TECHNICON ACOUSTICS
SOUND SCIENCE

FLUID, AIR, POWER

Guide to Reducing Noise

Diesel and gas powered generators, air compressors, and fluid pumps are a few types of equipment that many OEMs offer sound attenuated enclosure options to their customers. Enclosures systems for equipment must address engine noise, cooling packages, exhaust breakout, turbo whine, and other sources of sound.

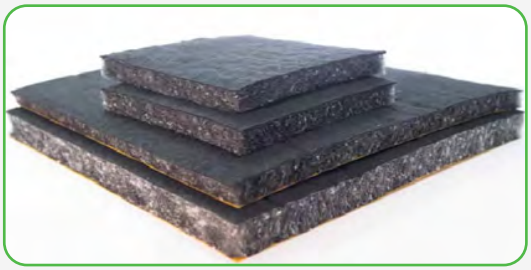
At Technicon Acoustics, we offer reliable solutions for reducing equipment noise. As the leading producer of acoustic and thermal solutions for North American OEMs, our experts are highly skilled and understand the design methods required for optimal noise control. In this eBook, we'll discuss how to reduce industrial noise and thermal output in power generation equipment.

Reducing Noise in FAP (Fluid, Air, Power) Equipment

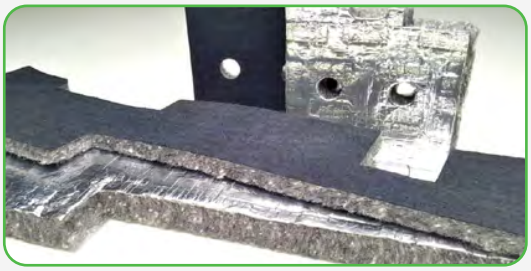
For many types of industrial equipment, creating an enclosure is the most effective way to reduce noise. At Technicon Acoustics, we use several types of acoustic products to mitigate noise, some of which are designed to absorb sound waves while others block them from being transmitted.

The most common materials we use in power generation equipment enclosures include:

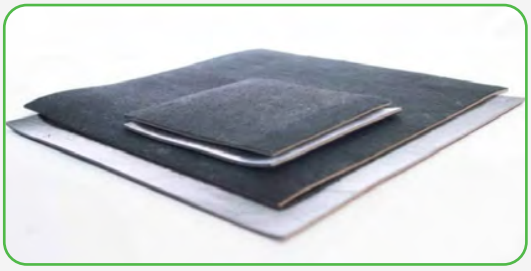
Acoustic absorber foam: Made from open-cell foam, this material lowers noise levels by preventing sound waves from reflecting off hard surfaces, significantly reducing the amount of airborne noise within a space.



PF-091 fiber: This unique material is our proprietary blend and a more environmentally friendly alternative to polyurethane absorber foam. PF-091 is a non-toxic fiber blend designed to absorb low-frequency sound waves.



Vibration damping materials: Materials like PVC, polyurethane, and rubber prevent unwanted vibrations from producing noise in an environment. They work by changing the resonant frequency of sound and converting it into heat.



Reducing Heat in FAP (Fluid, Air, Power) Equipment

In addition to noise concerns, thermal protection is an important consideration for equipment OEMs. When uncontrolled, heat-generating components like exhaust systems, turbos, and more can cause damage to surrounding heat sensitive components.

Our **Tech Shield™** and **Tech Shield Sleeve™** serve as high-performance solutions to these challenges:

- **Tech Shield™** is a lightweight, flexible insulation material made from a naturally flame-retardant inorganic core. When installed along the equipment's exhaust systems, fuel tanks, or other areas, it creates a noticeable reduction in cold side temperatures.

- **Tech Shield Sleeve™** utilizes the high-performance basalt fiber material in a braided sleeve. It is designed to surround exhaust pipes and results in cool side temperatures that are up to 70% cooler than the exhaust pipe itself. Tech Shield Sleeve™ also reduces vibration levels and cures in place for easy and long-lasting installation without unraveling.

How to Design an Enclosure for Optimal Performance

For the most effective noise and thermal output reduction, power generation equipment should be encased in a custom-designed enclosure. Within this structure, multiple vibration-damping and sound-absorbing products should be used. For example, an acoustic absorber foam or PF-091 fiber will prevent sound waves from reflecting off of hard surfaces and increasing noise inside the enclosure. By adding vibration-damping materials on fuel tank bases, you can also reduce vibration resonance.

When designing any type of equipment enclosure, some of the most important considerations involve material selection, specifically between barriers and absorbers. Barriers should be installed to prevent soundwaves from escaping the enclosure while absorbers are required for absorbing sound and echoes. At Technicon Acoustics, we offer unique composite materials that achieve both of these goals simultaneously.

In addition, our acoustic absorbers come in both foam and fiber-based materials, each with their own performance characteristics. For example, open cell polyurethane foam provides a cost effective solution to a wide frequency range and has been the choice of OEMs for decades. More recently developed polyester fiber absorbers, on the other hand, are the best option for applications in high humidity and potentially wet environments and offer improved low-frequency noise attenuation.

After selecting the best absorber and barrier solutions, thermal products like Tech Shield™ can be installed in the enclosure's hot spots to protect heat-sensitive internal components and the enclosure's surrounding areas. Finally, vibration-damping solutions should be installed to reduce structure borne noise and improve equipment longevity. Everything from the enclosure frame to engine mounting requires vibration isolation to create a quiet machine. Vibration damping materials include:

Rubber: Absorbs energy before re-releasing it into the environment as heat, effectively isolating vibrations.

PVC: Absorbs sound and vibrations while offering superior chemical resistance.

Polyurethane: A newer material in vibration damping, polyurethane absorbs excess energy and can be custom-engineered to meet application-specific requirements.

Costs and Regulations

As an industry leader in OEM solutions, Technicon Acoustics offers products that are cost-competitive without sacrificing performance. We use materials in the most efficient way possible and can help you develop designs that maximize material effectiveness while adhering to industry regulations.

Our team can design a solution that meets all of your requirements in the most cost-effective way. Adhering to best practices is essential for reliable noise attenuation. Contact the Technicon Acoustics team for a solution to your specific noise challenges.

Industrial Noise Reduction Solutions from Technicon Acoustics

With over 40 years of experience in industrial noise reduction, Technicon Acoustics can create an effective solution that meets all of your requirements while adhering to industry relations. We offer our products both directly to OEMs as well as through our supplier network. To get started, **contact us** or **request a quote** today. team for a solution to your specific noise challenges.

About Us

We are the leading producer of Acoustic and Thermal Solutions for Original Equipment Manufacturers throughout North America.

With decades of experience in the market, we can help OEMs solve even the most complex noise pollution problems. Our economical solutions will improve your products marketability, enhance customer brand perception, and help you maximize value for your customer.

We design, develop, manufacture, and deliver parts and materials that absorb, block, and isolate sound and thermal energy. Our dedicated team of Engineering, Manufacturing, and Administrative Professionals utilize the latest systems, processes, and technologies in our state-of-the-art facility to meet and exceed your expectations.

Learn More

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