

**Subject: 3.5kHz Transducers for Chirp 3260**  
**From: "M.H.Meyer" <megan@ldeo.columbia.edu>**  
**Date: Wed, 28 Jul 2010 12:27:08 -0400**

All,

We are talking about replacing the 3.5kHz transducers on Langseth (for Chirp 3260)

Knudsen has recommended Massa 1075A transducers in a 4x4 or 3x3 arrangement.

I am interested in what other UNOLS vessels have installed & configuration so we have an idea of how much real estate we need in the pod.

Any suggestions, guidance, installation pictures & or drawings appreciated.

Megan  
R/V Langseth  
Columbia University

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**From: Timothy McGovern (University of Hawaii)**

Megan,

The Kilo Moana uses a 4x4 config of Massa TR-75 transducers for its Knudsen 3260 system. Off hand I think our system is about 4' x 4', and sits about 16" high. I don't have any pictures of it right now, but it's a fairly simple affair. Basically it's a steel box inside the vessel that we have the transducers bolted into. Each transducer has its own cable that gets routed in a bundle. On top of the box we have a lexan window that gives us easy access and allows us to monitor the water level of the chamber. We re-fill the chamber as necessary. This is the config that was set up from day one. If I had to do it over again, I would add a drain plug to the bottom of the chamber so that it could be flushed more thoroughly, and add a more permanent, water tight top to prevent evaporation and subsequent degradation of data quality.

That's my two cents.

Best regards,

-Tim

Timothy M. McGovern  
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**From: Brandi Murphy (Scripps Institution of Oceanography)**

Megan,

At UCSD we have Massa TR-75 transducers in both 4x4 and 3x4 combinations. They are also in their own water filled steel boxes, individual cables bundled together into a J-box which is much easier to access than the 'ducers themselves.

Brandi

Scripps Institution of Oceanography, UCSD

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**From: Steve Poulos (University of Hawaii)**

Megan,

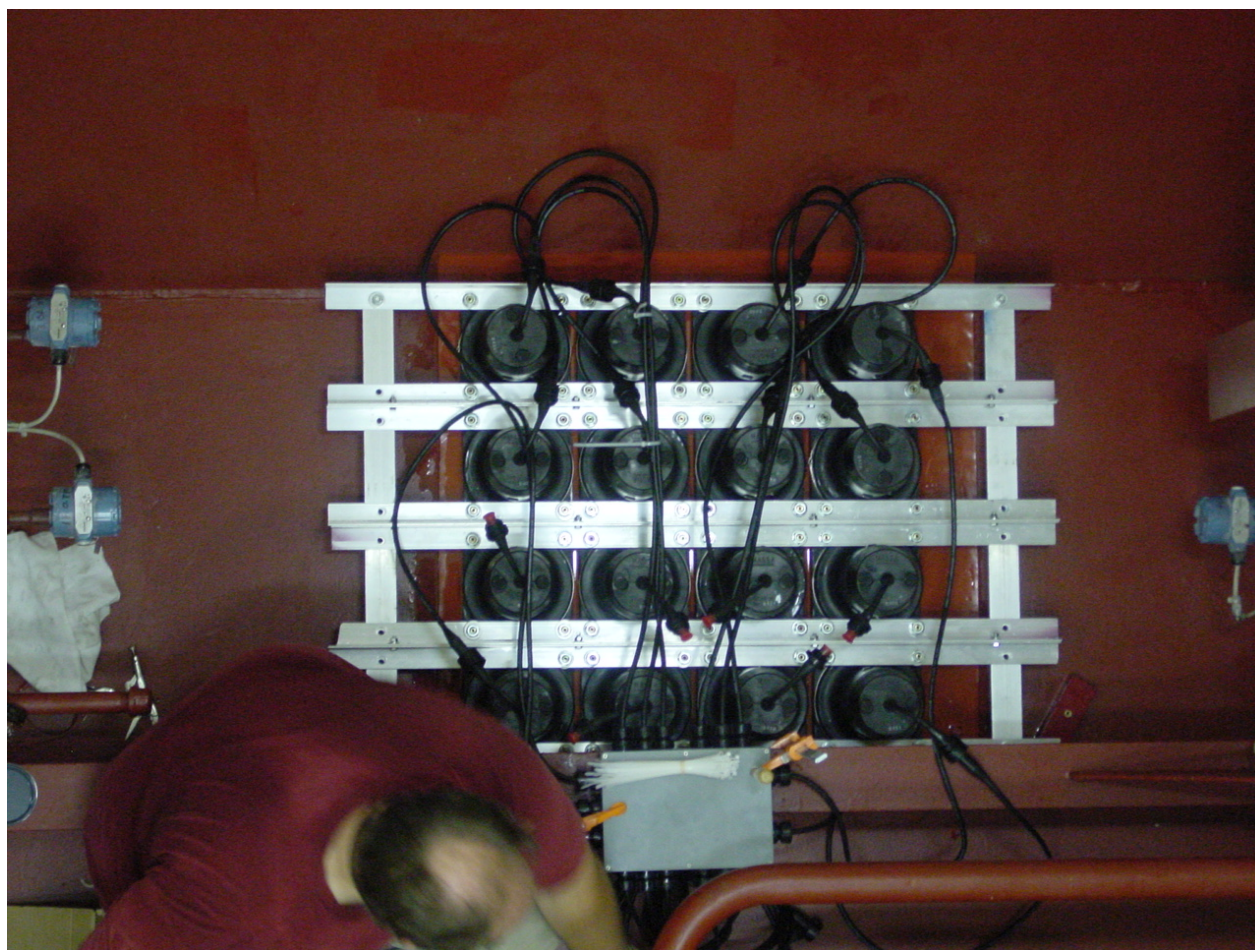
Adding a couple of additional comments ref Tim's email response -

The KM's is a 4 x 4 array of Massa TR-1075A 100ohm at 4kHz, parallel-series tuned (optimized for array impedance of 62ohms for the Knudsen). Originally we placed the 4x4 array on a silicone pad and folded up the sides slightly to contain Rhodisil Oil - trying to avoid water altogether - attempted to do a "dry" installation. We used magnets to hold the entire array to the hull. This worked well at first - but due to the transducers themselves sitting on the pad (with the oil as the acoustic coupler), after a short interval of time the signal degraded due to a vacuum effect on the TR-1075A face- decreasing sensitivity.

The first picture shows the dry install- frames/magnets on the pad, transducers on the pad directly the 2nd picture shows an early look after installation in a chest, transducers supported slightly above the hull with the fresh water evaporated - hence the need for a cover.

We went to water rather than a small chest with Rhodisil oil is because in case of cavitation at the surface of the transducer - one can pressurize slightly and minimize that effect - our pressurization scheme was to have a sealed cover and standing pipe (never implemented,our well is 15ft in height) with water - but it ended up working adequately without, so evaporation ended up being the main problem. But suspending the transducer faces just above the deck and submerged in oil would probably be just fine too - and probably less evaporation or needing to seal issues.

Steve





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**Reply From: Daryl Swensen (OSU) on Fri, 06 Aug 2010**

Megan,

Sorry for the late reply on this. On the WECOMA we just replaced our old 3.5 kHz ORE 137D transducers with a new set of Massa 4.0 kHz 1075A transducers. We have a 4x4 array in an inboard tank partially filled with oil. This is run by our CHIRP 3260. Here is a link to some pict. of our array with the old transducers. The oil has been removed:

[http://www.shipops.oregonstate.edu/martech/dswensen/info/knudsen\\_chirp/4kHz/old\\_system/test\\_pict\\_01-2009/](http://www.shipops.oregonstate.edu/martech/dswensen/info/knudsen_chirp/4kHz/old_system/test_pict_01-2009/)

Here is a simple drawing of our transducer well:

[http://www.shipops.oregonstate.edu/martech/dswensen/info/knudsen\\_chirp](http://www.shipops.oregonstate.edu/martech/dswensen/info/knudsen_chirp)

/4kHz/transducer\_well\_layout\_2006.pdf

We brought all the wires out to a J-box exterior of the tank. This allows us to combine the transducers and test the system easily. With our new system we initially wired everything in parallel and the impedance came out around 8 ohms at 4kHz. This was a little low for what Knudsen had the deck unit set up for. We changed the wiring to have two banks of eight in parallel and those banks then wired in series. This brought us up to 20 ohms at 4kHz and closer to the 25 ohms that Knudsen thought was best. I can send you our full test results and wiring configuration if you are interested.

We fill the tank about 3/4 of the way up the transducers with Shell DIALA AX oil. This has worked well for years. We don't have to mess with the preservation of the interior of the tank or doing anything with water. The only thing we do is check the oil when we are in the shipyard and keep the tank sealed. The previous transducers were purchased in 1981 and they physically looked in OK to good shape. We replaced them because a significant amount had impedance tested WAY out of spec..

Let me know if you would like more information or have trouble viewing.

Daryl

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Daryl Swensen  
Marine Technician Superintendent  
COAS, Oregon State University  
R/V WECOMA