Key Questions

• What might be a market segmentation for winches?
  Good, better, best; Segment A,B ….

• What might be the design drivers for a next generation of winches?

• What might be the product architecture that addresses these needs?
Winches

The Reference Architecture

The Subsystem Platforms

Hand Crank

Motor

Wire

Gearing

Housing

Sailboats

Powerboats

Other Uses

OEM

Aftmkt

OEM

Aftmkt
Interim Solutions
### Market Innovation

**Do it Once, Do it Again: Hatches**

<table>
<thead>
<tr>
<th>Sailboats</th>
<th>Powerboats</th>
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<td>OEM</td>
<td>Aftmkt</td>
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**The Reference Architecture**

- A New Design that
  - Looks Better
  - Works Better
  - Reduces Costs in Manufacturing

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Clean and Smooth External Appearance

Old designs were a functional solution, but not pleasurable to the user’s eye. Didn’t help OEMs to “sell a boat.”

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Moulded Acrylic for Key Subsystems

Slight Dome to window, giving strong visual affect. Acrylic edge has lip to allow water to run off rather than under acrylic.
Reduce Complexity

Single Piece Hatch Frame

Moulded in PET, an engineering polymer with excellent stiffness and strength properties.

Frame will be moulded to suit customer colour.

Used to be many pieces, with processes that included bending and fastening metal.
Better Interfaces
Strong and Sleek Hinges

Hinge pins run in bushes in acrylic window. Each hinge pin has two hinge bosses on the acrylic window, giving increased rigidity of the hinge pin.
Interfaces: Stay Arm Mounting

Hatch frame has a carefully styled and shaped mounting to transmit stay loading evenly to the deck.
Better Subsystems: Telescopic Stay

Easy to use twist grip action for infinite opening position of the hatch. Friction lock allows for slip under excess load, reducing failure in the field or water!
Accessories, too: Better Handles

Redesigned to allow easy closure of the hatch.
Rotation of handle restricted to 180 deg to protect from accidental damage.
A Scalable Architecture

Made for OEMs of Sailboats and Powerboats
Everything is a “special” that turns into volume orders.
Diameter, Height scalable in molding process.
Aftermarket Replacement Accessories