.**

**Design the
future with
SAACKE.**

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BURNER OVERVIEW.



Burner	ATONOX	ROTONOX	SSB
Burner capacity	7–100 MW	1–45.3 MW	1.5–90 MW
Fuels	Natural gas, liquefied petroleum gas, hydrogen, extra-light fuel oil, synthetic fuels, special fuels (biogases, bio-oils, etc.)	Natural gas, liquefied petroleum gas, hydrogen, extra-light fuel oil, heavy fuel oil, synthetic fuels, special fuels (biogases, bio-oils, animal fats, special gases, special oils, other alternative liquid and gaseous fuels)	Natural gas, liquefied petroleum gas, hydrogen, extra-light fuel oil, heavy fuel oil, synthetic fuels, special fuels (biogases, bio-oils, dust, lean gases, etc.)
Areas of application	New construction and modernization of industrial plants: Water-tube boilers, thermal fluid heaters, thermal processing plants	New construction and modernization of industrial plants: Shell boilers, water-tube boilers, thermal fluid heaters, thermal processing plants, hot gas generators, and combustion chambers	New construction and modernization of industrial plants: Shell boilers, water-tube boilers, thermal fluid heaters, thermal processing plants, hot gas generators and combustion chambers, other thermal processing and drying plants, ignition and support firing



TEMINOX

3–28 MW

Natural gas, liquefied petroleum gas, hydrogen, extra-light fuel oil, synthetic fuels, special fuels (biogases, bio-oils, etc.)

New construction and modernization of industrial plants: Shell boilers, water-tube boilers, thermal fluid heaters, thermal processing plants

TECHNOLOGICAL LEADERSHIP AND INNOVATION ARE PART OF OUR DNA.

In a time of increasing fuel diversity and strict emission regulations, we are a market leader in the development of burners and control systems guaranteeing high productivity and availability with even the most complex of fuels.



Future-proof combustion engineering

guarantees you long-term efficiency and sustainability for your energy production.



Comprehensive system expertise offers you the highest level of competence in technology and advice for combustion plants.



Process and system expertise accompany you every step of the way – from planning and delivery to commissioning and beyond.

ATONOX: THE ULTRA-LOW NO_x BURNER FOR YOUR LARGE COMBUSTION NEEDS.

The SAACKE ATONOX is already laying the foundations for an environment worth living in for future generations today with its excellent performance and innovative concepts. This is achieved through the use of both conventional and future fuels.

Its success is based on a modular burner design, which enables simple configuration for a wide range of different installation situations. This makes the ATONOX extremely flexible and reduces both the commissioning effort and costs involved.

The advantages for you at a glance

- ✓ Robust construction with optimal availability, low maintenance requirements, and a long life.
- ✓ Minimal operating costs thanks to the low use of auxiliary power.
- ✓ High efficiency thanks to low residual oxygen in the exhaust gas even with the strictest emission requirements.



Short planning phase, simple installation and commissioning thanks to modular design.



Small installation diameter generally requires no changes to the boiler pressure vessel in the case of modernizations.



Emission values

NO_x

Natural gas ≥ 30 mg/Nm³

H₂ and other gases ≥ 30 mg/Nm³

Light oil ≥ 75 mg/Nm³

Capacity range in MW

Burner size	Gas		ELFO	
	Q _{min.}	Q _{max.}	Q _{min.}	Q _{max.}

140	2.0	14.0	3.0	14.0
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200	2.5	20.0	4.0	20.0
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280	3.5	28.5	5.5	28.5
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400	5.0	40.0	8.0	40.0
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560	7.0	56.0	11.0	56.0
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800	10.0	80.0	11.0	56.0
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How the ATONOX impresses

- Secures the future for industrial decarbonization (“H₂ ready” ≤ 100 vol. % hydrogen)
- Biofuels and synthetic fuels
- No or only a little external exhaust gas recirculation required
 - Significant savings
 - Low installation and operating costs
- Compatible with a wide range of control concepts (**se@vis**, Siemens, ...)

ROTONOX: THE NEW ROTARY CUP ATOMIZER FOR PREMIUM EFFICIENCY.

The SAACKE ROTONOX burns a wide range of gaseous and highly viscous liquid substances extremely cost-effectively and with fewer pollutants. The rotary cup atomizer technology offers you perfect combustion behavior with maximum efficiency, variability, and reliability.

The advantages for you at a glance

- ✓ The safe, reliable, and low-pollutant combustion (thermal recycling) of the most complex fuels, waste materials, and reusable materials is what the rotary cup atomizer does best.
- ✓ Suitable for almost all heat generators and combustion chamber geometries.
- ✓ Robust, modular design based on 1,000-times proven rotary cup atomizer technology.
- ✓ Simultaneous combustion of several gases and oils.
- ✓ Very large control range for liquid and gaseous fuels.
- ✓ Low fuel supply pressure and low heat temperature required.
- ✓ High efficiency, low maintenance costs, and long life.
- ✓ Conforms to European directives and regulations of ship classification societies.
- ✓ Uncomplicated installation and commissioning.
- ✓ Unrivaled burner flexibility.
- ✓ Version for air preheating (optional).
- ✓ Integrated combustion management system (optional).
- ✓ Further modular system expansions possible.

Operating data

Burner size	Gas / ELFO in MW		Max. control range up to
	$\dot{Q}_{\min.}$	$\dot{Q}_{\max.}$	
18.03	0.45	1.7	1:5
25.03	0.57	2.3	1:5
35.03	0.57	3.4	1:8
50.03	0.68	4.5	1:8
70.02	0.74	5.7	1:8
100.01	1.10	7.3	1:8
100.03	1.10	9.1	1:10
140.02	1.40	11.5	1:10
140.03	1.80	14.0	1:10
200.02	1.80	17.0	1:10
280.01	2.10	20.4	1:10
280.02	2.30	24.0	1:10
280.03	2.90	28.3	1:10
400.02	3.50	33.9	1:10
400.03	4.10	39.6	1:10
560.03	4.70	45.3	1:10



SWIRL BURNER SSB: THE ALL-ROUNDER FOR ALL YOUR REQUIREMENTS.

The SAACKE swirl burner SSB enables the incineration and low-emission combustion of special fuels with extremely low heat values without any need for a support fuel. The all-rounder is particularly suitable for producing steam and heat as well as for use in thermal processing and drying plants.

The advantages for you at a glance

- ✓ Reduction of CO₂ emissions and significant contribution to environmental protection.
- ✓ Previously unused fuels replace conventional standard fuels such as natural gas and light oil – an added bonus for you in times of unstable heat markets.
- ✓ Reliable compliance with emissions requirements in accordance with the best available technology (BAT).

The swirl burner SSB is suitable for both new constructions and modernizations

- Considerable reduction of the number of start-up and shut-down processes with unnecessary ventilation sequences thanks to large control range.
- Suitability for under- and overstoichiometric combustion with a large lambda range of 0.3–4.0.
- Flame geometry can be customized to the respective furnace via different burner settings. Particularly stable and short flames possible if required.

Emission values

NO_x

Natural gas ≥ 30 mg/Nm³

H₂ and other gases ≥ 30 mg/Nm³

Light oil ≥ 90 mg/Nm³



Operating data

Burner size	Maximum combustion air flow in m ³ /h (under normal conditions)	Maximum capacity in MW	Control range for gaseous fuels Natural gas for example
20	3,500	3.5	Up to 1:10
50	9,000	9.0	
100	20,000	20.0	
200	40,000	40.0	
300	60,000	60.0	
400	90,000	90.0	

TEMINOX: THE ULTRA-LOW NO_x BURNER FOR YOUR PROCESS HEAT.

Thanks to its efficient and low-pollutant combustion, the SAACKE TEMINOX satisfies the strictest emission regulations in both gas and oil firing operation and maintains the residual oxygen values in the exhaust gas low. The burner is available in both a monoblock version with an integrated fan and a duoblock version with a separate fan.

The advantages for you at a glance

- ✓ Lowest emissions which reliably comply with or even fall below the country-specific emission regulations, e.g., the German Ordinances on the Implementation of the Federal Immission Control Act (BImSchV).
- ✓ High efficiency thanks to low residual oxygen in the exhaust gas even with the highest emission requirements.
- ✓ Highly efficient, noise-reduced fan (monoblock) with low current consumption.
- ✓ Compliance with CE directives, type-tested.
- ✓ Robust and modular design.
- ✓ Simple installation, commissioning, and maintenance.
- ✓ Suitable for a wide range of heat generators.
- ✓ Available as a natural gas, light oil, or dual fuel burner with the option of simultaneous operation with two fuels and combustion of special fuels.
- ✓ Version for air preheating (optional).
- ✓ Integrated combustion management system (optional).
- ✓ Further modular system expansions possible.

Emission values

	Natural gas	Light oil
NO_x	≥ 25 mg/Nm ³	≥ 120 mg/Nm ³
CO	< 10 mg/Nm ³	< 40 mg/Nm ³

Capacity range of monoblock/duoblock burner in MW

Burner size	Gas		ELFO	
	Q _{min.}	Q _{max.}	Q _{min.}	Q _{max.}
50*	0.5	5	1.3	5
70	0.7	7	1.7	7
100	1.0	10	2.4	10
140	1.4	14	3.3	14
200	1.8	20	4.7	20
280	2.5	28	6.8	25

*Only available as monoblock version



HOT GAS GENERATOR CCS: SOLUTIONS FOR VERSATILE HOT GAS APPLICATIONS.

With the CCS combustion chamber line, SAACKE offers a technology that is suitable for practically any application involving hot gases for drying and heating processes. In addition to standard fuels such as extra-light fuel oil or heavy fuel oil and natural gas, it can also thermally utilize residual and special fuels. With the SAACKE CCS product versions, you are ideally equipped for a wide range of applications.

The advantages for you at a glance

- ✓ Suitable for all standard and numerous special fuels.
- ✓ Wide range of hot gas temperatures possible.
- ✓ Large control range with low emission values.

- ✓ Homogeneous temperature profile at the hot gas outlet.
- ✓ Low radiation losses.
- ✓ Complete burn-out of the fuel.
- ✓ Variable mixed gas / mixed air quantity.
- ✓ Low maintenance intervals and robust design.
- ✓ Suitable as a thermal post-combustion plant, for flue gas reheating, and as a classic combustion chamber for many applications.



Burner	CCS-HT	CCS-HTcompact	CCS-LT
Capacity range	3–28 MW	7–100 MW	1–45.3 MW
Fuels	Standard fuels incl. heavy fuel oil, special fuels (biogases, animal fats, special and bio-oils, other alternative liquid, gaseous, and pulverized fuels)	Natural gas/special gases and low-calorific fuels upon request	Fuel gases, low-calorific fuel gases and extra-light fuel oil
Outlet temperatures	< 600–1,000°C	< 600–1,000°C	400–600°C (fuel gases up to 800°C)

se@vis 4: MORE THAN JUST A BURNER CONTROL.

Versatile, uncomplicated, and efficient: The modern SAACKE **se@vis 4** simplifies the control of your plant.

The advantages for you at a glance

- ✔ Control, regulation, and monitoring of combustion, boiler, and thermal processing plants.
- ✔ Simultaneous combustion of multiple fuels.
- ✔ Prioritization of the fuels.
- ✔ Control of units such as feedwater pumps.

Technical data

se@vis 4

Controllers	15, freely configurable
Input / output	Analog and digital process values
Interfaces	Profibus DP, Profinet IO, Modbus TCP, Ethernet IP
No. of network participants	12 rapid and highly precise servodrives
Operation	Optionally via 5.7" or 10.4" touchscreen monitor

PROGRAMMABLE LOGIC CONTROLLERS (PLCs): INDIVIDUALLY ADAPTED.

No two combustion systems are the same. That's why SAACKE considers each system individually and – if necessary – tailors your customized control system. Programmable logic controllers (PLCs) are the perfect complement to integrated control systems. SAACKE also supplies not only hardware and software, but also competent engineering by experienced development teams.



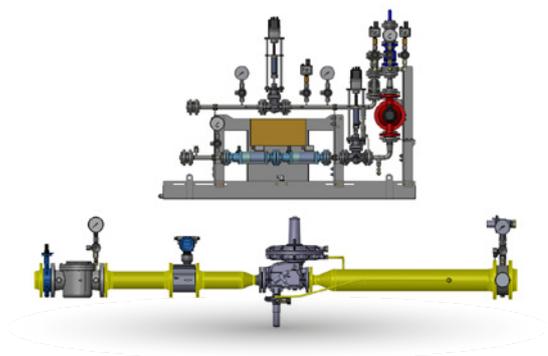
The advantages for you at a glance

- ✓ Customized control solutions for all plants.
- ✓ Use of tried-and-tested programmable logic controllers (PLCs).
- ✓ Precise control increases efficiency.
- ✓ Fuel savings.
- ✓ Lower environmental impact.
- ✓ Visualization adapted to the system provides a clear overview and can optimize downtimes.

FUEL TRAINS: SOLUTIONS FOR OPTIMAL FUEL SUPPLY.

SAACKE fuel trains are perfectly coordinated to the fuel, rate of flow, burner type used, and control employed. They are customized to your requirements and compiled using standard components.

SAACKE oil valve stations are either attached to the burner or available as a separate unit. In principle, SAACKE gas valve trains are available for practically any nominal size and almost any gas pressure.



The advantages for you at a glance

- ✓ Regulation of fuel pressure and flow rate coordinated to the burner and control unit.
- ✓ Oil valve stations for light oil, heavy oil, and biogenic fuels.
- ✓ Gas valve trains for all standard gases, alternative fuels, and many special gases.
- ✓ Expert advice and experienced engineering for all components.
- ✓ Certified production according to ISO 9001.

MODERNIZATION MODULES: IMPROVED EFFICIENCY OF COMBUSTION PLANTS.

SAACKE offers comprehensive solutions for the analysis of every combustion plant as well as modernization modules for every detail of burners and heat generators. The effect depends heavily on the plant's operating behavior.

Small effort – great impact

- ✓ Electronic compound control reduces consumption and running costs while increasing comfort and control accuracy.
- ✓ Speed control saves valuable energy and expands the optimal operating range.
- ✓ Utilization of calorific value with savings potential of far above 10% – applications are cost-effective thanks to standardized components and require little maintenance.
- ✓ Economizer increases the efficiency of a boiler plant by up to 6% and is kind to both the budget and the environment.
- ✓ Air preheater can save up to 10% fuel and significantly reduce the environmental impact.
- ✓ Feedwater control simplifies the operation, improves the steam quality, saves fuel, and reduces operating costs.
- ✓ Boiler blowdown control extends the life of the steam boiler plant, saves costs, and reduces the environmental impact.
- ✓ Control optimization enables more reliable operating behavior and extends the life of the burner, boiler, and peripherals – fuel savings of up to 10% are possible.

BURNER SERVICE THROUGHOUT THE ENTIRE LIFE CYCLE.

Here at SAACKE, we pursue a clear goal: We maximize the service life of your combustion system to ensure that you **benefit from a reliable and high-performance plant**. We increase the efficiency of your burner with targeted optimizations and modernizations, updating it to reflect the state of the art of the technology. With our **extensive offering of safety-relevant spare parts**, we additionally guarantee you optimal functional reliability and smooth operation.

The advantages for you at a glance

- ✔ Increased efficiency and extended life for your combustion system.
- ✔ Optimal functional reliability with our service.
- ✔ Sustainability and cost-efficiency for your company.

Reducing costs and protecting the environment: we put our many years of professional experience and expertise to good use for a more sustainable design of your combustion system infrastructure. For you, this means: you save operating costs and reduce your ecological footprint at the same time!



1. Commissioning and start-up: maximum transparency

You benefit from a professional start of operation with precise documentation of all performance data. This provides you with the certainty that the starting situation is clearly documented and easily traceable.

2. Maintenance: reliable efficiency

You benefit from consistently high performance parameters, which ensure that your plant is available and ready for operation at all times.

3. Optimization: a long-lasting, future-proof solution

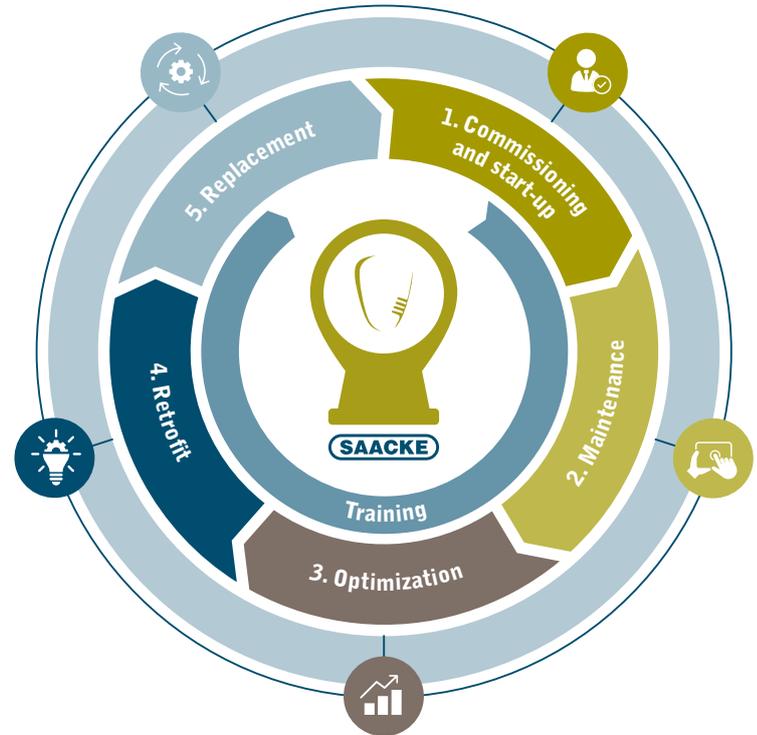
You benefit from the higher productivity of your plant and lower emissions at the same time thanks to improved performance data and increased performance.

4. Modernization: sustainable operation

You benefit from long-term protection of your initial investment and active support in case of obsolescence of components, to extend the product life cycle of your plant.

5. Replacement: minimal risk

You benefit from our expertise as an experienced partner, who understands your requirements inside out and offers you customized and future-proof solutions.



CO₂-FREE COMBUSTION – ARE YOU READY TO GET STARTED?

The future in one word. Take the C off combustion and you're left with: CO₂-neutral thermal energy without compromises. That is what the Ombustion team stands for. It offers consulting services and develops strategies to make combustion technologies more sustainable.

Where classic standard fuels still dominate energy production in industrial furnaces today, alternative combustion technologies are set to take over in the future. This requires **efficient and climate-neutral solutions** geared towards the processes and local conditions, which is precisely where Ombustion comes in.

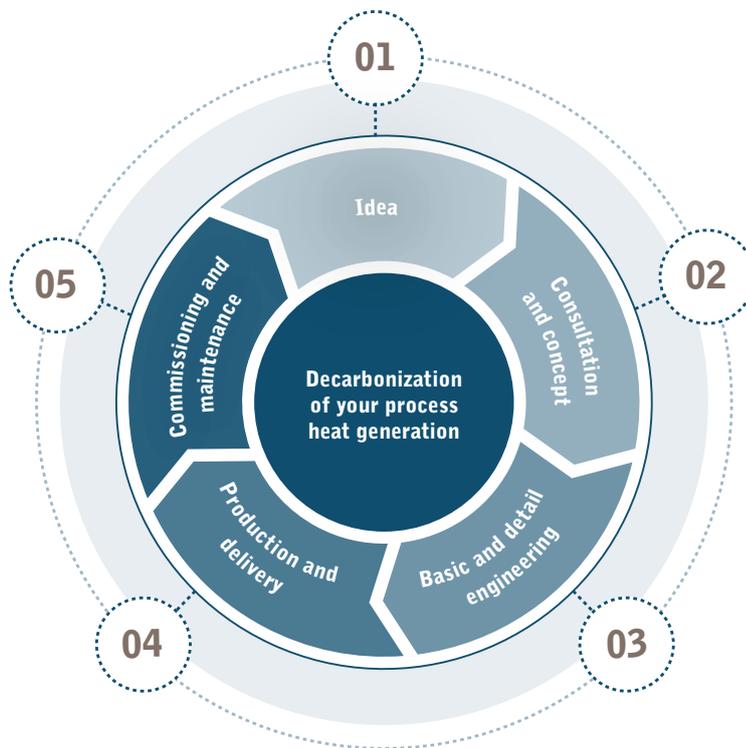
Our team offers **specialized consulting and engineering services** to support the development of **sustainable combustion processes**. Our goal is always to develop the optimal strategy in close cooperation with our customers to reduce the CO₂ footprint with customized, sustainable combustion solutions. When doing so, we at Ombustion draw on SAACKE's wealth of expertise.



Arrange a
consultation
now!

ombustion.com

- 01** **Your idea**
Your first contact partner:
Ombustion
- 02** **Consultation and concept**
Performed by Ombustion
- 03** **Basic and detail engineering**
Performed by SAACKE;
advice and support
from Ombustion
- 04** **Commissioning and maintenance**
Performed by SAACKE;
service, advice, and support
from Ombustion
- 05** **Production and delivery**



WE ARE THERE FOR YOU WHERE YOU NEED US.



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