

Waterjets or Propellers

• CAMARC DESIGN •

PILOT • PATROL • SAR • FERRY • RIB

Waterjets or Propellers

Camarc design many Pilot, Patrol and SAR craft with either waterjet or propeller propulsion. Operators often ask, which is best? The simple answer to that question is; neither. Each system of course has advantages and disadvantages and can be better suited to particular applications. Camarc remain objective in this respect with around half of the designs using each system. As with anything relating to performance, this can be an involved subject but the main points for consideration have been outlined below. For a fair and general comparison it is assumed that the correct waterjet model or propeller selection has been made, i.e. good waterjet vs. good propeller.

Hull Design

The main points summarised are in reference to Camarc hull designs. These are double chine and happen to have a resistance profile without a significant "hump" at around 14-16 knots (which some hulls do have), this is also a desirable feature for waterjet propulsion. The Camarc hull design is equally suited for jet or propeller propulsion. Always ask Camarc for performance or application advice on Camarc designs.



Camarc Waterjet pilot boats typically range from 25-35 Knots



Camarc Propeller pilot boats typically range from 18-28 Knots

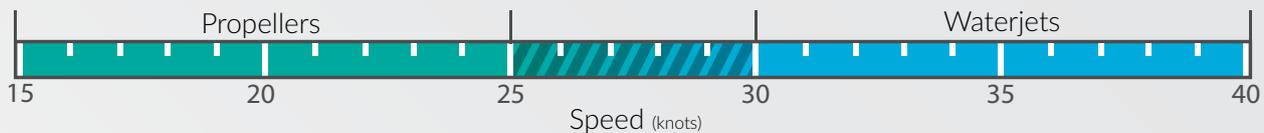
Speed

Efficiency is an important consideration as this directly affects operators with the resultant impact on fuel economy and costs. For operational speeds up to 25 knots, propellers should be more efficient and are therefore the obvious choice. For speeds of 30 Knots upwards, jets should be more efficient and are the appropriate solution. As a result of these generalised efficiencies there is a region from around 25 - 30 Knots where either system could be used without significant losses. The choice on which to select then comes down to other factors for consideration like cost, maneuverability, controls, safety and maintenance.

Weight

Vessel weight is also a consideration. Jets will not be effective on a heavy craft and can become overloaded, this again relates directly back to the speed application where jets are better suited to higher speeds (and therefore relatively lighter craft). For example, Camarc have not fitted jets to any 'fast' steel Pilot or Patrol Boats (which have speeds up to 22 knots) as the combination of weight and speed would result in low efficiencies with waterjets.

Application based on efficiency at various speeds;



Other Factors

Other factors to consider, the priority of which will vary between different operators;

- Cost; An important factor and waterjet installations tend to be more expensive than propeller installations.
- Safety; Waterjets offer improved safety in terms of MOB or casualty recovery over exposed rotating propellers.
- Maneuverability; Waterjets offer improved maneuverability at slower speeds over conventional propellers & rudders.
- Loadings; Waterjets absorb power more or less independently of boat speed whereas propellers can rapidly overload the engine if boat speed is restrained.
- Maintenance; Routine maintenance of components, repairs of damaged parts and service support should be considered.
- Control; Operator control of waterjets can be more difficult than conventional propeller boats but joystick control systems and crew training or experience will impact on that.

PROPULSION	PROS	CONS
WATERJETS	<ul style="list-style-type: none"> Higher speed efficiency Maneuverability MOB safety Protected from damage Reduced loads on gbox 	<ul style="list-style-type: none"> Lower speed efficiency Cost Losses from marine growth Losses with Weight growth Maintenance
PROPELLERS	<ul style="list-style-type: none"> Lower speed efficiency Cost Simpler onboard systems Maintenance 	<ul style="list-style-type: none"> Higher speed efficiency Maneuverability MOB safety Vulnerable to damage