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Industrial Noise Control

New Service Area of Rothos Energy Systems GmbH

A New Service Area

Industrial noise control is a new service area of Rothos Energy Systems. The company is expanding its portfolio to include acoustic enclosures and housings, various silencer designs, and customized solutions for industrial plants and processes.

The focus is not on rigid standard products, but on technically coordinated solutions. Design, engineering, materials, connections, and equipment are tailored to the specific noise source, process conditions, installation situation, and operator requirements.

From Analysis to Delivery

Rothos supports projects from analysis and acoustic design through engineering and construction to manufacturing and delivery. Depending on the project scope, installation, commissioning, and integration into existing systems can also be considered.

Noise is generated at many points in industrial plants: at machines and units, in intake and exhaust systems, at pipelines, outlets, safety valves, or during temporary relief and start-up processes. The technical countermeasures must vary accordingly. An enclosure follows different design rules than a silencer in a pressurized or high-temperature system.

Why Industrial Noise Control Must Be Individually Designed

In industrial plants, it is not enough to simply surround a noise source with as much insulation material as possible. The solution must also match the process and operating concept. Machines need cooling air, equipment must remain accessible for maintenance and inspection, and flow-carrying systems must not be impaired by a silencer beyond acceptable limits.

For this reason, acoustic and fluid-dynamic design are considered together. For an enclosure, relevant factors include airflow, heat dissipation, doors, viewing windows, cable and pipe penetrations, and removable panels. For silencers, medium, flow rate, pressure loss, temperature, humidity, filtration, material, and connection geometry must also be considered.

Planning Factors for Design

Planning Factor	Importance for the Solution
Noise Source and Frequency Range	Define the noise-control principle, enclosure structure, and design of absorptive or reactive elements
Flow Rate and Pressure Loss	Influence cross-sections, baffle arrangement, transitions, and fluid-dynamic design
Temperature and Medium	Determine material, insulation, surface protection, and design details
Installation Location	Requires weather protection, support structure, and suitable coating depending on indoor or outdoor use
Maintenance and Accessibility	Lead to doors, removable panels, inspection openings, and suitable filter-change concepts
Interfaces	Define flanges, transition pieces, pipe connections, fasteners, and integration into the overall system
Standards and Customer Specification	May specify special materials, documentation, pressure-rated design, or ATEX requirements

An Integrated Solution

The result is a solution that combines noise reduction, flow, accessibility, and plant integration. This coordination is especially important in existing plants because buildings, piping, and maintenance routes create fixed boundary conditions.



Large modular metal acoustic enclosure for an industrial system in a production hall

Three Product Groups for Industrial Noise Control

The new service area is divided into three main groups. They cover both the enclosure of complete machines and units and noise attenuation in intake, exhaust, pressure, and process systems. Rothos also develops individual designs for applications where dimensions, materials, or operating conditions are outside common standards.



Acoustic Enclosures and Housings

Modular and removable enclosures for machines, units, and complete plant areas, designed for indoor or outdoor installation.



Silencers

Intake, blow-off, start-up, pressure, and flue-gas silencers as well as conical diffusers for different flow and installation situations.



Customized Special Solutions

Individually engineered products, pressure vessels, and special designs based on process data, customer specifications, and applicable technical requirements.

Acoustic Enclosures and Housings for Machines and Systems

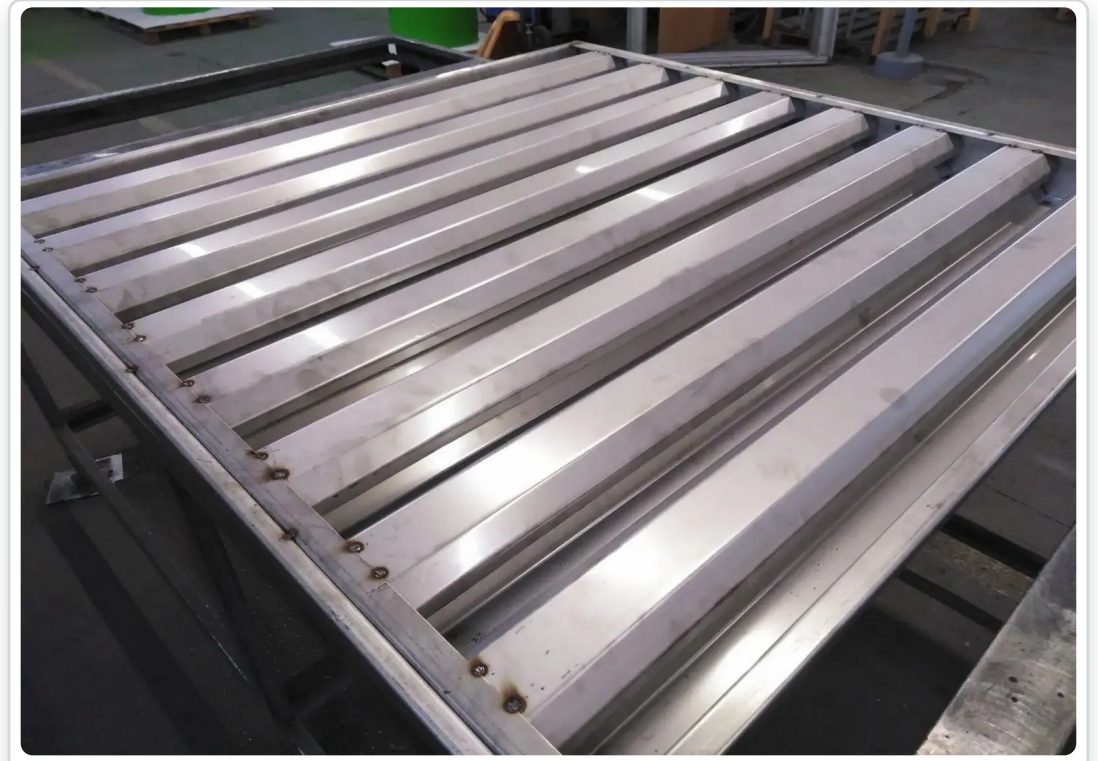
Acoustic enclosures and housings spatially separate noise sources from their surroundings. They are used for compressors, turbines, generators, pumps, fans, and other industrial units. Depending on the task, a compact hood may be sufficient, or a walk-in enclosure may be required to surround larger plant areas.

The designs are suitable for indoor and outdoor applications. The range extends from small versions starting at about 3.3 ft to enclosures more than 65 ft long. Depending on the environment, galvanized sheet steel, coated carbon steel, or stainless steel may be used. Small enclosures can be self-supporting, while larger solutions receive a structurally designed support frame.

Maintainability as a Design Objective

Maintainability is an important design objective. Removable panels, doors, viewing windows, supply and exhaust air openings, and integrated fans are planned so that the enclosed system remains accessible and safe to operate. Weather-resistant and ATEX-compliant designs are also possible for suitable applications.

- Indoor and outdoor installation
- self-supporting or steel-supported construction
- removable and walk-in design
- integrated supply and exhaust ventilation as required
- galvanized steel, coated carbon steel, or stainless steel
- weather-resistant and project-specific ATEX-compliant designs



Internal ventilation louvers of an industrial acoustic enclosure

Silencers for Intake, Pressure Relief, and Flue Gas

Silencers form the largest product group in the new portfolio. Their design is determined by the specific application. In addition to the required acoustic performance, flow rate, pressure loss, medium, temperature, humidity, material, connection geometry, and available installation position must be taken into account.

Intake silencers: for noise reduction in intake systems, optionally combined with filter stages, moisture separation, and matching transition pieces.

Blow-off and start-up silencers: for temporary or recurring discharge processes, for example during start-up, pressure relief, or blow-off.

Pressure silencers: for pressurized systems and process applications with individually designed connection and vessel geometries.

Conical diffusers: for fluid-dynamically coordinated expansion of line cross-sections, with acoustic functions depending on the task.

Flue-gas silencers: for exhaust and flue-gas systems, adapted to temperature, flow, material requirements, and installation situation.

Intake and Filter Silencers

Intake and filter silencers can combine a double-wall, insulated housing with baffles designed for both flow and acoustic performance. The absorptive fills are protected by fiberglass layers and perforated sheet metal. The materials used are coordinated for a durable, moisture-resistant, non-combustible design.

Equipment options can include different filter classes, single- or two-stage filter concepts, moisture separation, and a pressure indicator. Rectangular transition pieces, conversion to round pipe connections, or a 90-degree intake from above or below can already be considered in the design. The service side for filter replacement is also adapted to the available space on site.



Multi-stage filter unit for an industrial intake silencer

Heavy-Duty Designs and Intake Towers

Robust intake silencers and intake towers are available for outdoor installation and demanding industrial applications. These designs are manufactured from heavier-gauge steel plate and include all required brackets or a dedicated support structure. Transition pieces and baffles are designed to match the system.

Depending on the environment, coated carbon steel or different stainless steel grades can be used. In addition to acoustic performance, the main priorities here are weather resistance, mechanical strength, ease of installation, and secure connection to the intake system.

Blow-Off, Start-Up, and Pressure Silencers

Blow-off and start-up silencers are designed for processes in which gas or steam is discharged temporarily with high flow energy. The design, connection, and internal elements must therefore match the medium, operating values, and load case. Flow discharge and mechanical fastening are also part of project engineering.

For pressure silencers, conical silencers, and conical diffusers, pressure-bearing components and special codes may also be relevant. The acoustic function is then combined with vessel design, material selection, and manufacturing requirements. Flue-gas silencers are adapted to exhaust temperature, flow, and the existing flue-gas routing.



Customized Solutions Instead of Off-the-Shelf Products

Many industrial noise-control tasks cannot be solved with an unchanged standard product. Existing piping layouts, limited space, high temperatures, corrosive media, special materials, or pressure-bearing components require an application-specific design.

Rothos adapts the solution to the process, operating data, and technical specification. The range extends from modified designs proven in many applications to fully customized products. These can include pressure vessels, conical silencers, conical diffusers, intake towers, transition pieces, and combined steelwork and noise-control structures.

The customized share may relate to individual details or to the entire product. Examples include non-standard flange patterns, special dimensions, special installation positions, multi-part designs for tight installation routes, special surface treatments, or material combinations. Combining several functions in one assembly can also be part of the solution.

Codes and Materials for Customized Solutions

For operators, this means the existing plant does not have to be adapted to a rigid catalog product. Instead, the product is developed to integrate as sensibly as possible into the process, spatial conditions, and maintenance routines.

Depending on the project and target market, pressure-bearing customized solutions can be designed and manufactured in accordance with applicable codes such as ASME, PED, or EN 13445. Available materials include carbon steel and various stainless steel grades.



Blue blow-off and start-up silencer with central flange connection

From Concept to Delivery

Industrial noise control is a system task. Acoustic performance must not be considered separately from flow, cooling, accessibility, structural design, and process safety. A project therefore begins by recording the initial situation and technical requirements.

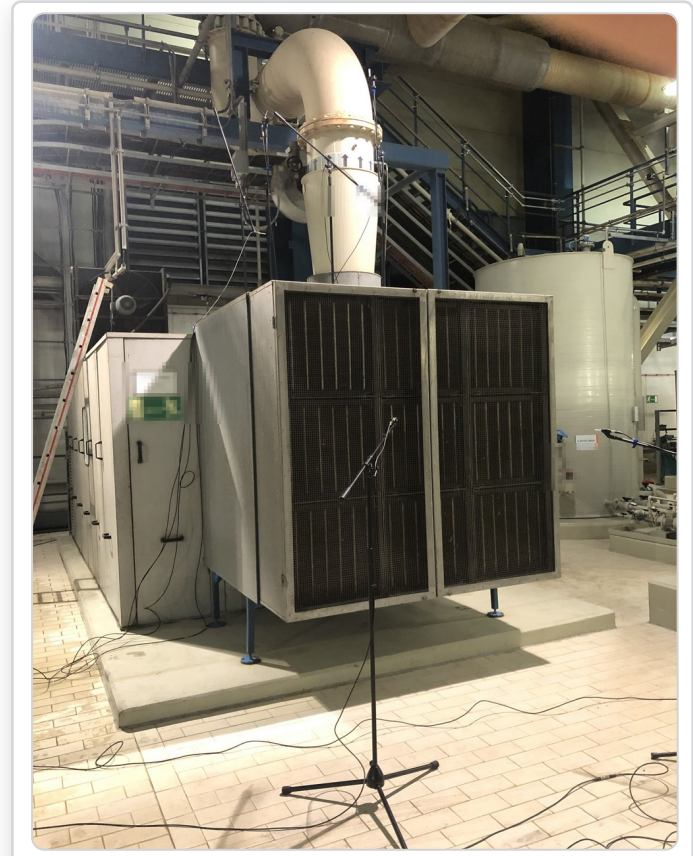
Project Phase	Typical Content
Analysis and Consulting	Record noise source, installation location, operating data, interfaces, and maintenance requirements
Acoustic Design	Define noise-control principle, required design, and suitable absorption or attenuation elements
Fluid-Dynamic Review	Consider flow rate, pressure loss, ventilation, temperature, and connection geometries
Engineering and Design	Create 3D design, support structure, materials, manufacturing drawings, and technical documentation
Manufacturing and Surface Treatment	Manufacture project-specific components, apply coating, or execute in stainless steel
Delivery and Implementation	Delivery, with project-dependent installation, commissioning, and integration into the plant

Installation and Maintenance Considered from the Start

This continuous approach combines plant-engineering expertise with acoustic and fluid-dynamic design. The goal is a robust, economical, and maintenance-friendly industrial solution that not only works on paper, but can also be integrated into plant operation.

Transport, installation sections, lifting points, fasteners, and later dismantling routes are therefore considered during planning. This is especially important for large enclosures and heavy silencers. A well-prepared design reduces site adjustments and makes later inspections, filter changes, and maintenance work easier.

For modular enclosures, installation can be carried out using bolted panels, so no welding is required at the panel joints on site. The support structure, doors, ventilation elements, and penetrations are considered as one integrated system.



Typical Industries and Applications

The new noise-control solutions are intended for operators and plant manufacturers in the chemical and petrochemical industries, energy supply, power plants, water and wastewater technology, the food and paper industries, the steel industry, mechanical engineering, and other areas of the process industry.

Typical applications include intake and exhaust systems, process-air and compressed-air systems, compressor stations, turbines, steam systems, cooling and ventilation systems, fan systems, piping systems, stacks, emergency relief systems, and safety valves. Which solution is technically appropriate always depends on the specific operating data and local boundary conditions.

Conclusion: Industrial Noise Control as a New Service Area

With this new service area, Rothos Energy Systems expands its plant-engineering expertise to include individually designed solutions for industrial noise control. Acoustic enclosures and housings, various silencer designs, and customized special products are adapted to the process, installation situation, and technical specification.

Companies receive a continuous project approach from analysis and design through engineering and construction to manufacturing and delivery. Further product information, designs, and equipment options can be found on the new Products: Industrial Noise Control service page.

Would you like to discuss a specific noise-control task? Contact Rothos Energy Systems.

Useful Links

[Rothos Energy Systems: Products – Industrial Noise Control](#)

[Rothos Energy Systems: Services](#)

[Rothos Technical Articles: Process Heat and Industrial Plant Engineering](#)

[Contact Rothos Energy Systems](#)