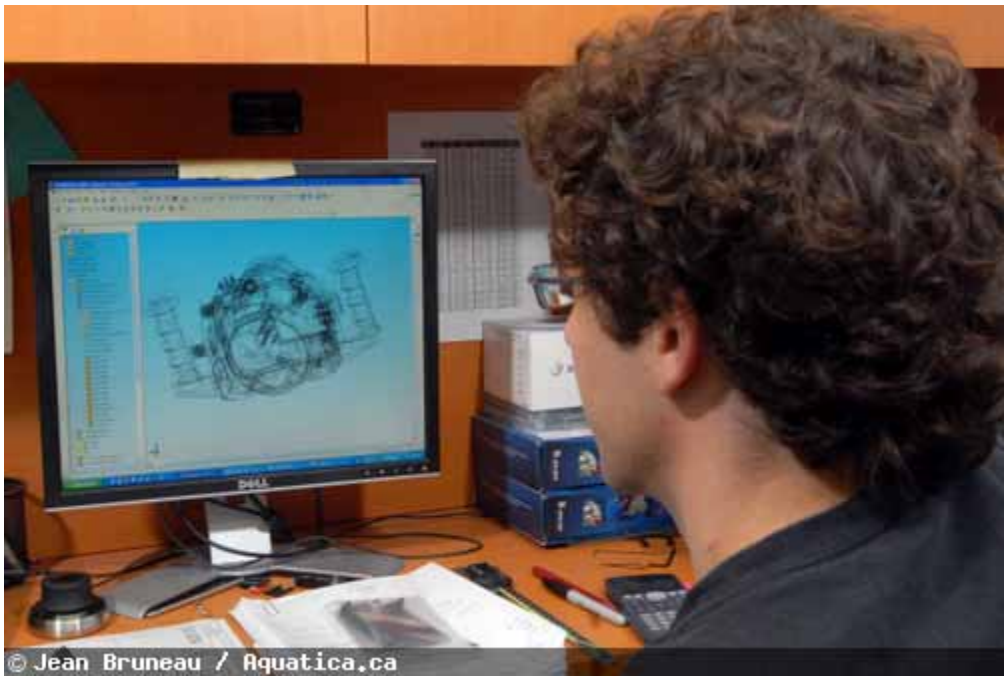
Part 1: Designing

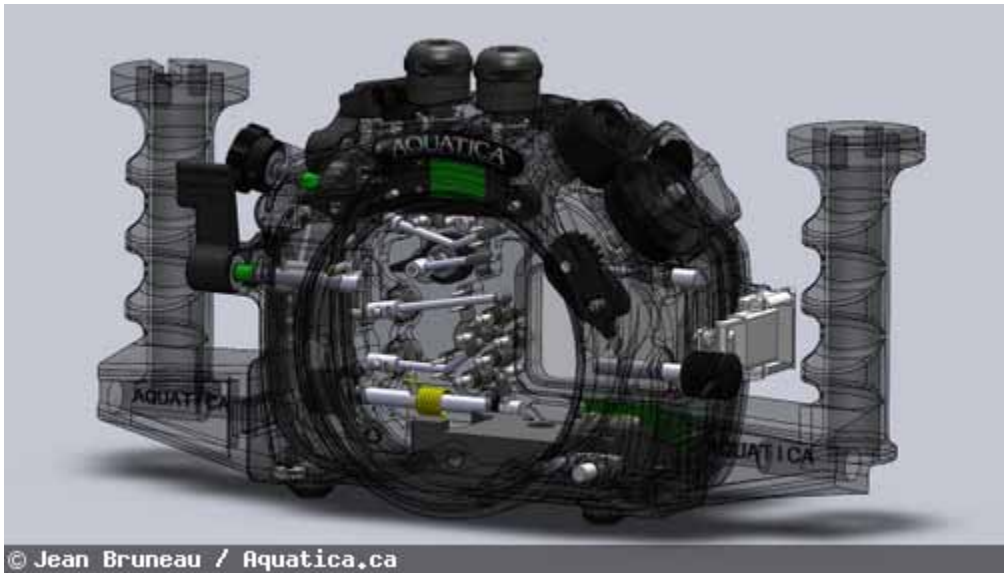
Every once in a while people ask me how housings are made, so to dispel any myths I have decided to take you on a tour of our company and show you the process from the ground up. No folks, it's nothing like the machinery seen in Charlie Chaplin movies. Underwater housings do not come out of an oven and we certainly don't have a large steam whistle calling the breaks like in the cartoons. In order for you to have fun creating images underwater, we need to be serious about our work (that does not mean we are unpleasant people, we love our fun as much as any of you)!

The first step in creating a housing is not really taken by us, but by the camera manufacturer. The camera that they decide to create obviously has a major influence on whether or not it will catch on with underwater photographers. As a specialized community, underwater photographers are looking for things in a camera that are quite often over-looked by topside photographers. Therefore, not all cameras are suitable for underwater use. When we decide to make housings for a camera, we look for a model that will match the specific needs of underwater photographers.

Once a candidate is selected, the next step is getting the camera. The large camera companies do not give housing manufacturers any special treatment and the best way to get a model ahead of time is by keeping a good relationship with the local Canon or Nikon rep. Usually we can get access to their sample model quite a bit ahead of the official camera launch. We can then take this opportunity to set it up on a laser scan bench and grab a 3D virtual model of the camera that we can load up on the computer and get going on the design work in earnest.

The 3D model is then integrated in the Computer Aided Design software (CAD). The rather complex software allows placement of the housing component in a virtual environment, which allows the engineers to then rotate the virtually created housing around and look at it from every conceivable angle.



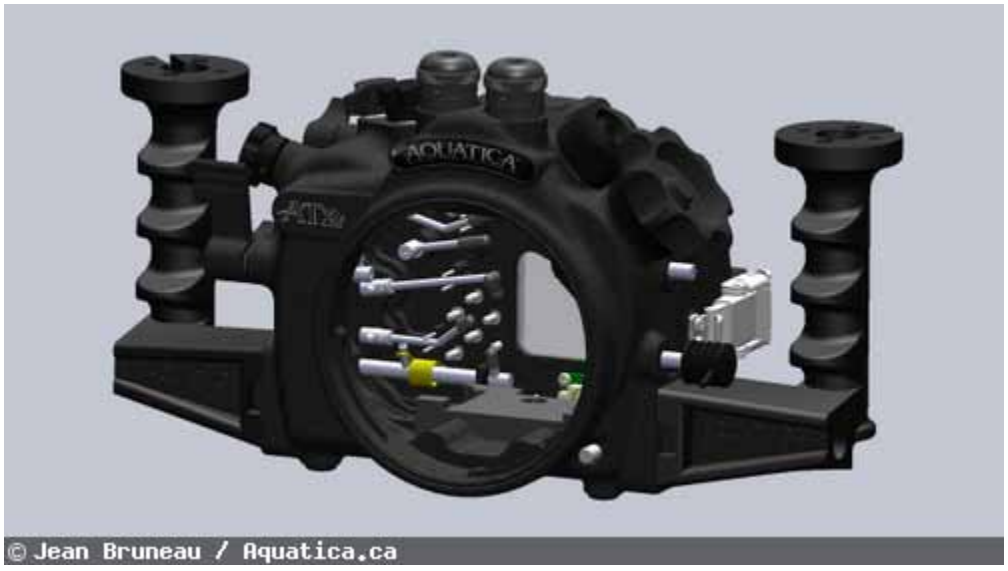


Once satisfied with the design, it's time to layout where the controls and buttons will be spread out and how they will access the camera's controls. This part is critical and quite a few factors need to be considered:

- How vital is this control's location?
- How complex is the mechanism to locate when placed in the housing?
- Is this going to conflict with other controls, and if yes, which one is the priority?

- Are there any specific needs to address such as space for the built in flash to pop up.

At this point, the design will gradually go from a simple wire frame shape to a photo realistic rendering, such those you see from time to time from the various manufacturers when they announce future projects.



The final price of the housing is also a consideration. Complex mechanisms tend to be

more expensive to manufacture and this needs to be accounted for at some point. Entry-level housings do not benefit from the same in-depth complexity as high-end housings at a substantially higher price bracket. Still, it is understood that every innovation that can be possibly implemented in a new housing design will be included.

The next step is to enter the data of the preproduction prototype into the Computer Numerical Control (CNC) program. The information being entered is really nothing more than a set of directions, sort of like numerical instructions, that tell the machines computer what work needs to be done. Once the programmer has uploaded the data, it will instruct the CNC machine, in this case a sophisticated one working on 5-axes, where and how deep to shave and drill out excess material from the provided block of aluminum.