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TASMANIA



NEWS FROM THE AUSTRALIAN MARITIME COLLEGE

Media Release

Chiefs of Staff, News Directors

Wednesday 13 May 2015

Tension builds as pasta bridges face ultimate test

Maritime engineering students have been weighing up the merits of rigatoni versus spaghetti as they put the finishing touches to their entries in the AMC Pasta Bridge competition.

The challenge is to design and build the strongest bridge with a span of one metre using nothing but commercially available dried pasta and glue. It will be contested by about 85 second-year engineering students at the Australian Maritime College, a specialist institute of the University of Tasmania, as a major assignment in their mechanics of solids unit.

AMC Naval Architecture Course Coordinator Dr Roberto Ojeda said the teams would be aiming to beat last year's record of 279kg.

Students started the project by conducting a series of mechanical tests on the pasta to investigate what mix offers the best material properties. Long and slender pasta such as fettuccine or spaghetti is typically used for tension members, while rounder counterparts like cannelloni and rigatoni are best suited for compression members.

"There is a lot of reasoning that goes into selecting these materials; pasta has different properties depending on the breakdown of its ingredients," Dr Ojeda said.

"It's a great opportunity to test the knowledge that students have gained in other units. They've learnt about material science, manufacturing and testing, and now they can choose materials based on that knowledge. The success or otherwise of their designs is in the detail."

After seven weeks of research, design and preliminary testing, the finished products have been assembled and will face the ultimate test on AMC's custom-built loading machine known as "the pasta buster". No bridge will make it out in one piece as load is continually added until they shatter.

Dr Ojeda said the competition, now in its eighth year, was very popular among students and provided a range of learning outcomes including seeing theory put in to action.

He is in discussions with academics around the world to develop a set of unified rules for the activity and hopes to one day enter an AMC team in the world championships held annually in Prague, Hungary. The current pasta bridge world record is 570kg.

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