Summary

- Established in 1996. Originates from NTNU
- Permanent magnet machines for demanding environments
- 30+ specialists in the fields of electric machine, mechanical and systems design.
- Prototype manufacturing and testing facilities.
- Proven by strong customer base
- Backed by strong investors: Verdane Capital, Trondheim Næringsinvest, MOOG Inc. and employees
- Acquired by Rolls Royce Aug 2013
History and key milestones

SELECTED KEY EVENTS

INNOVATION AND EARLY ADOPTION

CROSSING THE CHASM

EARLY MAJORITY

Revenues (MNOK)

1996-2000
2001-2004
2005
2006
2007
2008
2009
2010
2011
2012
2013P
Advantages and value proposition of PM Technology

1. SIMPLICITY
- Simple construction
- Robust, best candidate for high reliability applications
- Best candidate for integrated product
- No field winding, No rotor cage
- No welds in rotor bars
- No external exciter, No magnetizing machine

Machine Configuration

2. EFFICIENCY
- No energy is used for excitation of rotor
- Higher efficiency over entire speed range
- Low heat generation in the machine components
- Best candidate for applications where fuel save is important

Machine Efficiency

3. COMPACTNESS
- 50 % more compact than asynchronous machine
- Dynamic factor improved with 100%
- Slim stator and rotor due to high pole design
- Best candidate where space is valued in the application
- Best candidate where dynamic performance is valued in application

Machine size and weight
# PM disruptive for several applications

<table>
<thead>
<tr>
<th>RIMDRIVE</th>
<th>PUMPS</th>
<th>WINCHES</th>
<th>CONTRA-ROTATING MACHINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rim Drive Thrusters based on new technology where sea water flows inside motor frame&lt;br&gt;• Disruptive as it enables a solution with large air gaps for encapsulation and removal of gears and sealings</td>
<td>• Need for higher power drives pump technology to higher speed to increase power density&lt;br&gt;• Disruptive as drag losses can be reduced by 50%. Long step out controls.</td>
<td>• Dynamic factors determines how winches operates&lt;br&gt;• Trend from hydraulic to All Electric solutions&lt;br&gt;• Disruptive technology for applications where dynamics are key</td>
<td>• Size reduced by 50 % due to doubling of relative speed in contra rotating wet machines&lt;br&gt;• The PM technology is disruptive as machines needs to be made with large air gap and encapsulation</td>
</tr>
</tbody>
</table>

PM MACHINES IS INCREASINGLY SUBSTITUTING LEGACY TECHNOLOGIES SUCH AS HYDRAULIC INDUCTION
Value Creation Across Applications and Operations
PM Marine Products appliances

- Rim Driven Thruster
- Anchor Handling Winch
- Direct Drive Propulsion
Key Learnings

1. Market driven Application focus
2. Leverage industrial partners
3. Listen to advice from Smiling men
4. Adapt to changing realities