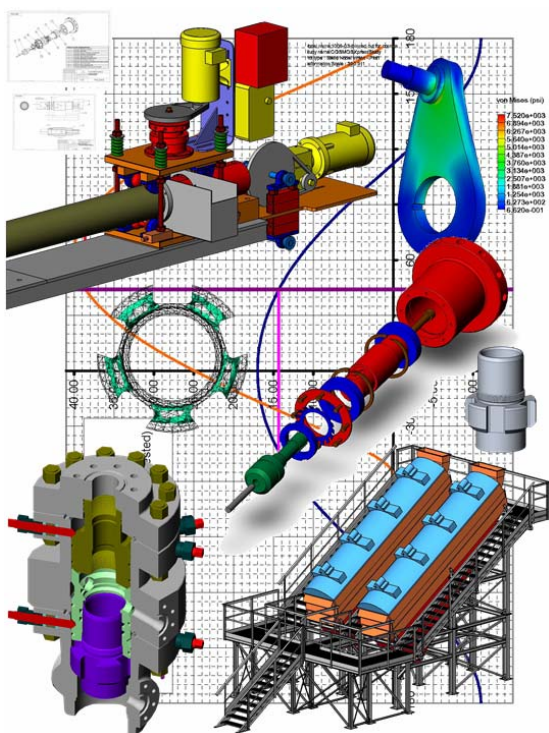


Renegade Engineering Ltd.



**Providing
Mechanical Engineering
Design Services**

RENEGADE ENGINEERING LTD.

Renegade Engineering Ltd. Provides Engineering support in the following areas:

- ✓ **Design of Mechanical Systems**
- ✓ **Stress Analysis of Mechanical Components**
- ✓ **Pressure Containing Components (Specializing in API-6A)**
- ✓ **Pressure Piping**
- ✓ **Manufacturing Equipment**
- ✓ **Structural Steel (CSA S16.1)**
- ✓ **Agricultural Equipment**
- ✓ **Product Verification Testing**
- ✓ **Project Management**

Renegade Engineering Ltd. utilizes the following software for 3D modeling, Stress Analysis and for the production of machine or construction drawings:

- ✓ **SolidWorks (Computer Aided Design Software)**
- ✓ **CosmosWorks (Finite Element Analysis Software)**

Renegade Engineering Ltd. Practices Engineering in Accordance with APEGGA and:

- ✓ **Is a Member of the Association of Professional Engineers Geologists Geophysicists of Alberta (APEGGA)**
- ✓ **Has a Permit to Practice in Alberta**
- ✓ **Has a Professional Engineer on Staff**

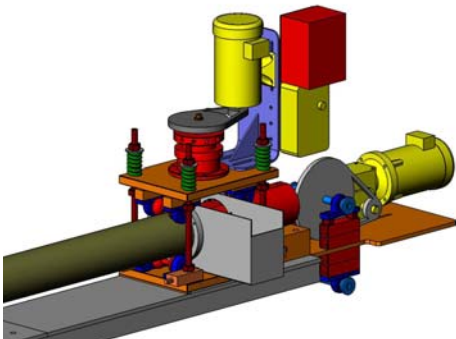
GOALS & OBJECTIVES

Renegade Engineering Ltd. was created to provide engineering support in the field of mechanical design. Our Goals and Objectives are:

1. To provide practical, cost effective and profitable custom designs tailored to our customers' needs and requirements.
2. To provide assistance for companies who require engineering support and do not require full-time staff.
3. To provide engineering support for engineering groups who need to supplement their knowledge base or to increase the groups' capacity during high demand periods.

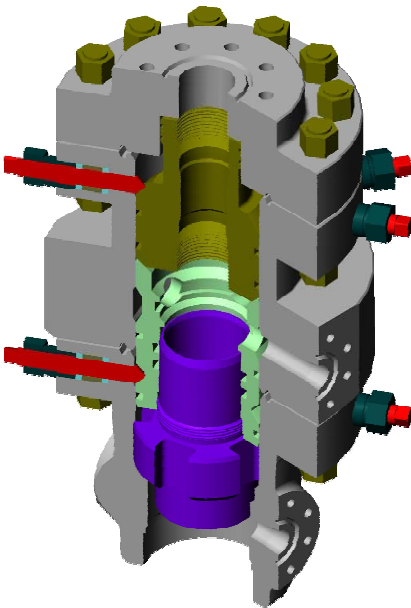
MACHINE DESIGN

We deal with Machine Design Projects of varying complexity; from the stress analysis of one component or system to the entire design, manufacture, assembly and testing of a system. Shown below is a system designed, manufactured, assembled and tested for a client by Renegade Engineering. The machine is used in the longitudinal cutting of pump housings and has been in service for over 3 years. Original performance requirements were exceeded by 4 times.



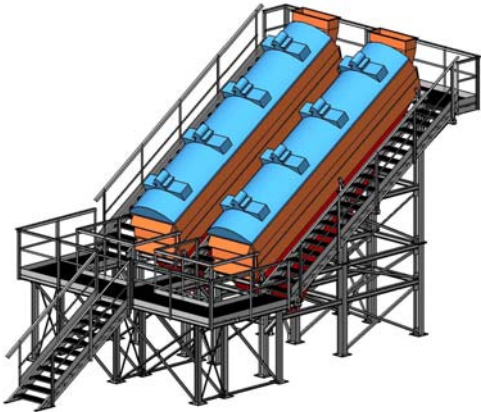
PRESSURE CONTAINING EQUIPMENT

Much of Renegade Engineering's experience was obtained in the oilfield. Experience gained in plant environments and from equipment manufacturers' have had a significant impact on our design philosophy. We have extensive experience in the design of wellhead equipment where pressures of up to 15,000 psi are reached. We have designed for temperature ranges of -75°F to 630°F . We've engineered systems for axial loads of up to 3,000,000 lbs. We also have experience with Sour Service equipment. Shown below is an 11" 5000 psi Multi-Bowl Wellhead designed by Renegade Engineering Ltd.



STRUCTURAL STEEL

We have been designing support structures, walkways, catwalks and platforms for industry in accordance with CSA S16.1. Shown is a structure designed by Renegade Engineering Ltd. for a recently commissioned sand plant.



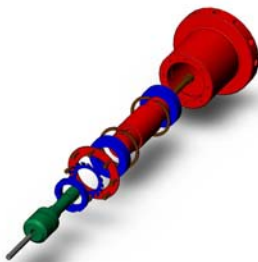
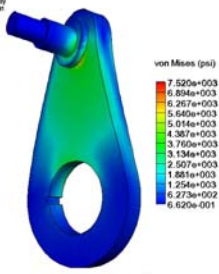
COMPUTER AIDED DESIGN

Design is component based and is performed in 3D. The component can be easily manipulated and changed with the parametric software (SolidWorks). Assemblies and Drawings which were created from the part or parts are automatically updated when the part is changed; this increases speed and ease of design. We have a Finite Element Analysis (FEA) package (CosmosWorks) which functions with SolidWorks to perform stress analysis on the components. FEA gives us a better understanding of the situation than we would have had using conventional methods of analysis.

PROJECT CONSIDERATIONS

Renegade Engineering can be of assistance to you in any of your endeavors, whether it is performing a feasibility study to determine if a project is viable, completing design work for a project, or managing the entire project (from conception to completion). We believe client involvement is an integral and vital component to our success. Let us provide you with effective, efficient, profitable, and competitive engineering solutions. Please consider us for your engineering needs and give us a call.

Model name: 1026-C3-minimal_out_for_assemble
Study name: COSMOSXpressStudy
for type: Static Analysis stress - Post
Information Base: 392 911



Renegade Engineering Ltd.

Contact: Jeff Rakowski, P.Eng.
PO Box 174
Radway, Alberta
T0A 2V0

Phone (780) 974-4617
Fax (780) 736-3679

E-Mail: jrakowsk@telus.net

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