

Fish-Friendly Impeller Design



For the drainage, irrigation and flood control sectors fish-friendliness of pumps is an upcoming concern. Fishfriendly pumps decrease both the hit chance and velocities of the fish with the impeller vanes, such that fish survivability is relatively high compared to conventionally shaped impellers. The most recent development is on one-vane mixed flow impellers to improve fishfriendliness.



An assignment at Rodelta will be focused on one or more aspects:

- 1) Analytical and numerical performance prediction and flow patterns inside one-vane impellers to gain insight in the influence of geometrical parameters on the flow field and therefore performance of the impeller.
- 2) Besides the pump performance with respect to fish-friendliness and pump hydraulic performance, also mechanical and hydraulic imbalance caused by the inherent nonrotational symmetry of the geometry and hydraulic passage will be investigated.
- 3) The target is to determine the main design parameters that make a fish-friendly, high-performance pump with minimal mechanical unbalance possible.

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