

# COMPONENTS & TECHNOLOGY



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VP Components & Technology / PML

*Fisher & Paykel*

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# DIRECT DRIVE MOTORS

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# DIRECT DRIVE MOTOR BUSINESS

21 YEARS EXPERIENCE IN DIRECT DRIVE TECHNOLOGY

DELIVERING REAL CUSTOMER BENEFITS

STRONG APPLICATION INTEGRATION SUPPORT

HIGHLY AUTOMATED MANUFACTURING

THE APPLIANCES INDUSTRY IS CHANGING TO DIRECT DRIVE

FISHER & PAYKEL IS WELL POSITIONED FOR GROWTH

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# A WORLD FIRST BY FISHER & PAYKEL



- In August of 1992 Fisher & Paykel's Smart Drive™ washer made the cover of Appliance Magazine, showing the first time an electronically controlled Direct Drive motor had been used in a washing machine

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# INDUSTRY CONVERSION TO DIRECT DRIVE IS ACCELERATING

- FPA were the first to implement the technology
- Asian manufacturers have widely adopted Direct Drive and have been a major factor in marketing the benefits to the consumer
- We are at a cross-over point where the benefits of Direct Drive are starting to strongly out-weigh the system cost premium for mass market applications
- New high efficiency thin profile FPA motors allows existing drive technology to be replaced with minimal product redesign



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# ADVANCED DIRECT DRIVE MOTOR TECHNOLOGY

- Engineering Plastic Construction
- Application in front and top load washers
- 30% more efficient
- Lower cost
- Low noise



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# 21 YEARS EXPERIENCE WITH DIRECT DRIVE

- Proven track record of developing world leading technology
- Highly experience motor development team

Year Introduced	Magnet Type	Magnet Numbers	Pole Numbers	Winding Material
1990	Neodymium	56	42	Copper
1992	Ferrite	↓	↓	Copper
2004	Ferrite	42	36	Copper
2008	Breakthrough ferrite magnet technology	↓	↓	Aluminium
2011	Next generation	↓	↓	Aluminium

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# DELIVERING REAL CUSTOMER BENEFITS

1991	Initial production with sensing intelligence and variable speed Direct Drive motor
1993	Auto-water level, load sensing and maximum capacity sensing introduced
1996	Intuitive washer with fabric sensing
1998	Intuitive Eco™ launched. Significant energy savings
1998	EcoSmart™ launched in U.S. Most energy efficient washing machine (top loading and front loading)
2006	AquaSmart introduced. First top loader in Australia to achieve the 4 star water rating
<b>Current</b>	Product line-up fully utilising the advanced benefits of Direct Drive technology



**LOAD SENSING =  
BETTER CLOTHES CARE**



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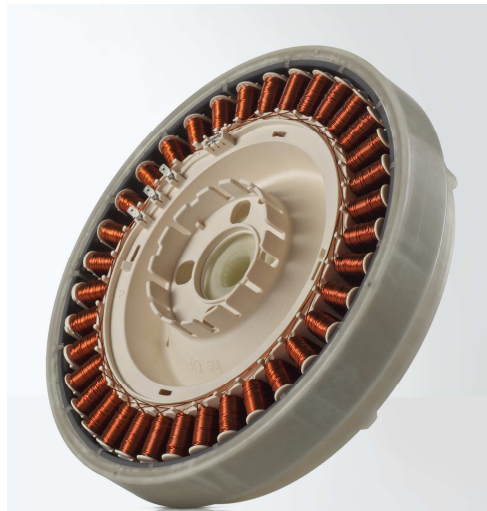
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# TECHNOLOGY LICENSING AND INTEGRATION

Design & Manufacture + Technology Licensing + Integration



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# STRONG APPLICATION SUPPORT

- **21 years of experience in Direct Drive control and applications**
  - Advanced motor control technology
  - Control system design and integration capability
  - Proprietary computer simulation of all motor parameters



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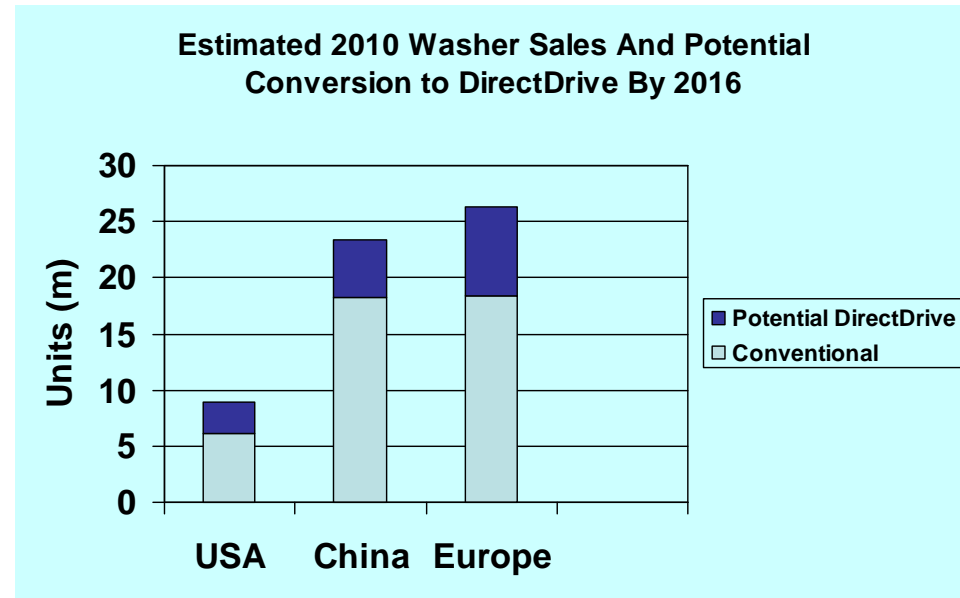
# HIGHLY AUTOMATED MANUFACTURING

- Manufacturing locations
  - Clyde, Ohio
  - Rayong, Thailand
- Motor manufacturing equipment produced by Production Machinery Limited (PML)
- Highly automated
- A modular approach

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# GLOBAL OPPORTUNITY

- **Appliance industry is turning to Direct Drive motors**
  - Industry increasingly focused on delivering benefits of energy and water efficiency
  - Direct Drive technology gives additional features for low cost
  - Competition using Direct Drive as a point of difference



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# MAJOR BUSINESS GROWTH – 2011

- **Whirlpool Agreement since 2005**
- **Two new technology supply and licensing contracts signed this year**
  - Haier (March 2011)
    - 10 year contract: Right of review in Year 3
    - Capital cost: NZ\$18 million; working capital \$5–\$7 million)
    - Revenues: \$20–\$35 million per annum commencing Q2 FY13
  - Major Appliances manufacturer (August 2011)
    - 4 year contract
    - Capital cost: NZ\$11 million; working capital \$3–\$4 million
    - Revenues: \$16–\$23 million per annum commencing Q2 FY13
- **Current contracts - FY14 revenue target \$56m to \$86m**
- **Active patent protection programme**
- **Direct marketing to other appliance manufacturers**
  - Website launched <http://www.fisherpaykel.com/direct-drive-motors>

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# DIRECT DRIVE MOTOR

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SMART DRIVE™  
VIDEO  
[CLICK TO PLAY](#)



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## FISHER & PAYKEL DIRECT DRIVE MOTORS

20 years focus on Direct Drive motor technology has resulted in significant intellectual property. These include 32 patents on motor function, construction and manufacture and 5 on control of motors. We have 20 patents pending which will continue to cement us as "The Direct Drive Motor people".

We have motor designs that are suitable for both vertical & horizontal axis washer applications. Our proprietary magnet technology allows us to offer higher performance for lower cost.

We understand washing technology. Our design team have consistently come up with significantly more efficient, cost effective motor designs to meet the ever changing world of appliances.

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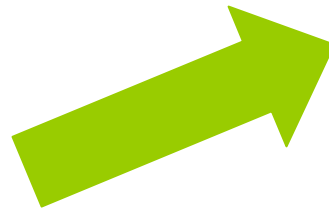
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# A SIGNIFICANT OPPORTUNITY

- Opportunity to leverage our technology capabilities
- Our Direct Drive technology is world leading
- Significant return on capital, underwritten by contracts
- Leverage our technology beyond washing machine applications



- FY16 Revenue Target ~ \$120m to \$160m
- Additional capital \$40m
- Applications
  - Front load washers
  - Top load washers
- New segments

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# NEW COMPRESSOR TECHNOLOGY

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# REVOLUTIONARY COMPRESSOR TECHNOLOGY

- **Conventional Compressors**

- Key components for energy and cabinet design
- Similar design the world over
- VCC compressors reaching efficiency limits



- **New compressors developed by Fisher & Paykel**

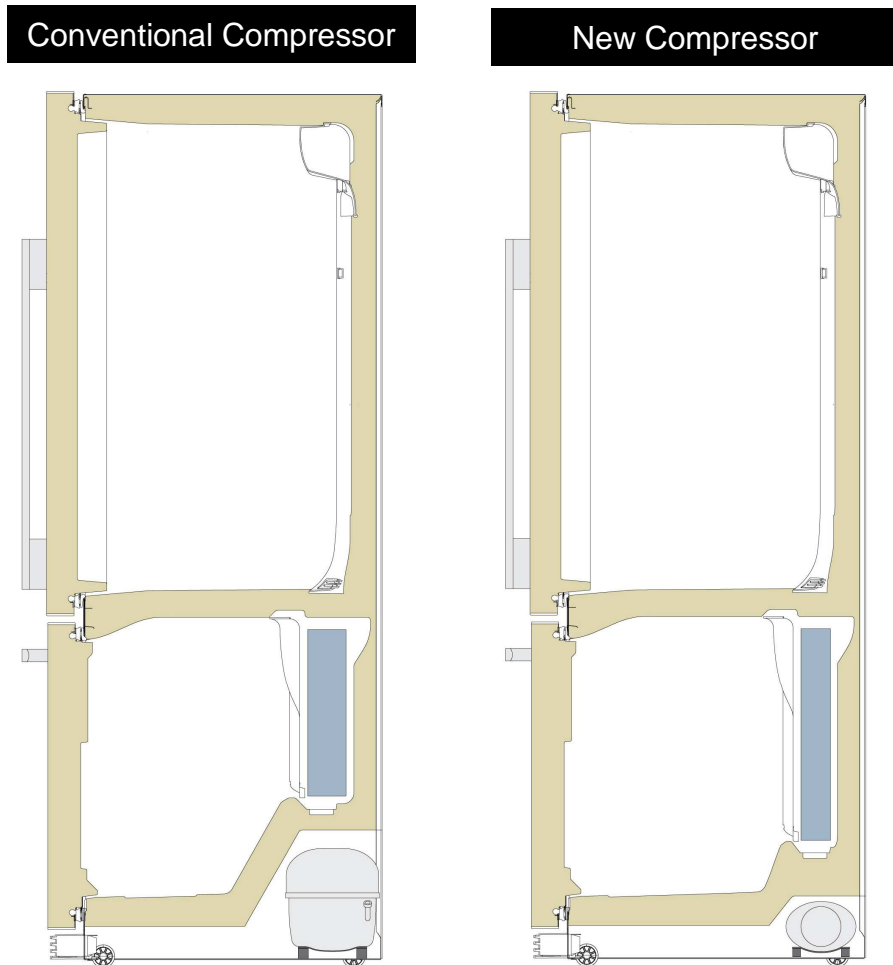
- Represents a step change in compressor technology
- Less complexity – lower mass
- Higher energy efficiency
- Low profile design



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# DELIVERING CUSTOMER BENEFITS

- Up to 30% more energy efficient
- 15L more storage capacity
- Refined temperature control
- Increased design flexibility
- Significantly lighter
- Oil free



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# NEW COMPRESSOR TECHNOLOGY

- **History**

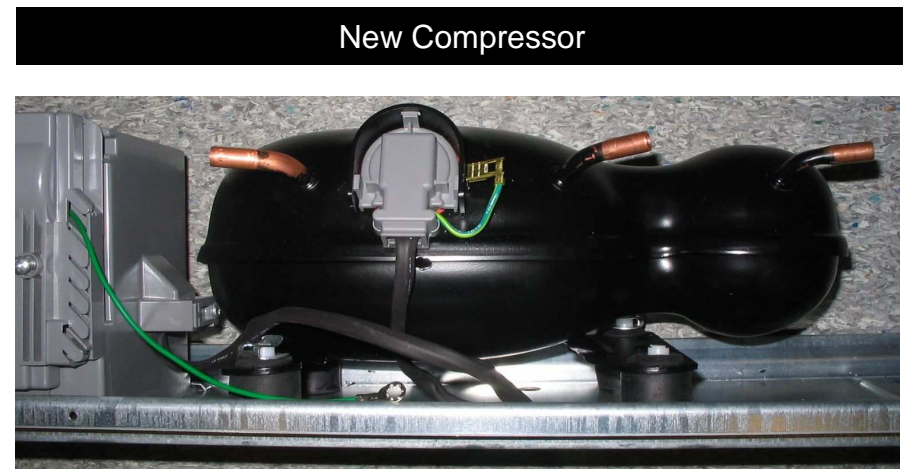
- Fisher & Paykel Appliances developed revolutionary technology
- Close collaboration with Embraco (owned by Whirlpool Corporation) over the past 5 years to bring technology to pre-production phase
- License Agreement signed by Fisher & Paykel and Embraco
- Patented technology

- **Benefits for Fisher & Paykel**

- Royalty revenues (compressor & controller)
  - approx 2% of around US\$70 per set
  - Estimated volume 3 – 5 million sets per year
- Exclusivity period
- Opportunity to supply global market

- **Next step**

- Field testing – ongoing



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## IMPORTANT NOTICE

This presentation has not taken into account any particular investor's investment objectives or other circumstances. Investors are encouraged to make an independent assessment of Fisher & Paykel Appliances Holdings Limited and its subsidiaries.

All currencies are expressed in New Zealand dollars unless otherwise stated.

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