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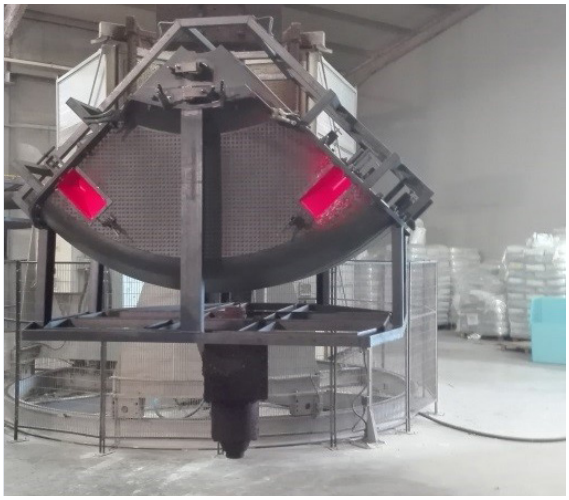
POLYETHYLENE PLASTIC BUOYS

As stated in previous articles, polyethylene is a thermoplastic that behaves plastically at temperatures as low as 100ºC. This allows the material to be easily molded on pieces and easily repaired with little tools needed. Rotomoulded poliethylene buoys are probably the most common buoy technology manufactured and deployed over the world.

The usual process to form polyethylene pieces is the rotational molding process, which uses only heat to fuse plastic pellets into a finished shape.



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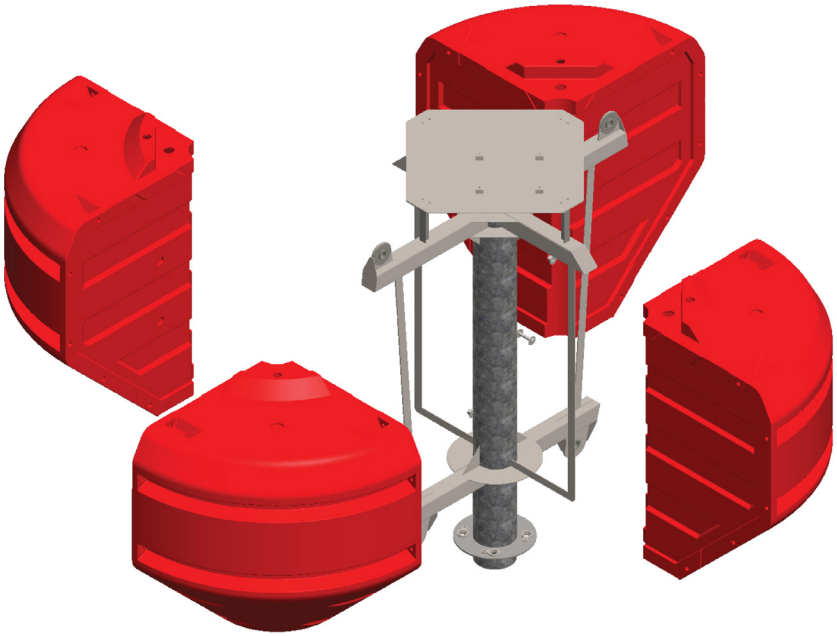
The alternative is the extrusion process, where plastic pipes and plates are formed using heat under high pressure which forms strong molecular chains resulting in greater strength, impact resilence and abrasion resistance.

A lot of different types of polyethylene are used on the manufacturing of plastic buoys, including types from low density to ultra-high-density polyethylene. Only the medium or lower density plastics can be rotomolded, higher density plastics are manufactured by extrusion.



However, sometimes plastic is not the only material used to manufacture this buoys. Small buoys can be made completely by one plastic module, while larger ones are usually firmed by multiple modules or hybrid metal/plastic constructions.

When designing and selecting polyethylene buoys, the following aspects must be observed with special attention:

WALL THICKNESS AND THICKNESS UNIFORMITY

Wall thickness and the thickness uniformity are the principal factor to consider when evaluating a polyethylene buoy resistance to cracking, vessel impacts and environment wear. Therefore, especial attention must be placed in defining and controlling this specification.

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MATERIAL QUALITY

Material types and qualities are very variable in this typology of buoys, material cost can vary up to 500% from one type to the other. For this reason, material must be defined properly and choose according to the expected performance.

UV RESISTANCE

UV degrading is the number one reason for the loss of performance in a polyethylene plastic buoy, UV protection and his effectiveness must be controlled and stated properly.

FILLING

This category of buoys presents a void interior, that can be filled with water in case of a crack or hull damage, resulting in a complete sinking of the buoy and the lose of all its supported equipment. For this reason, some kind of watertight filling is a mandatory characteristic in any buoy that should be reliable as a Aid to Navigation.

BALLAST WEIGHTS

Due to the low weight and high volume of this kind of buoy, some kind of stabilizing ballast weight (steel or concrete) is a very important performance characteristic. This would lower the gravity center of the buoy and improve his stability in various environmental conditions, if the ballast weights are adjustable, the AtoN technicians can adapt one buoy model to different depths and conditions, improving even more overall performance.