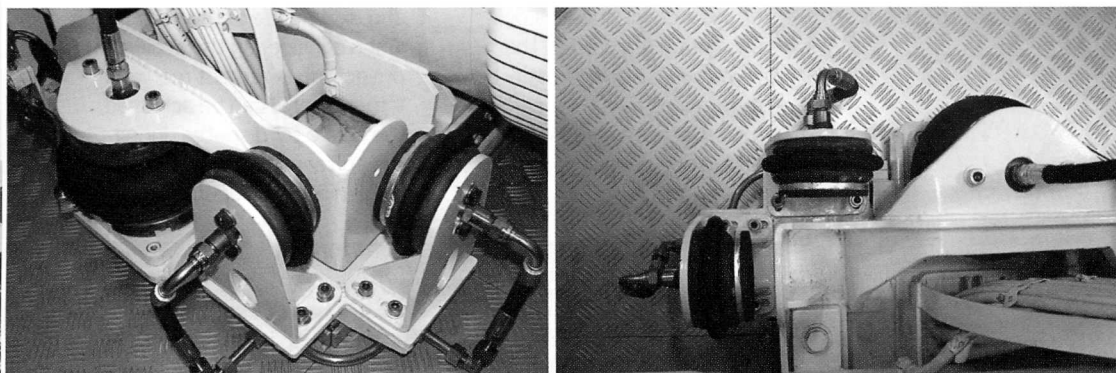


Riding on air

DEICON DYNAMICS CLAIMS ITS NEW AIR ISOLATION SYSTEM IS THE MOST EFFECTIVE MOUNTING SCHEME YET DEVELOPED FOR BIG DIESEL GENERATORS AND COMPRESSORS TONY JONES REPORTS



The lateral mount and additional stabilisers at the corner of a large marine generator

Minimising the amount of noise and vibration transmitted by machinery, such as gensets and aircon compressors, is a constant battle for any superyacht builder.

The two most common solutions are double (or two-stage) mounting and air isolation mounts. Although very effective in lowering the transmission of vibration at high frequencies, the drawbacks of double mounting include design complexity, weight, space requirement, and costs associated with the added seismic mass. Air mounting, on the other hand, offers unsurpassed isolation at low frequencies but comes with its own set of problems, including lack of damping and low lateral stiffness.

Many experts consider 'active' systems (such as the one made by MTU-Paulstra) as offering the ultimate solution, but these are very expensive and highly complex.

NVH specialists, Deicon Dynamics and Control, has therefore developed a new product intended to retain all

the desirable attributes of air mounting while addressing its inherent problems.

Its pneumatic Computer Controlled Air Isolation System progressively varies the stiffness of the mounts between 'soft', for effective vibration isolation when the boat is not moving, and 'stiff

shock isolation. The degree of stiffness can be selected from a number of pre-programmed settings or handed over to the system's computer, in which case the change happens automatically.

However, because air mounts on their own do not provide much resistance in the

"Stiffness can be selected from pre-programmed settings or handed over to the system's computer"

for effective shock isolation and structural integrity when the boat is underway. The former is highly underdamped with little lateral stiffness, providing excellent vibration and structure-borne noise isolation. The latter, while still underdamped provides high lateral stiffness and excellent

horizontal plane, additional lateral restraint is provided by a pair of smaller units at each corner which are engaged, when needed. These auxiliary units will not only provide increased lateral stiffness but when engaged will also enhance the heavy stiffness of the main mounts.

The photos left show one mounting foot of a diesel genset isolated from the structure by one vertical support mount and two lateral control units.

However, air mounts are by their nature underdamped and can suffer from low frequency resonance which can reduce shock isolation capability even at high pressures.

Deicon has therefore developed a patent pending active damping technology that addresses these shortcomings while maintaining all the desirable attributes. This active damping technology is achieved by positively flowing pressurized air in and out of the mount via a pneumatic servo-valve under feedback control governed by a proprietary damping scheme/algorithm.

At the time of writing, the product was under review by the American Bureau of Shipping (ABS) for type approval, which Deicon hopes to have achieved by the end of this year.

Deicon specialises in NVH technology across a wide range of applications. Its website is well worth a visit for those wishing to know more about this vital subject.

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