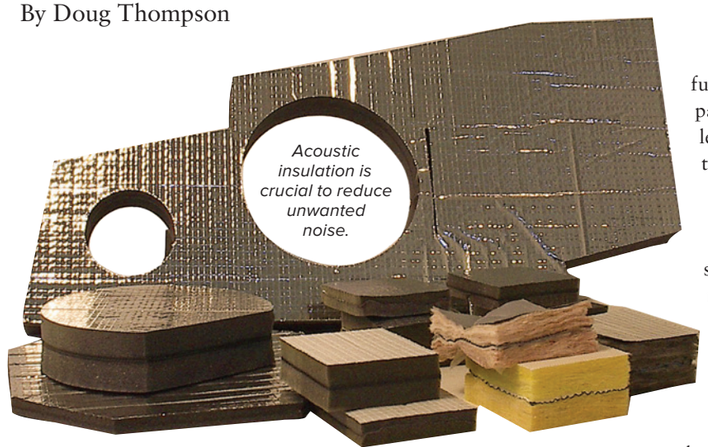
Quiet Down

Reduce rattles and roars for a better ride.

By Doug Thompson



Powerboats are not expected to be completely quiet, but there's a big difference between the confident rumble of a diesel inboard engine and an annoying buzz or vibration that gradually gets worse.

The first step to finding a solution to irritating boat noises is to determine the cause. That's where a company focused on vibration and acoustic noise control can help, such as the team at Soundown based in Salem, Massachusetts.

Soundown's in-house technicians can interview the owner or captain over the phone and figure out whether the noises are airborne (the result of ineffective insulation or acoustic underlayment) or structural (perhaps caused by worn-out engine mounts or engine-isolation problems).

"The Soundown staff is experienced and has helped solve many of the common noise problems for most makes and models of boats launched over the last 40 years," says Chris Murray, commercial director for Soundown, which also has a facility in Fort Lauderdale. "On the phone, we are going to ask about the noise levels on your boat, the quality of the insulation, and if there is leakage of sound through many different paths like air-intake vents or hatches. We have solutions that make a difference on top of what the builder has already installed."

Noise and vibration control engineers can diagnose sound problems and offer consultation for do-it-yourselfers and marine service professionals through a noise treatment plan that includes noise-reducing products and the most effective steps to take.

"Airborne noise is considered the low-hanging fruit, so we investigate those sounds and their possible solutions fully," says Murray. "If the engine room insulation package is less than two inches in thickness and less than a pound per square foot, you are going to benefit from an upgrade."

Structure-borne noise includes the engine mounts and other isolation. Engine mounts have a service life of about 15 years before the rubber starts degrading. The resulting vibration is felt in the floor and walls of the boat.

Many owners don't realize structural noise on their boat until they ride on another one. The noise increases gradually and is hard to notice, and the "quiet" they experience while cruising on a different vessel is usually the catalyst for change.

"When the mounts start to break down, the noise and vibration increases, and previously unnoticed frequencies may move," explains Murray. "This settling of the mounts is called the creep effect of natural rubber. Then, the engine gets out of alignment along with the driveshaft and the propeller. In most cases, the engine is the culprit, and the noises and vibrations with panels, bow rails, and pedestals are symptoms."

Replacing engine mounts on a 50-foot cruising boat with a single or twin 600-hp engines is generally not a huge job when the replacement is the same type of mounting system. As long as the mount and installation geometry is equivalent, an owner can upgrade at a boatyard with confidence.

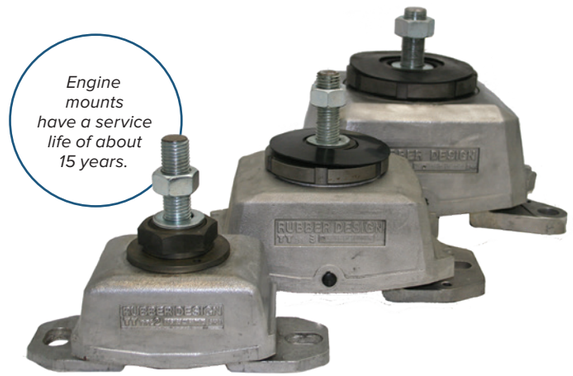
"We rank the noise signature at different speeds and try to establish a percentage of noise from a given source at idle, cocktail cruising speed, regular cruising, and wide-open throttle," says Murray. "All of the typical sources have different rankings depending on how much energy is being put into the structure or being cast off by the engine block. Once we do our analytic detective work, we can find the path that gets you dialed in to achieve your sound reduction goals."

Another consideration is exhaust noise. On boats 40 feet or smaller, the exhaust is almost always routed out the transom, so the sound volume depends on the silencers installed. Because exhaust noise is low frequency and not directional, it will bend around to produce a noticeable tone aboard the boat. "As you get into boats 50 feet and larger, some builders route the exhaust underwater or go out of the corners, so there are other components to work with," says Murray. "You can add improved silencers to change the level of exhaust sound."

When it comes to rotating equipment, such as engines, driveshafts, gearboxes, and props, the captain and crew need to monitor the intensity of the sound. For example, a sound can quickly go from okay to annoying to "we've got a big problem."

If an owner is replacing engines or doing driveline work during haul out, they can have Soundown spend a day aboard the boat to measure and rank all the noises and vibrations. A noise and vibration survey for a 60-footer starts at around $3,000 and includes a written report.

"This can help avoid the 'he said, she said' type of problem if tables start shaking after the driveline work," Murray says. "The survey can show that the table didn't shake before the boat was brought in. It might be worth the money on a big boat with a lot of work being done."



Companies that offer noise, vibration, and alignment services use state-of-the-art, specialty equipment to measure and analyze precisely where the issues are located and the cause. "Today's owners want quiet," says Murray. "They also have the expectation they can attain that quality in their boat." A noise and vibration survey can help reach that goal.

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