



# Underwater Camera A Production Success

Aqua Tech utilizes low volume production for underwater camera housings



Aqua Tech Water Imaging has been providing innovative products for water photography since 1997. The Aqua Tech sport housings are among the top products produced by the Australia based company. These housings protect the user's camera from the water while still allowing for magnificent photographic capability. In fact, one of the greatest challenges is to produce a water tight housing while keeping it a functional design to protect the camera inside.



ND-7 Camera Housing for the Nikon D700

Aqua Tech brought seven types of housings to APP for production. Chris Wentworth, General Manager of APP's Anaheim, California facility,

worked directly with engineers to identify and modify any design issues prior to production that might be a problem for the cast urethane process. During the first production run, Aqua Tech was trying to cast in difficult features like threads and gasket tracks which presented some problems

with proper fitting and sealing. Aqua Tech engineers quickly realized post CNC machining would be a better solution for the complicated geometries. Wentworth suggested a urethane material rather than the epoxy material Aqua Tech was using because the urethane material provided a better color match and had better sealing properties than the epoxy material.

Once the changes were complete, APP went to work producing the SLA® master pattern in the new IPro SLA® system using Accura® 55 material to create the silicone mold. Typically one mold will produce at least twenty-five castings depending on the geometry of the part and the material being used. In this case, Aqua Tech was only looking to produce twenty five housings per run. This type of low volume production is ideal for the cast urethane process and also gives the client the freedom to make design changes even after production has begun. The costs associated with design changes midstream are nominal (a few hundred dollars in most cases) compared to



that of other production processes like injection molding and CNC machining where you have expensive metal tools, setup fees and programming fees that can amount to thousands of dollars.

The Aqua Tech SLA® masters went through a prepping stage prior to molding. Technicians applied a texture to the model and sand on the grips for a more “graspable” surface. Each cast housing required sixteen inserts and a window frame to be cast in. APP cast these items directly into the part (overmolded) which provided for a more secure fit. Each housing took approximately three days to cast and finish before it was ready for post machining operations. The thread ring and the O-ring track were features that were too difficult to cast in therefore post CNC machining was the only way to include these features in the design and keep them at the tolerances required.

To date, APP has produced the ND-3, ND-7, DV-4, D2 and D35 models. These housings are compatible with various models of Nikon and

Canon cameras.

The cast urethane process is an excellent means for producing low volume, production parts. There are many benefits to this process such as low production costs when compared to other production methods, more freedom to produce challenging designs, shorter production cycles and lower costs which also make it easier on the pocketbook if the design needs to be changed after production begins. Clients also have the luxury of only ordering the amount of parts needed rather than being required to order thousands up front.



APP has produced urethane parts used on concept vehicles, as consumer products, in medical applications and even as household items.

## TOP TEN REASONS TO USE APP

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|---------------------------------|---------------------------------------|
| 1. FAST - INSTANT ONLINE QUOTES | 6. COMPETITIVE PRICING                |
| 2. SINGLE POINT OF CONTACT      | 7. 100% QUALITY GUARANTEE             |
| 3. FRIENDLY, EXPERIENCED STAFF  | 8. WIDE RANGE OF SERVICES & MATERIALS |
| 4. IN-HOUSE EQUIPMENT           | 9. DESIGN TO PROTOTYPE TO PRODUCTION  |
| 5. TWO MANUFACTURING LOCATIONS  | 10. THOUSANDS OF SATISFIED CLIENTS    |