LAWRENCE COOPER
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3D CAD Modeling Design & Drafting

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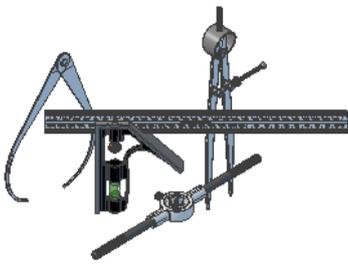| Project :	Ref :	Date :

This is how I would start off a project to design a tanker to transport fuels and oils. Before I would start to model any of the tank structure I would start off modeling the fuel that is to be transported. As I am going to work in cubic meters for the capacity of the fuel to be carried, i first set the units for this to use meters. This saves me the bother of needing to convert the volume the CAD model of this fuel load calculated by the software as I have set up to get the
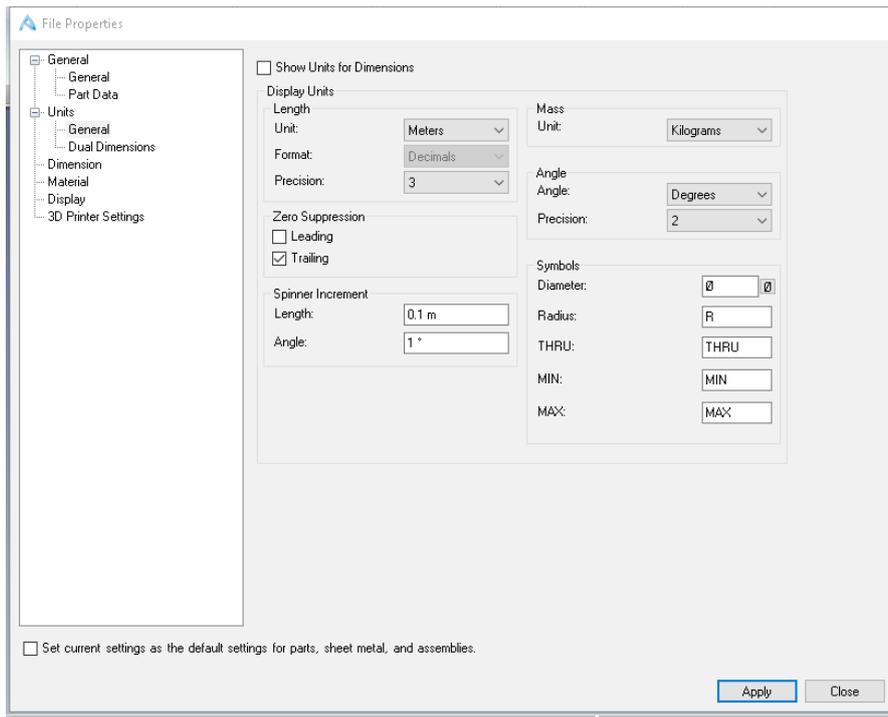
Answers I need to start designing my tank. The image on the left is a screenshot of the unit settings in my CAD sofyware. I am using Alibre Design software as it is what I own. I purchased this software originally in 2012 to take up a contract to produce a range of fans and dust filters. I chose this software as it did the job required at a great price. I am using the version from 2017 as being retired I only work on a few projects these days. I do not use pirated software. If you can not make a profit from your work using legal software you are not good enough.
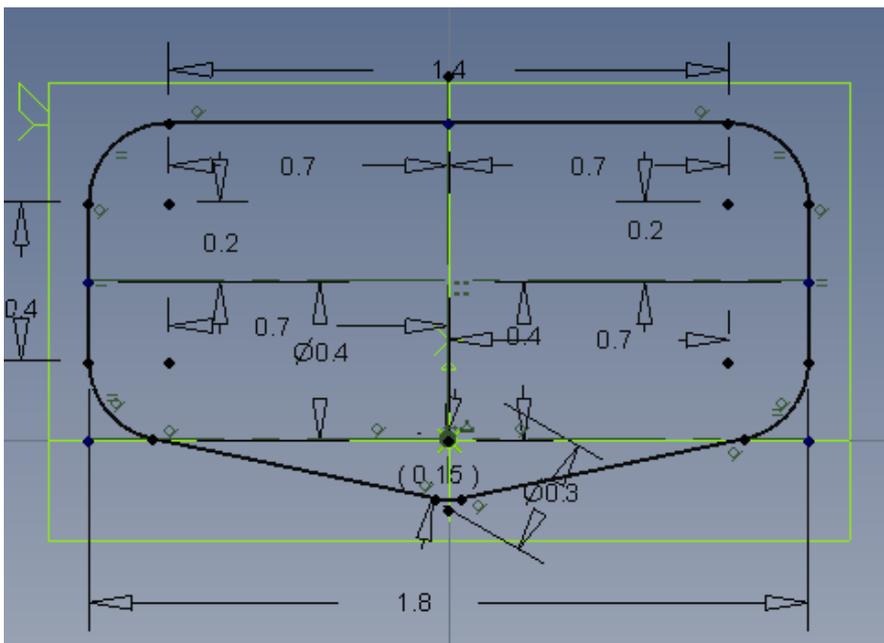
The next image shows a cross section of the proposed shape for the interior compartment of the tank. I have constructed this shape from lines and arcs. When I start on the structure of the tank this will make it easy to model this as an assembly of sheet metal parts. This makes it a simple task to produce files of the developed shapes for cutting out on CNC profile machines.

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For this example I have just created a random shape. The shape of the cross section you will create for your design, you would come up with to suit the requirements you are using to produce the tank you are designing. As the purpose of the tank is to carry a load of fuel efficiently and safely the modeling the fuel is the place to start.
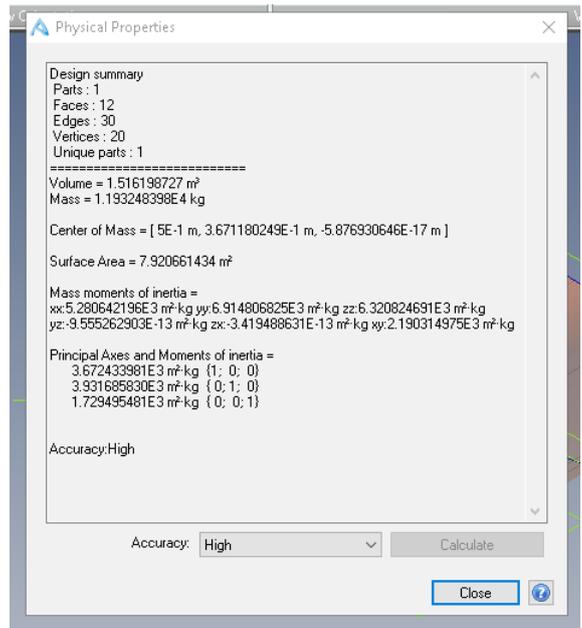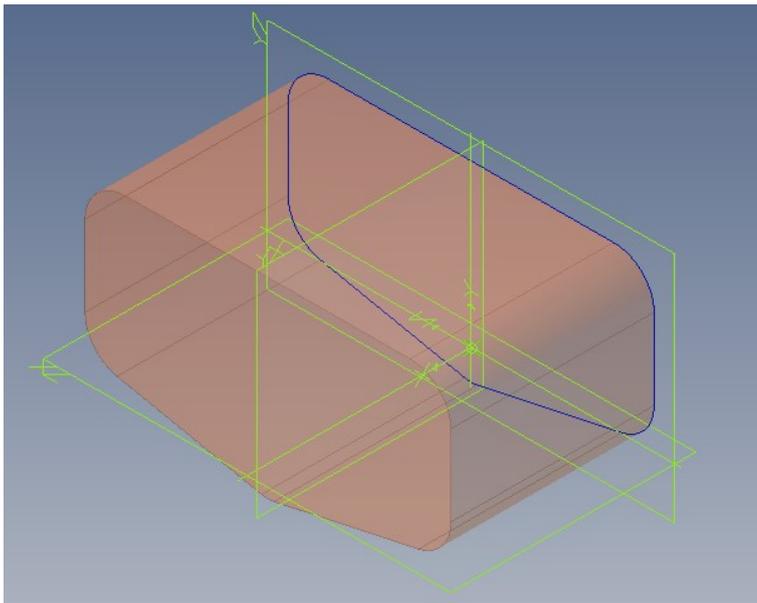
This cross section of the fuel space, I then extrude for a length of 1 meter. By using the built in tools of the CAD software I can get a value for this volume. I can then work out the length of tank needed to give the capacity I require. By giving this modelled fuel physical real world properties I can use this to get useful data to use in my design such as mass and location of the center of gravity for this fuel load. As I would work through to a finished design for this tank I can adapt this modelled fuel load refining it as I go. I would be looking at the final tank not to be one continuous volume but a series of separate compartments so that different fuels could be carried or the same fuel in the compartments. Once I have worked out the required length I would make changes to this modelled fuel load as I work through to a final design. This modelled fuel space is the total volume including a ullage alowance. By making cuts through this space I can make cuts into this volume to give the fuel that will be transported. By modeling the fuel load along with the tank structure The CAD software can be used to get much detail and information that will be of value it producing and specifting the finished vehical.