Toos Acoustic

Noise Reduction Devices

2024

+985135425513-4
www.toosacoustic.com

A Comprehensive Introduction to Toos Acoustic: A Leader in Industrial Noise Control

" Developing technology based on needs and insatiable curiosity in solutions to control acoustic pollution "

Toos Acoustic, officially known as "Sanat Projeh Toos," began its activities in 2006 and is based in the Khorasan Science and Technology Park. [hf1]Recognized as a knowledge-based company by the Vice-Presidency for Science and Technology of Iran, the company specializes in consulting, designing, and manufacturing mechanical equipment for industrial noise pollution control. [hf۲]Toos Acoustic has helped in Health and safety Executive (HSE) by providing acoustic solutions for various industries, including oil, gas, petrochemicals, steel, mining, power generation, and food processing.[hf3]

Relying on a team of expert engineers and researchers, Toos Acoustic offers customized solutions that meet the specific needs of its clients. [hf4]The company has gained the trust of clients by guaranteeing accepted noise reduction and providing warranties and after-sales services[hf5]. Its products, all marketed under the "Toos Acoustic" brand, include a variety of silencers (inline, vent, ventilation, and exhaust), acoustic enclosures and covers, acoustic rooms, and spark arrestors. [hf6]These products are designed by using the specialized and proprietary software "SILE" and are tested in the company's Flow Noise Laboratory. This laboratory is equipped with 4000-liter tanks, compressors, and precision instruments like B&K sound measurement equipment and Siemens flowmeters.[hf7]

Toos Acoustic Initiative:
[hf۸]Innovative Solutions for a Quieter Environment

Neighborhood with dynamic and high-tech companies in Khorasan Science and Technology Park provides opportunity for Toos Acoustics to exchange experiences and access advanced resources. [hf۹]The company has contributed to the advancement of acoustic science in Iran by holding seminars and educational workshops on noise reduction and has played a key role in developing national standards, such as drafting the IGS-M-PM-114 standard for the National Iranian Gas Company and Standard ISIRI 15652 for building acoustics.[hf۱۰] This company has Received some authentic national awards. [hf۱۱]
With a focus on quality, innovation, and customer satisfaction, the company is recognized as a reliable partner in industrial projects.**[hf12]**

[hf13]

The Importance of Noise Control

Noise pollution is a primary challenge in industrial environments, capable of negatively impacting employee health, productivity, and the environment. Excessive noise can lead to hearing loss, stress, reduced concentration, and even legal issues arising from community complaints. In this regard, Toos Acoustic assists industries in complying with environmental and safety standards by providing advanced acoustic solutions, thereby creating a quieter and safer work environment.

"Competitive Features of Toos Acoustic:

- Technical Expertise and Knowledge-Based Status:
  Being a knowledge-based company (for vent and inline silencers) distinguishes Toos Acoustic from traditional firms. This assures clients that they are working with a company that not only values product quality but is also at the forefront of technology and innovation. This is particularly valuable in industries like oil, gas, and petrochemicals, which require advanced, customized solutions. For instance, the supply of over 350 inline silencers to the National Iranian Gas Company demonstrates the company's capability in delivering high-quality, innovative products.

- Advanced and Innovative Technology:
  The specialized and proprietary code "SILE", developed over two decades of research, is one of the main assets and strengths of Toos Acoustic. With this code, the complex geometry of the silencer is modeled and the turbulent flow of the fluid inside the silencer is simulated and solved. Using the results obtained from this code, the optimal design of the silencer (to achieve minimum pressure drop and maximum noise reduction while considering cost) is carried out. The Flow Noise Laboratory, equipped with advanced instruments like B&K sound measurement equipment and Siemens flowmeters, guarantees product quality and performance. The lab can simulate real-world industrial conditions to test products before installation. [hf14]

- Custom[hf15] Solutions:
  Toos Acoustic provides customized products by understanding the unique requirements of each client. This approach is highly valuable in industries such as oil, gas, and petrochemicals, where needs vary significantly. The design team collaborates closely with clients to deliver solutions tailored to the specific conditions of each project.[hf16]

- Quality Assurance and Support:
  Toos Acoustic ensures customer satisfaction by offering a noise reduction guarantee, a product warranty, and 10 years of after-sales service. Products are designed and manufactured according to international standards like ASME and ASTM and are on the vendor lists of major entities such as the Iranian Ministry of Petroleum.[hf17]

- Role in Standardization:
  The company has contributed to the development of the acoustics industry in Iran by participating in the creation of national standards, such as drafting the IGS-M-PM-114 standard (for the National Iranian Gas Company), Standard ISIRI 1565 (National Standard of Iran) for building acoustics, and standards for silencer procurement and the acoustic design of gas pressure reduction stations.[hf18]

- Awards and Recognitions:
  Toos Acoustic has received numerous awards from prestigious festivals, including "Elm ta Amal," the "National Elites Foundation," and the "Sheikh Bahai Regional Festival.". These awards reflect the company's creativity and impact in the fields of science and industry.

- Research and Development:
  By investing in R&D, Toos Acoustic contributes to the advancement of acoustic science. Publishing scientific articles in journals and conferences and conducting training seminars are part of the company's activities in this area.

Products *"Advanced Acoustic Solutions*

Inline Silencer

- **Inline Silencers:** Reducing Noise at the Source

  In-line silencers are designed to control flow noise in gas pressure reducing stations (TBS and CGS) and other control. They are also used in the suction and discharge lines of rotating machinery such as compressors. [hf19]

  - The design of these products is done using the computational code "SILE". [hf20]
  - The silencers consist of both reflective and absorptive components, ensuring optimal performance across all frequencies, especially between 1000 and 4000 Hz.[hf21]
  - They are available in both internal and external models and are manufactured according to ASME standards.[hf22]
  - Field and laboratory tests have confirmed expected noise reductions.[hf23]

Vent Silencer

- **Vent Silencers:**

  Vent silencers are designed to reduce the noise generated by the safety valves discharge of gaseous fluids (like air or steam) in atmosphere, in refineries and petrochemical plants.

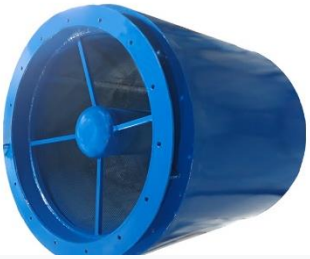
  - Using a combination of reflective and absorptive elements, these products reduce noise across various frequencies and are suitable for various industrial conditions such as high temperatures and corrosive environments.
  - These silencers are designed with the computational code "SILE".
  - Silencers are made with large dimensions (more than 6 meters long and more than 3 meters in diameter) and small dimensions of a few centimeters, and can reduce sound by more than 40 decibels depending on the need[hf24].

Acoustic Attenuator

- **Acoustic Attenuators (Acoustic Louvers):** Balancing Airflow and Silence

  Acoustic louvers are designed to reduce noise from ventilation systems in industrial and commercial settings.
  - These products have been installed in places such as diesel generator rooms and compressor rooms.
  - By using sound-absorbing panels, these attenuators effectively reduce noise while maintaining airflow.
  - Custom designs allow for adaptation to different duct sizes and airflow requirements.
  - Acoustic louvers not only deliver high acoustic performance but also coordinated with building architecture, making them suitable for both new and Reconstruction building.[hf25]

Exhaust Silencer



Exhaust Silencers:

Exhaust silencers are designed to reduce noise from exhaust diesel engines and intake and exhaust industrial systems. These products are installed on platforms with intake and exhaust systems and reduce noise over a wide frequency range. The acoustic design of these silencers is similar to vent silencers, but they are placed in a different category due to their different application and mechanical design.[hf26]

- **Acoustic Closures and Enclosures:**

  Acoustic covers and enclosures are used in places where it is not possible to reduce noise at the source (using a silencer in the path). For example, this product is used for acoustic insulation of granule transfer lines and the body and path of fluid transfer pipes of turboexpanders. Acoustic covers reduce the transmission of sound inside the pipe or equipment from the body to the outside environment. Therefore, the pipe covering should be continued until the sound is reduced to the desired level. These covers are made of two types: blanket (flexible) and metal.[hf27]

Acoustic Room

- **Acoustic Rooms**:

In places where it is not possible to reduce sound at the source (using a silencer along the path) for technical reasons or customer requirements, an acoustic room or enclosure is used. Sometimes it is necessary to have immediate access to all noisy equipment, so using an acoustic room is a suitable solution for reducing sound. If the acoustic chamber is placed around the sound source, it can reduce the sound outside the room, and if the sound source is outside the room (such as a control room), the sound inside the room is reduced. The acoustic rooms that this company has built around diesel generators, blowdown compressors, high-speed pumps, and seal gas compressors have come in various sizes. Depending on the customer's request, all or part of the walls and ceiling of the room can be removed during overhaul and repair.[hf28]

Spark Arrestor

- **Spark Arrestors or Dust Arrestors:**

In areas where the environment is polluted with combustible gases, hot particles emitted from the exhaust of a diesel engine provide favorable conditions for fires caused by the combustion of flammable materials. Spark arrestors prevent the release of hot particles suspended in the gas of diesel engine combustion products into the environment.

This equipment traps hot particles (or sparks) in the exhaust path of a diesel engine to eliminate the potential risk of fire. The spark arrester operates on the principle of centrifugal force. As a dust arrestor, this equipment can also filter (separate) particles suspended in the gas operating fluid.[hf29]

[hf30]

Recent Projects

Toos Acoustic has proven its capability in delivering effective acoustic solutions through the execution of numerous projects across different sectors. The table below highlights some of the key projects:

A Distinguished History Across Various Industries

Discription	Product	Industry	Customer
Supplied a few hundred silencers for gas pressure reduction stations from 2012 to present	Inline Silencers	Oil & Gas	Provincial Gas Companies
Installed 100 vent silencers for high-pressure gas discharge to the atmosphere	Vent Silencers	Petrochemical	Arvand Petrochemical
Supplied 4 large-scale vent silencers, reducing noise from 121 to 85 dB	Vent Silencers	Petrochemical	Salman Farsi Petrochemical
Provided vent silencers to reduce flare noise	Vent Silencers	Petrochemical	Maroun Petrochemical
Reduced noise from nitrogen discharge to the atmosphere	Vent Silencer	Refinery	Lavan Refinery
Acoustic covering for a turboexpander	Acoustic Closures	Refinery	South Pars 5th Refinery
Silencer for steam discharge line	Inline Silencer	Refinery	Adish
Supplied 9 vent silencers	Vent Silencers	Petrochemical	Dehloran Petrochemical
Reduced compressor noise	Damper Silencers	Steel	Khorasan Steel Factory
Insulation for production equipment	Acoustic Rooms	Steel	Gol-e-Gohar Steel
Provided noise reduction solutions	Acoustic Consulting	Power Generation	Toos Power Plant
Insulated a CHP system, reducing noise to 60 dB	Acoustic Room	Commercial	Ferdowsi Commercial Complex, Mashhad
Reduced noise from steam extractors	Acoustic Insulation	Food Industry	Golshad Food Industries
Insulation for plant cultivation	Soundproof Rooms	Research	Research Institute of Food Science and Technology
Supplied 2 silencers for high and low-pressure steam	Vent Silencers	Petrochemical	Arta Energy Methanol Petrochemical
Reduced compressor noise from 125 dB	Acoustic Room	Mining	Sangan Iron Ore Complex
Insulated a turboexpander and pipes	Acoustic Closures	Petrochemical	5th Refinery, Pars Special Economic Zone
Reduced CHP unit noise to 60 dB	Acoustic Room	Commercial	Mashhad Electricity Distribution Company
Reduced noise from steam extractors	Vent Silencers	Steel	Sabzevar Steel Complex
Reduced noise from steam extractors	Vent Silencers	Petrochemical	7th Refinery, Pars Special Economic Zone

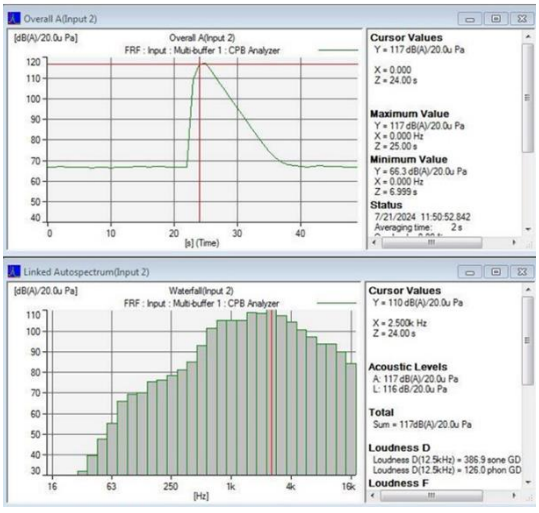
Flow Noise Laboratory

For a silencer to be produced at the level of reputable international standards, it must have "technical approval and performance testing under real conditions." The specialized Flow Noise Laboratory at Toos Acoustic can perform product performance tests under real or near-real conditions. In this laboratory, the acoustic and hydrodynamic performance of vent silencers, inline silencers and Louvers and acoustic enclosures are measured and evaluated. To generate the gas flow in the test section, two 4000-liter tanks are used, which are filled using a compressor or high-pressure nitrogen cylinders. The laboratory was built based on the ISA S75.07. The lab can also examine and calculate the hydro/aerodynamic performance of valves, especially their discharge coefficient.**[hf31]**

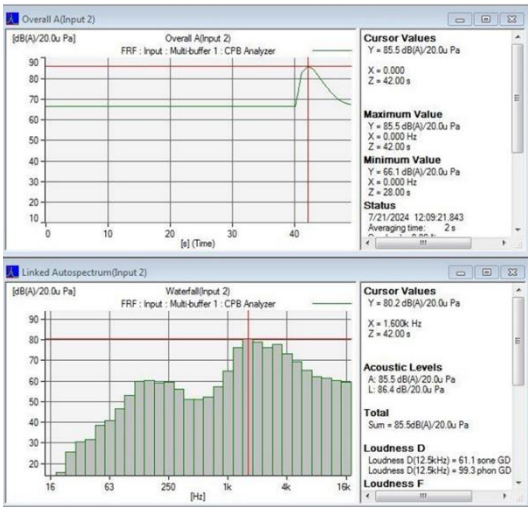
Sample Test Results:

A performance test for an 8-inch inlet flange silencer for Salman Farsi Petrochemical was conducted at the Toos Acoustic Flow Noise Laboratory with the client's representative present. The sound measurement results in two states—gas discharge to the environment with and without the silencer—are shown in the figure. It can be observed that the equivalent sound pressure level is 121 dB without the silencer and 85 dB after its installation. **[hf32]**

Without Silencer



With Silencer



Toos Acoustic
Noise Reduction Devices

Contact us
Phone: +985135425513-4
Fax: +985135425514
Website: www.toosacoustic.com
Social media: +989302437535 and @toosacoustic
Email: info@toosacoustic.com; spt.co.info@gmail.com