

HMW Variable Speed Drive (VSD) Workshop, Washington DC, 2014-04-16/17, Robert Chin

# ABB in Motors and Generators Overview – Technology Platform

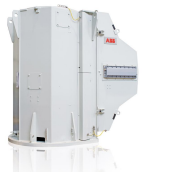
Power and productivity  
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# ABB Motors and Generators

## Facts and Figures

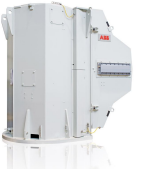
- World's leading manufacturer of LV, MV and HV motors and generators, and mechanical power transmission products serving all industries and applications, on all markets
- + 4 BUSD revenue
- 15 000 people, 45 factories in 13 countries
- Complete product offering from sub-fractional HP up to 70 MW
  - LV, MV and HV induction motors and generators
  - Synchronous and permanent magnet motors and generators
  - DC motors, servomotors, gear motors
  - Mechanical power transmission products
- About 300 000 motors in 6 central stocks globally



# Product Offering Worldwide

## Complete Technology Platforms

| Total offering |                               | ABB | + | Baldor | = | ABB + Baldor |
|----------------|-------------------------------|-----|---|--------|---|--------------|
| Motors         | NEMA LV                       |     |   |        |   |              |
|                | IEC LV                        |     |   |        |   |              |
|                | Large < 11000 kW<br>15000 hp  |     |   |        |   |              |
|                | Large > 11000 kW<br>15000 hp  |     |   |        |   |              |
|                | Gear                          |     |   |        |   |              |
| Generators     | Small generators              |     |   |        |   |              |
|                | Large generators              |     |   |        |   |              |
|                | Mechanical power transmission |     |   |        |   |              |
|                | Service                       |     |   |        |   |              |

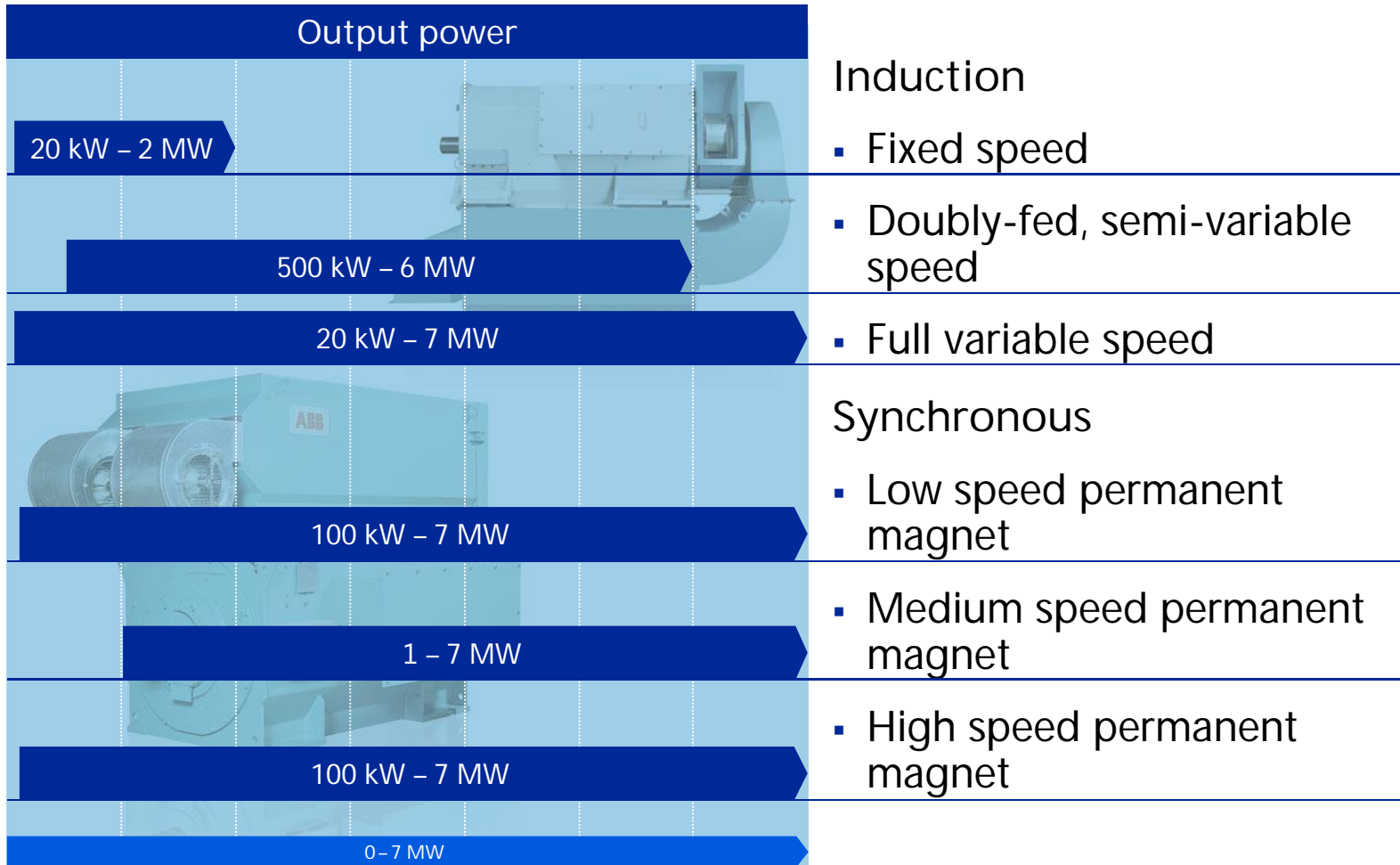


- Asynchronous motors
- Synchronous motor (PM and reluctance)
- Field-wounded synchronous machines
- Synchronous and induction generators
- Servo motors (including linear motors)



# MW Range Wind Power Generators

## Full Ranges of Concepts



# Large Synchronous Machines in Mining

## 18.6 MW Gearless Mill Drives (GMD)

18.6 MW Ball Mills (27 foot)



# Very High Voltage and High Power Motors Motorformer (both DOL and VSD)

Y1998-2000:  
Basic development  
of Motorformer™  
technology



Y2001:  
First DOL Motorformer™  
delivered to Air  
Separation Plant, Sweden



Y2005:  
First VSD Motorformer™  
for O&G-business



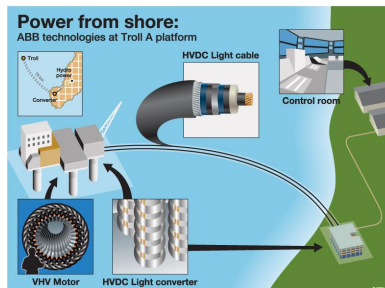
Y2011:  
ABB wins new order:  
VSD Motorformer™ &  
HVDC -Light



Y2000-2001:  
Refinement and  
Prototyping of DOL  
Motorformer™ concept



Y2002-2004:  
Development of VSD and  
HVDC Light  
Motorformer™ concept

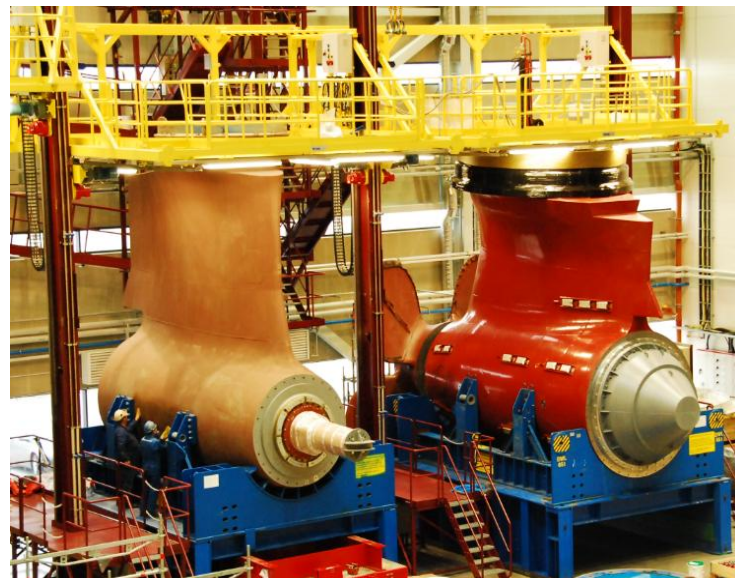
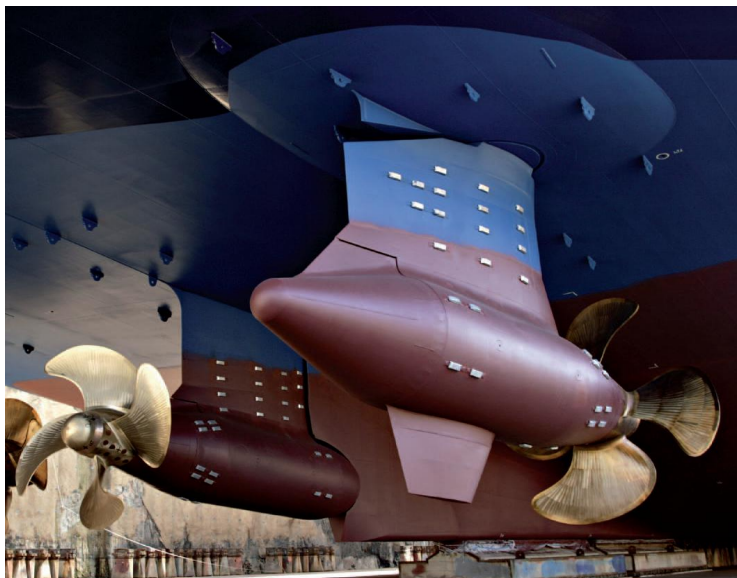


Y2008:  
Further deliveries of  
Motorformer™ for  
O&G applications



# MV and High Power Drive Train Technology in Marine Azipod Propulsion System

Azipod® propulsion system



# Summary

## Perspectives on HMW Electrical Machines for VSDs

- Application driven
  - Requirements
- Power density
  - Compactness or overall footprint
- Integrated approach (motor and drive intergration)
  - Ultra high power density
  - Package solution (high compatability)
- "Performance" optimization (?) vs Overall Cost
  - Overall efficiency
- Reliability and
- End-customer benefits
- ....



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