



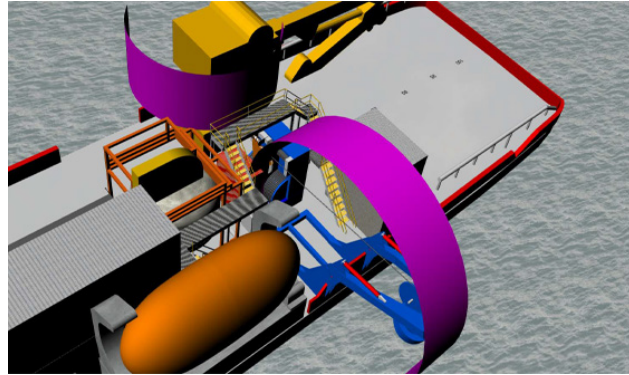
# McNotes

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## Naval Architects & Engineers

### Current Projects

**Oceaneering International** – We are currently in the middle of a project that involves the replacement the existing hyperbaric lifeboat with a new larger and improved one. This substitution impacted the current module support system and provided a number of design opportunities for ACMA.



*Proposed catwalk for equipment access*

**Institute of Nautical Archeology** – ACMA developed a new contract level design drawing package and specification for a non-profit group in the U.S. and Turkey that allows a shipyard to compute an accurate cost for construction of a vessel. We also utilized our CFD software to verify speed powering predictions and main propulsion power selection. Structural details were developed, general ship services were determined and designed, electrical power requirements and general one-lines were developed and, of course, ship stability and vessel lightship were calculated.

**Capability Update** – ACMA recently purchased a copy of the software “OFFPIPE” which gives us the capability to design pipe laying stingers in a variety of water depths and operating environments. Over the past 40 years, we’ve provided support services to a number of offshore construction companies involved in this arena, including equipment arrangements for job-specific equipment, mooring system arrangements and analysis, structural design and stability checks, and vessel inclinings. With the addition of “OFFPIPE” to our design software, ACMA is continuing to expand our support of the offshore construction industry.



Naval Architects / Engineers

*Four Decades of Service*

**1975 – 2015: From Industry Pioneer to Industry Leader**



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## From the Top


As we enter the 40th year of our operation, I'm reminded of the guiding principle this company was founded on – solve the client's problems by providing a quality product at a fair price.



Of course, there's been a lot of water under the bridge these past 40 years. So many opportunities and challenges, but most importantly, so many special relationships. And, through those relationships, I've learned that every customer is important, regardless of the size of the initial job, since every project completed successfully often leads to another project or a valuable recommendation.

Over the years, I've also recognized the importance of diversification in talent, capabilities and resources. All of our "key" players have on-site shipbuilding experience and I make it a point to see that every engineer and designer who joins our team has exposure to this aspect of our business so we're in a better position to support our customers. And, I think my father would agree, we're well positioned to provide another 40 years of service to the marine industry.

So, my thanks to our customers both past and present for their loyalty and support. We're looking forward to serving you in the days and years ahead.

  
Scott C. McClure, President

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**Alan C. McClure Associates**

Founded in 1975, Alan C. McClure Associates, Inc. (ACMA) is one of the industry's premier naval architecture and engineering firms. Headquartered in Houston, Texas, we've provided advanced design and engineering services to our international clientele in offshore exploration, production and marine transportation for four decades.

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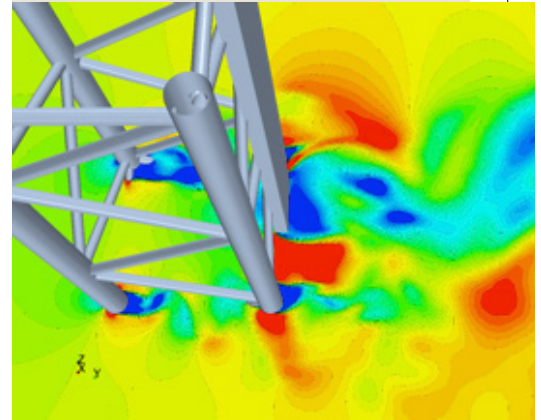
## New Options for Aerodynamic Analysis of Offshore Structures

Until recently, no alternatives existed to determine the effect of aerodynamics and its associated forces on offshore structures other than wind tunnel tests. While wind tunnels answer part of the question, they are limited in the level of detail they provide. ACMA has now provided that information to a client by virtue of a CFD analysis which uses extensive physics formulas to capture all the aerodynamics, including partial wind shadowing. The application of this software approach also allows changes in the model to be made quickly and inexpensively, with results available almost immediately after the implementation of those changes. This cost-effective alternative to wind tunnels can provide fast and thorough results at a fraction of the cost previously associated with modifying models and administering additional testing.

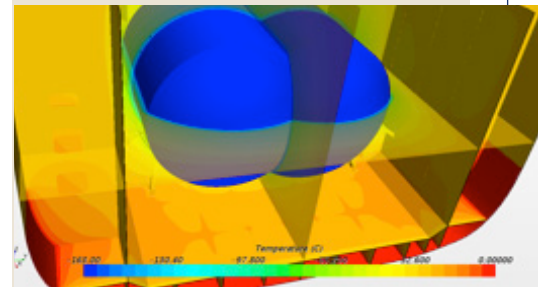
Using its powerful CFD program, ACMA can provide detailed information on the wind flow around any offshore structure, including drag coefficients, wind forces, center of efforts, wind-patterns over helidecks and numerous other issues. Every aspect of the wind loadings can be broken down into a component for a single structural element and these component forces can then be summed to determine the total force and the center of its application.

According to ACMA Naval Architect Nick Barczak, "Thanks to ACMA's techniques and software developments, details as small as isolated trusses in structures can be incorporated into a model with very little computing impact. This adds a greater degree of flexibility and accuracy in the models that are built and analyzed."

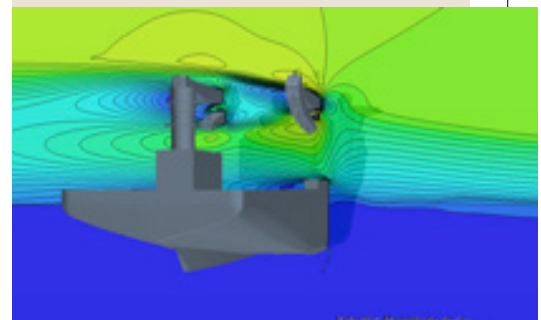
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*Air flow around crane truss*



*Thermal gradients around LNG tanks*



*Combined air and water flow for dynamic positioning analysis*

## New Options for Aerodynamic Analysis of Offshore Structures - Continued

ACMA is currently working to verify that the process and procedures used for their analysis are acceptable for class approval. Once these procedures are approved, they can be used in the future to provide more accurate analysis of offshore structures and vessels, while still maintaining an appropriate level of safety.

“It’s not enough to know how to run the CFD software,” adds ACMA President Scott McClure, “you also need an understanding of the dynamics and math the software is using so you can ensure the delivery of an accurate, high-quality end product.” Scott also noted that in addition to using the CFD software for wind loading analysis, ACMA has been very successful utilizing it in the thermodynamic analysis of a cryogenic tank and how the thermo-loads will impact a ship’s structure.

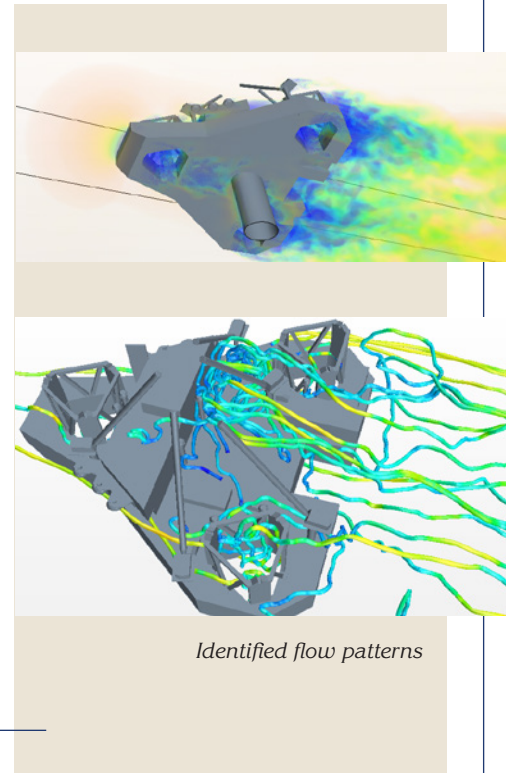
According to ACMA Naval Architect Jeff Reifsnnyder, “We

modeled the ship structure, added insulation and its properties, cryogenic tank support and isolation materials, as well as ambient air and water temperatures. The software allowed us to put in temperature thresholds, and with this we were able to identify areas that are impacted and materials that need to be replaced.”

The flexibility of the software has also allowed ACMA to model bilge-keels to determine their effectiveness in roll damping, propeller flow and design, flow impact into underwater appendages in high flow areas and virtual tank testing for speed/power predictions. In every case, the results were found to have accurate correlations to what was experienced.

In the future, ACMA anticipates the demand for its advanced analysis capabilities will continue to grow. With its CFD software providing fast and accurate engineering

analysis, changes can be made at a fraction of the cost required by a physical model and that’s an important factor, considering time is money.



## OTC Update

At a recent meeting of the Offshore Technology Conference (OTC) Board of Directors, ACMA’s VP Darrel Harvey was elected by the Board to become the Program Committee Chairman for OTC 2016. The Board also named Charles Knobloch as the Vice Chairman of the 2016 Program Committee. Darrel has been an active member of the Program Committee representing the Society of Naval Architects and Marine Engineers (SNAME) for 15 years and has played a key role in developing the technical sessions, breakfasts/lunches and panel discussions for the conference.



ACMA's VP Darrel Harvey

*“It is a great honor to be recognized by the Board and elected to serve as the Program Committee Chair for 2016. My goal is to continue participating on the Board and representing SNAME in the future.”*