

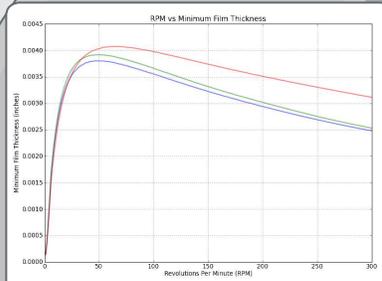
## A Multi-physics Approach to Reliable Product Design.

AMB's team is comprised of highly skilled engineers and machinery designers whose experience spans a wide range of specialties, including structures, fluids, mechanics and dynamics. We employ sophisticated methodology, tools and processes to create design and drawing packages that meet demanding specifications and perform reliably in extreme or remote environments.

### How Quality Comes Full Circle

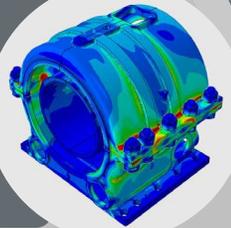
MB Engineering follows a collaborative "360-degree" approach that integrates customer feedback into every project phase. This blending of insight and expertise ultimately results in products that satisfy customers' expectations, and their budget and performance goals. AMB's engineering services include:

- **Mechanical Design.** Using the latest 3D CAD software, AMB Engineers model conceptual and detailed design drawings. All manufacturing drawings are ASME Y14.5-compliant.
- **Material Selection.** The Engineering Group employs a comprehensive, systematic process to define and select a project's most appropriate and cost-effective material, including a detailed examination of mechanical, thermal and environmental properties.
- **Analysis.** AMB performs finite element analysis (FEA) using ABAQUS software to verify design integrity throughout the production process, including: static, quasi-static, nonlinear explicit dynamics, thermal and contact analysis.
- **Programming.** To facilitate development of complex, exotic or highly specialized products, AMB Engineers develop custom analysis tools in-house, using programming languages such as Python, LabVIEW, C++ and Matlab.



Journal bearing analysis, modeling and performance characterization are just some of the applications for which AMB has customized analysis tools.

AMB uses ABAQUS finite element software to perform detailed structural analysis and multi-physics simulation of both military and civilian products.



This line-shaft bearing from a Burke-class destroyer shows how AMB utilizes SolidWorks to render models exactly as they will be produced for design, ergonomic and usability studies.

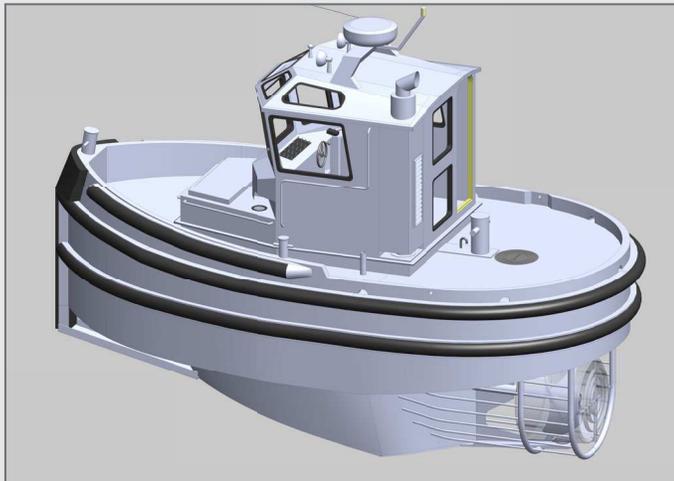


## AMB's 3D Model and 2D Drawing Package Helps the U.S. Navy Avoid Prototyping Costs.

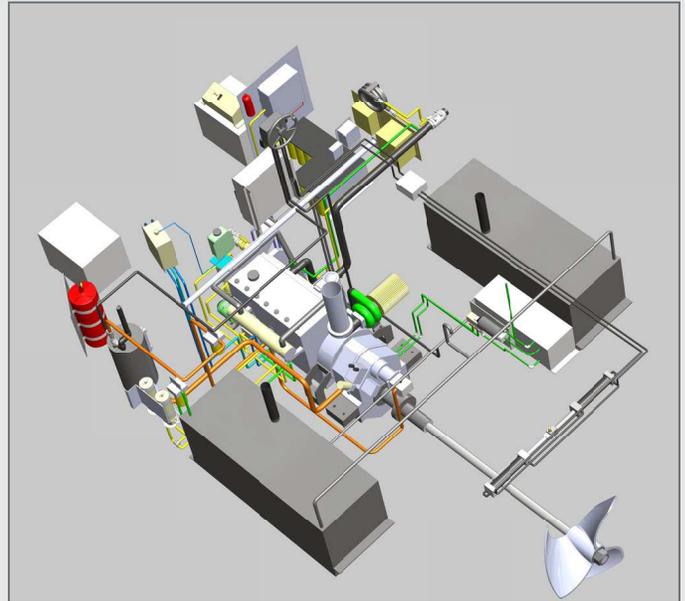
Engineering drawings that are precise, accurate and easy to follow facilitate a smoother, more efficient transition from design to production. That's why AMB teams invest considerable time and effort in creating the most elegant and concise packages possible. Here is a reverse-engineering project for the U.S. Navy that demonstrates this vital capability.

### The Boomin' Beaver Tug

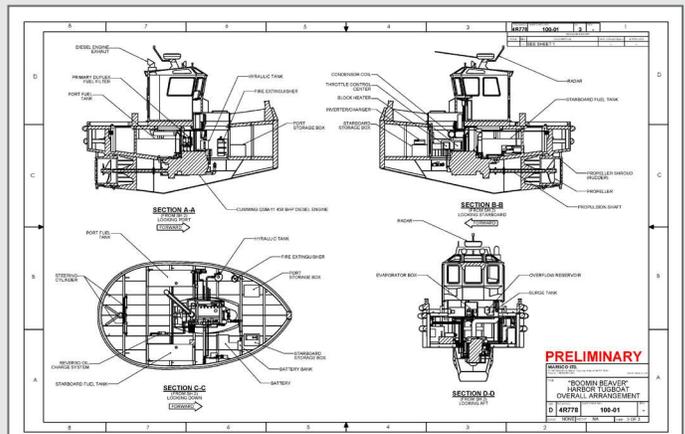
To extend the life of an aging but still serviceable harbor vessel, the Navy chose AMB to analyze and improve the boat's ergonomic factors and hydraulic routing. The Navy also wanted to plan future hull modifications and repairs, and upgrades (to component level) electrical, mechanical and wiring subsystems. Because no drawings of the tug existed, the Navy called AMB.



AMB Engineers combined advanced modeling and surfacing techniques with intimate knowledge of pipe and conduit routing to produce exquisitely detailed 3D renderings.



AMB's expertise contributed directly to significant savings. Modeling drawings made from our 3D renderings were so accurate they enabled the Navy to meet its planning objectives *without* building a prototype.



AMB's full-scale model and 2D drawing package, including full documentation, equipped the Navy to cost-effectively plan and implement future modifications and repairs.

## Rapid Resolution to Unexpected Challenges

*With complex military and civilian machinery, technical issues can arise anywhere at any time. But equipment that's in service or being field tested is especially susceptible. To minimize downtime and disruption when challenges do arise, AMB has created a flexible organizational structure in which our teams work closely with customers' to get equipment up and back online quickly. We support all AMB-manufactured products, and when needed, consult on the repair and replacement of those from other companies.*

### **Remote Support**

AMB Engineers and technicians can be dispatched in teams to locations around the world to test, evaluate, assess and correct machinery failures.

### **Onsite Support**

In addition to providing remote support, AMB's onsite Engineers and technicians can work directly with customers' home-office teams to promptly implement the most appropriate and timely solution to virtually any technical issue.

