

# Making waves

UI Research Park facility advances partnership with Navy

By Cindy Hadish  
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CORALVILLE — A new University of Iowa facility is literally making waves.

On Thursday, IIHR — Hydroscience & Engineering, part of the UI College of Engineering, unveiled its \$4.9 million IIHR Wave Basin Facility, which will be used to test scale-model naval ships under real-world conditions.

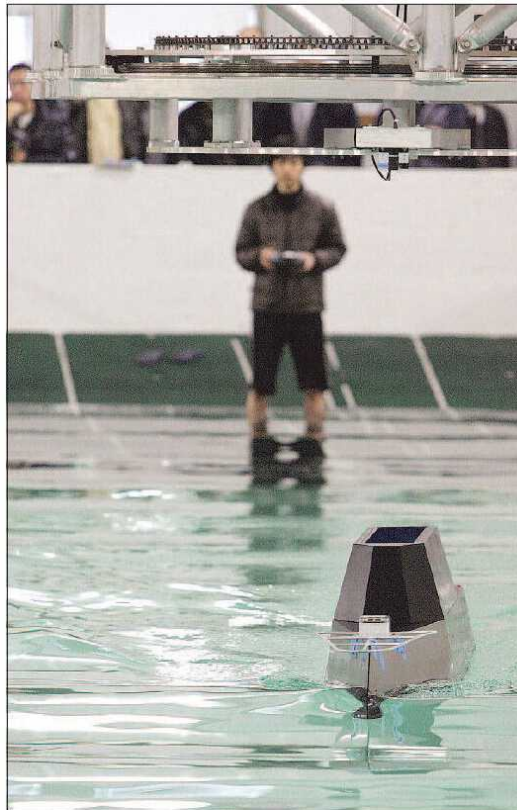
Located in a nondescript tan warehouse in the UI Research Park, the wave basin looks like an indoor pool, but its high-tech capabilities make it one-of-a-kind. With the new site, research engineers will be able to evaluate computer simulation codes developed at the UI for U.S. Naval ship designs.

Similar facilities can do “captive” tests in which ship models are attached to a carriage system to evaluate local flow measurements, or they can do simple tests with a free-moving model, said IIHR Director Larry Weber.

The UI’s new wave basin can do both, he said.

A 1/50th scale model remote-controlled destroyer, launched from a “beach” at the site, undergoes easy, medium and difficult tests. Because of the scale, a 1-foot wave in the pool is comparable to a 50-foot ocean wave.

The model, which contains gyroscopes and other sensors, is followed by an upper-level track-



Liz Martin photos/The Gazette

Masaki Sano, a University of Iowa postdoctoral researcher from Japan, controls a model of a naval warship Thursday during a demonstration of the IIHR wave basin in Coralville. The basin is the first free-model facility in the world, and will allow researchers to measure waves and flow around the model.

ing system with a camera that also measures the responses.

“No other facility in the world is able to make those measurements,” said Frederick Stern, director of the IIHR Ship Hydrodynamics Program.

About two dozen people work

on the project to develop safer, less-expensive techniques to evaluate naval ship design.

Stern said the basin’s wave maker has enough power to capsize the model, but because of what a capsized model could do to the \$55,000 model’s sensitive equip-



Masaki Sano sets the test conditions for a demonstration of the IIHR wave basin.

ment, that’s not in the plans for now.

The facility was constructed using \$1.9 million in internal funds and \$3 million from the U.S. Office of Naval Research.

With no ocean in sight, Iowa might seem an unlikely site for naval testing grounds, but Weber said the partnership has a lengthy history. Formerly known as the Iowa Institute of Hydraulic Research, the IIHR began at the UI in the 1920s and has grown to a 200-person operation.

Weber said the partnership with the U.S. Navy began in 1954 when the UI hired senior scientist Lou Landweber from the Navy to develop a research program in ship hydrodynamics.

For 50 years, the IIHR used a towing tank — a 300-foot-long by 10-foot-wide basin — in which models were attached to a carriage system, rather than the new remote-controlled version.

“We simply outgrew that tank,” said Weber, noting that the new wave basin measures 65-feet-wide by 130-feet-long, allowing the models to circle, zigzag and more. Both sites are 10-feet deep.

The towing tank, in the basement of IIHR’s office on the UI campus at the Burlington Street Dam, still will be used.

Weber said besides forwarding the group’s research, the cutting edge capabilities of the new wave basin helps attract graduate students to the department.

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