

Antares Engineering Services

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1 About Us

Antares Engineering Services is based in the hills district in northwest Sydney. We provide a variety of mechanical engineering and project management services to clients in Australia.

2 Why use our services?

We give our engineers the time and environment to get an indepth understanding of our client's challenges. We don't look for the cheapest or most elaborate solutions. We look for what is practical and achievable within our client's time, cost, safety and quality constraints. Our breadth of experience in a wide variety of applications allows us to see unique opportunities and possibilities. Our engineers don't just show up to work. They are independent minded and driven to produce creative unique solutions. As a small, flexible engineering design company we have low overheads and are able to offer our clients exceptional value.

3 Industries

We carried out projects for the mining, offshore, logistics, dredging and drilling industries. However we do not restrict ourselves to working in those industries. If a client is operating mechanical equipment in any industry we can help him to source, design and install new equipment or increase the efficiency and safety of existing equipment. Our depth of experience allows us to apply ideas and concepts from other industries to help our clients with their present challenges.

4 Collaboration

We have access to top class fabrication and machining workshops locally and work closely with our partners to produce quality work. We also work closely with other disciplines such as electrical and control systems engineers. This enables us to offer complete turnkey solutions.

5 Services

Engineering Studies

We help our clients with the following:

- Initial feasibility studies drawing on experience from a wide variety of applications.
- In field observation and testing of systems or operating issues.
- Data, quantitative and mathematical analysis to justify or eliminate various courses of action.
- Financial analysis to determine economic viability of various solutions.
- Blue sky thinking to consider non-conventional possibilities.
- Resource assessment to determine if required resources are available when required.
- Sub-contractor assessment to determine if sub-contractors have skills, knowledge and capacity required.
- Risk assessments to highlight risks and minimize injuries.
- Market assessment in sourcing new suppliers or equipment.

Engineering Design

Areas where we can help our clients:

- We follow a structured engineering design process.
- Combined use of 2d and 3d software to accelerate the design process.
- Preparation of specifications and design requirements.
- Ensuring compliance to relevant codes and standards.
- Preparation of basic engineering documentation including:
 - Determining load cases.
 - Initial system calculations.
 - Sketches of various stages of equipment operation.
 - Stress and stability calculations of main assemblies / components.
 - Interface drawings of main assemblies showing weight, external forces, electrical and fluid connections.
 - Selection of high value purchased items.

- Preparing P&ID's.
- Preparation of detailed engineering documentation including:
 - Detailed stress and deflection calculations of components.
 - Detailed component sizing and selection calculations.
 - Final selection of materials.
 - Detailed system schematics.
 - Assemblies updated with finalized information.
 - Installation and lift plans.
- Preparation of detailed shop drawings.
- Preparation of failure mode and effect analysis.
- Commissioning procedures.
- Operating and spare parts manuals.

Project Management

We can help with the following:

- Assisting key stakeholders in developing project scope, goals and deliverables.
- Assisting with tender process.
- Developing technical specifications and requirements.
- Ensuring project compliance with relevant codes and standards.
- Defining tasks, securing resources and collaborating with vendors and consultants.
- Preparing document lists and register.
- Managing budget, reporting and mitigating risks.
- Creating, managing and monitoring project plan ensuring responsibilities and timelines are communicated with relevant stakeholders.
- Organizing meetings at various milestones between stakeholders.
- Ensuring engineering documentation is approved by stakeholders and correctly controlled.
- Supervising work carried out by subcontractors.
- Ensuring quality control procedures are in place and followed.

- Tracking and reporting KPIs.
- Managing and monitoring end to end responsibility and accountability.
- Supervising site installation and commissioning.
- Preparing cost control procedures.

Asset Management

Areas where we can help our clients:

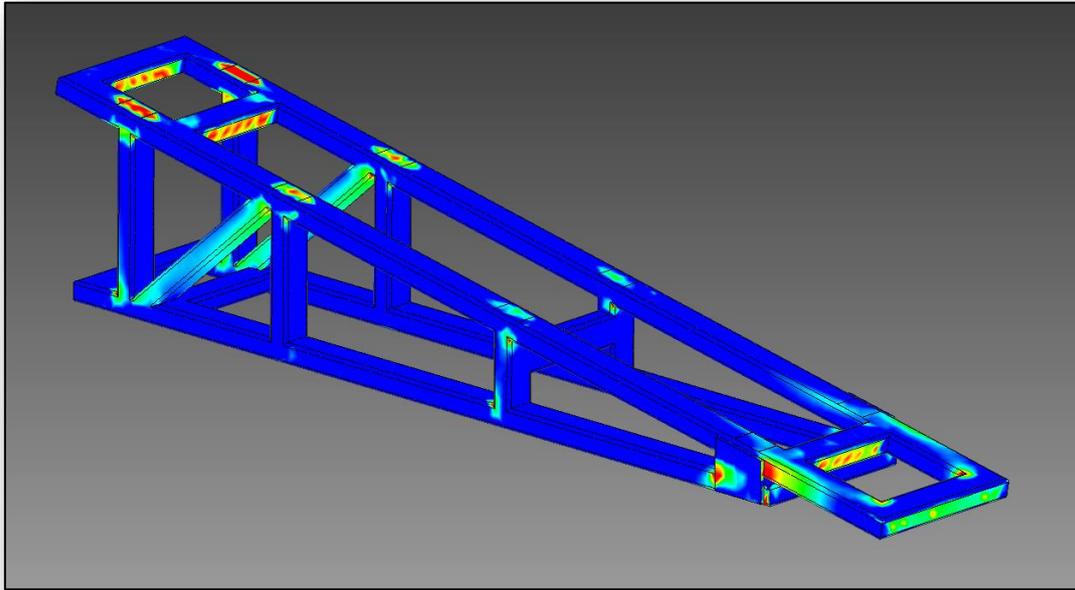
- Preventative maintenance plans.
- Preparation of spare parts registers.
- Operational parameter recording and analysis.
- Risk assessment and failure mode and effect analysis.
- Inspection and condition assessment.
- Troubleshooting failures and breakdowns.
- Data, quantitative and mathematical analysis to determine operational performance or to plan for future development.

6 Core Strengths

Concept Development

Having a number of 3d design software packages we can use software appropriate to our clients present and future requirements. For example some software packages are more suitable for high volume products with a small number of parts. Or if a client's activities involves machine designs with thousands of parts, a different CAD package would be more appropriate. We understand the advantages of using both 2d and 3d design tools at certain stages in the design process. Various layout iterations can be sketched in minutes using AutoCAD. In comparison it can take hours or days to make the same progress using 3d CAD packages at the early design stages. Once the design direction looks promising, a 3d model can be very useful in further developing the design.

We can prepare static stress, dynamic stress and deflection analysis of our designs using world leading FEA packages.

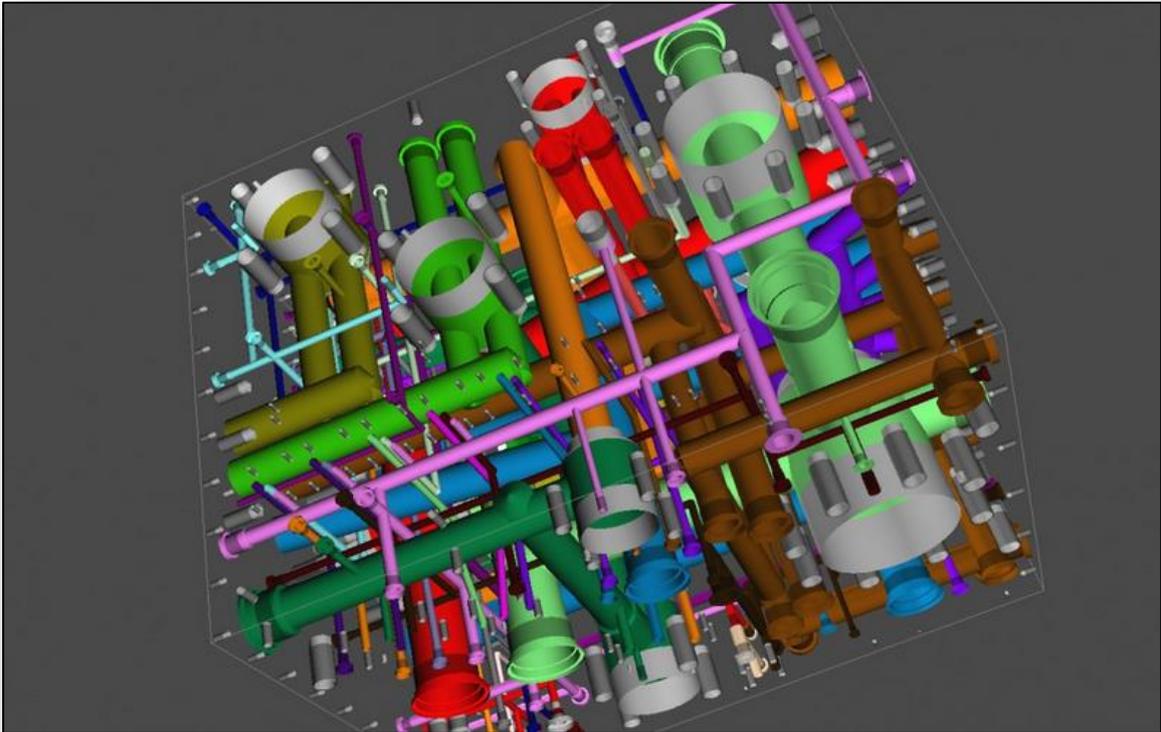


Hydraulic Systems

We design complete hydraulic systems for applications ranging from small 50 watt micro systems to large 1MW installations. We also provide support to customers in troubleshooting and maintaining existing systems. We carried out work on open and closed circuit, constant pressure, constant horsepower and load sensing systems. Here are some of the services we provide:

- Hydraulic system design to ISO 4413 / AS 2671.
- Preparation of system specifications and design requirements.
- Component selection calculations.
- System design calculations including heat, pressure loss and flow requirements.
- Design of hydraulic systems for harsh operating environments.
- Hydraulic circuit drafting using Hydrosym and AutoCAD.
- Preparation of piping and hosing diagrams.
- HPU design.
- Design of hydraulic manifolds using Solidedge and HydroMan.
- Hydraulic cylinder design.

- Hydraulic hose inspection.
- Hydraulic system troubleshooting.
- System contamination measurement.
- Hydraulic system analysis using portable electronic data acquisition equipment.



Mechanical Design

We have experience in designing a wide variety of mechanical equipment including:

- Various types of equipment skids including air compressors, boosters, water pump packages, nitrogen pressure intensification units, hydraulic power units and diesel engine packages.
- Various types of heavy transport equipment including end tippers, side tippers, drop deck machinery carriers, tilt trays, dog trailers and dollies.
- Sheet metal forming equipment.
- Drill rigs and drilling support equipment.
- Down the hole drilling tools.



7 Example Projects

Below is a small selection of projects we have worked on.

Dredger Hydraulic System

We have experience of designing hydraulic systems for both trailing suction and cutter suction type dredgers. Below is an example of one such dredger.



Pressure Intensification Unit

We were heavily involved in the design of a pressure intensification unit, used to pressurize nitrogen for an offshore drillship. The system compressed nitrogen gas using a large hydraulically driven actuator. The complete unit was placed inside a drill tower and required its own access and walkway.



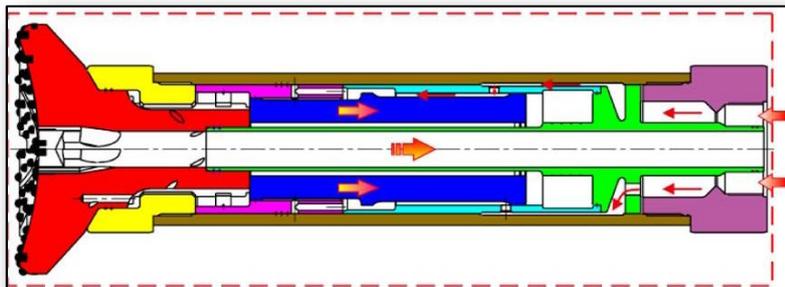
Heavy Transport Equipment Design

We have experience of designing chassis and bodies for a variety of heavy transport equipment. Below is a road train that we helped to design. We also created concept designs for innovative transport solutions.



Down The Hole Hammer

We have experience of designing a variety of down the hole drill tooling. One project involved the design of an innovative down the hole aircore hammer. The challenge with this particular hammer design was that the complete hammer mechanism had to fit within a very confined space. The hammer automatically starts operating when the drill bit hits hard rock. The hammer was tested successfully.



Mobile Drill Rig

We have experience of designing and modifying a variety of drill rig types. We worked on diamond, waterwell, RC, inseam horizontal directional, and aircore mineral exploration drillrigs. We also carried out design work for mining blasthole rigs and offshore drill towers. Below is an aircore drill rig that we worked on.



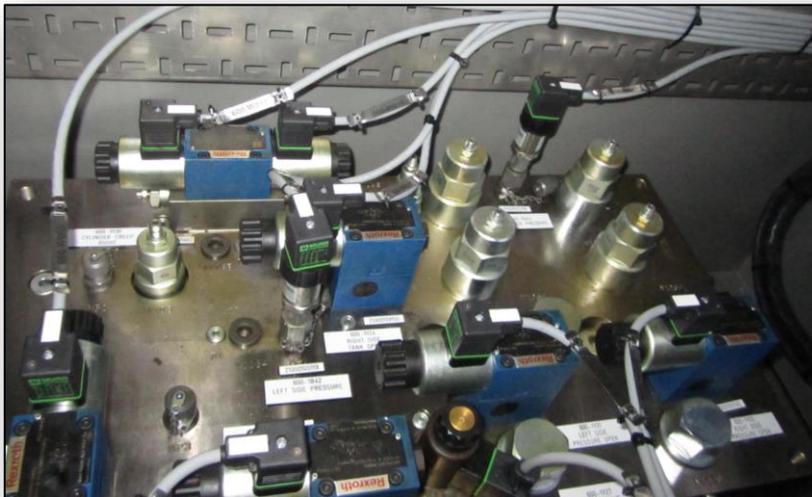
HPU Room

We helped design a HPU room for an offshore drilling tower. The space available to fit the HPU was limited. It was a challenge to ensure that it interfaced correctly with systems in the rest of the tower, and that sufficient room was available for operation and maintenance. Noise reduction was also an issue and innovative methods to reduce noise were used. The HPU was commissioned successfully.



Pendulum Drive System

Another project we were heavily involved with was the design of a hydraulic system to drive an actuator used to swing a large pendulum to and fro. The pendulum was connected to a 90m high 2,000 tonne drill tower. The tower was swung to and fro to simulate conditions on a drillship operating offshore. A unique solution was required to control the hydraulic actuator due to the large oil flows, and quick valve response times required.



Seaweed Harvester

For an offshore company in the Netherlands we designed a unique prototype seaweed harvesting machine. The timeframe for delivery was very short. The initial kickoff meeting was in late December and the harvester was operating in the North Sea by May. The prototype harvester consisted of guiding rollers and a rotary cutter with cutting height adjustment. The main design requirements were to develop a lightweight, inexpensive, compact machine, which could harvest seaweed from seaweed lines. The lessons learned

from the testing of this and similar machines could lead to large scale farming and harvesting of millions of tonnes of seaweed worldwide annually.

