

INVESTMENT OPPORTUNITY IN REVOLUTIONARY NEW TECHNOLOGY TO POTENTIALLY DOUBLE THE WIND POWER OUTPUT OF TURBINES

INNOVATION AT WORK IN AUSTRALIA

Working to Produce Green Energy

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MathersHydraulics-A025

Mathers Hydraulics reserve the right to change specifications at any time without notice.



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MATHERS
HYDRAULICS

INTRODUCTION

All interested parties and investors are invited to view an introductory presentation of new AUSTRALIAN technology that has the potential to substantially increase the reliability and generating power of Wind Turbines. This initial presentation covers the basic drive functions, benefits and timing in carrying out proof trials and the development of larger power drive line components for production needs.



Both the drive technology and the unique drive system have been patent protected for future security. Universally viewers of the presentation comment on its simple to understand operation and objectives; be assured it is not a complex combination of physics and engineering. The process and products additionally have substantial international support from world leading international scientists and engineers from multiple engineering backgrounds. Lastly the core technology allows for very large megawatt powers far excess of wind power needs.

Patents Holding Company: Mathers Hydraulics Technologies Pty Ltd holds the product patents.

Company: AUSTRALIAN WIND TECHNOLOGIES PTY LTD holds the system patents.

INNOVATION AT WORK

Budget: AU\$30 MILLION

Most certainly this technology meets all the objectives of the government innovation funding policies and consequently a budget of \$30 million dollars from government support and private investment is proposed to cover the first 2 years. A full budget has been prepared for the first two years.



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MH10/09/08/04/05

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SUPPLIER QUALITY AWARD
2007
Mobile Plant



Sustainability Award 2007

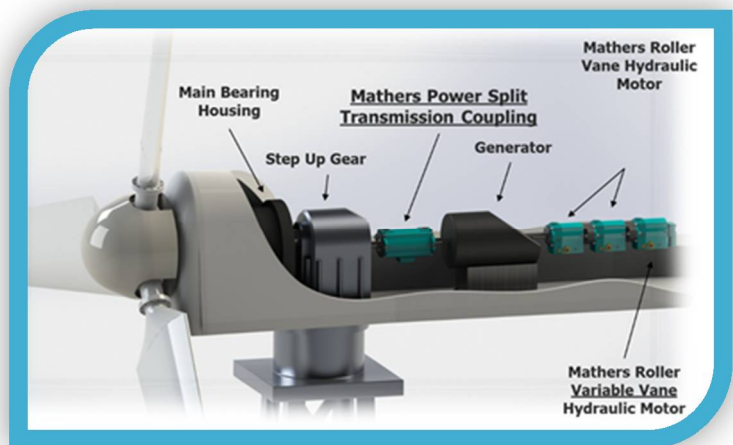


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POWER SPLIT COUPLING

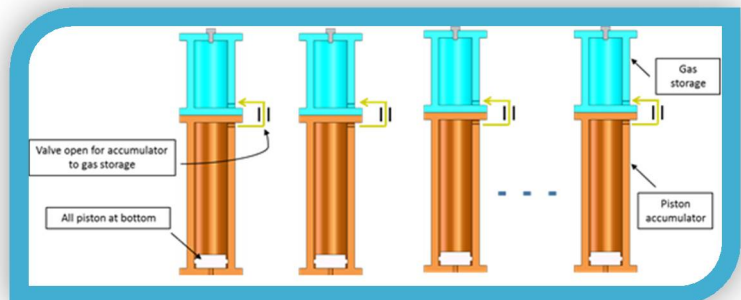
Use of revolutionary new POWER SPLIT COUPLING to capture Pitch and Yaw lost wind energy to improve productivity by over 40%. Other benefits include the removal of damaging electronic JITTER pulses that causes fires, drive line damage and vibrational stress on towers shortening life.



PISTON ACCUMULATORS

Use energy storage ACCUMULATOR system in a revolutionary new way to capture hydraulic energy without storing excess fluid.

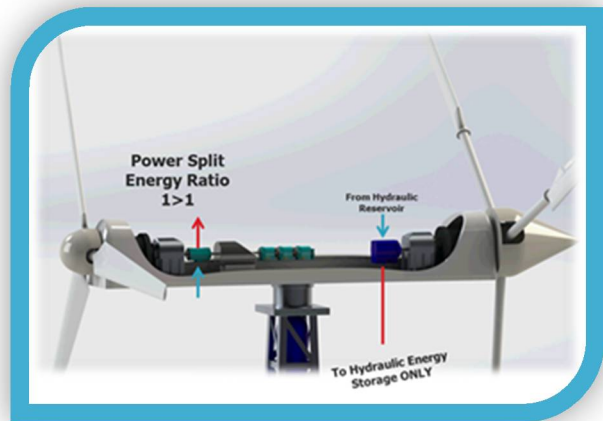
Additionally by incorporating the accumulators as part of the structure, cost is reduced whilst the tower strength is greatly increased.



DOUBLE WIND TURBINE

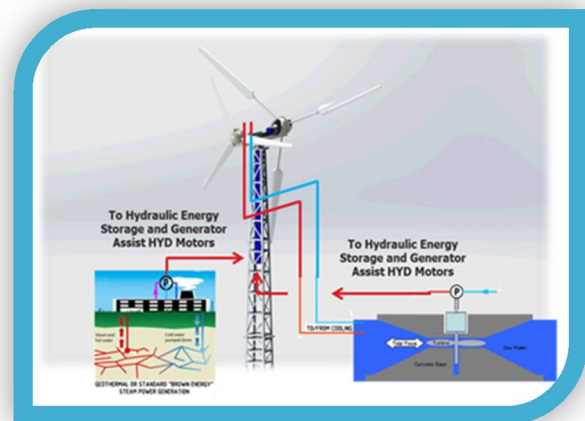
Adds a secondary Wind Turbine hydraulic drive to:

1. Double the output at low cost.
2. Counter balance the weight of the primary turbine which in combination with the JITTER elimination feature, is predicted to increase the current tower life of 25 years.
3. Doubles the power output without doubling the generator capacity.



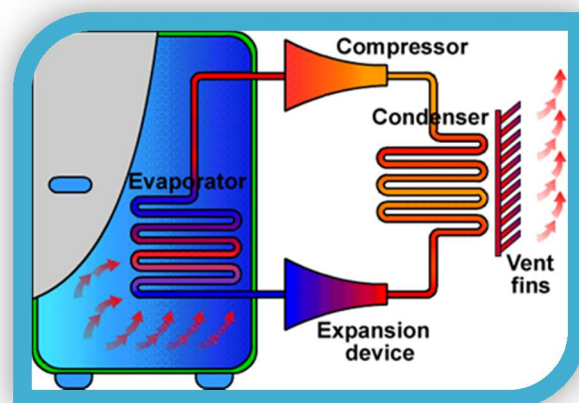
WIND AND WATER POWER

Where applicable, adds hydraulic power from tidal, river or sea current sites at low cost to the energy storage system to seamlessly combine WIND and WATER POWER into one high efficiency system and eliminates the high cost of water driven generators.



CRYOGENIC REFRIGERATION

Uses cryogenic refrigeration principles to capture and store energy in smaller chambers during grid lulls and then recover this energy by the essential cooling of drive line components to maintain an energy balance.



WATER GLYCOL

Uses fire safe environmentally friendly Water Glycol as the drive fluid, allowing cooling of the gear box and generator for further efficiency improvements in the cryogenic system.



INNOVATION BENEFITS – SOCIAL, WORK AND FINANCIAL

1. Meets PM and government objective of keeping Australian Innovation benefits in Australia.
2. Reduces need for brown energy on standby with its high cost.
3. Exports high value patented sophisticated machinery products.
4. Earns export profit from both the supply of components and royalties on power produced.
5. Helps meet Australian emission targets.
6. Places Australia in forefront of international green energy countries with associated scientific benefits.

TECHNOLOGY ENDORSERS

1. Professor Kim Stelson, Director of the CCEFP/NSF.
2. Michael Gust, Manager of the CCEFP, ex VP of Eaton Fluid Power.
3. Dr. Philip McCluskey, retired global manager of Caterpillar hydraulic research.
4. Gary Kassen, Director of CNH Hydraulics research, Ex VP of Eaton Fluid Power.
5. C.P. Rangachar, CEO Yuken Hydraulics India, Electrical Engineer.
6. Hemanth N.Gopal, engineering manager of Yuken Hydraulics India.
7. James Oliver, Manager of Olitek Engineering.
8. Philip Waddington, Principal hydraulic engineer BAE Systems.
9. Yan Linjiao, CEO YTO Group Corporation.
10. Mike Noske, Project Manager of Keppel Prince.
11. Steve Garner, Manager of Keppel Prince.



WHERE WE ARE TODAY

Fans and pumps are being manufactured by Yuken India for official trials with trucks and machinery.

Furthermore Yuken India is now manufacturing prototype combination pumps and transmissions for trials with major corporations as of 2016.

Dr. Phil McCluskey and other retired executives from Caterpillar will commence the sale of Research Licences using the technology to the leading machinery corporations when the products become available mid-2016 from Yuken.



Displaying **95% efficiency** power split coupling drive at Excon Exhibition in Bangalore-Nov 2015

Wind Power is totally different industry and again we are only a component supplier on very large assemblies. We see this innovative technology as a huge opportunity for Australia that requires government support to provide jobs and revenues. We have been advised that after discussions by our government member with the minister for science's office, a formal submission was made and accepted. Currently we are now working with both the minister of Science and innovation office and also the minister of the environment office on the commercialization program. Technically we are gathering more and more scientific and market support on our objectives of commence field trial in early 2017.

MARKET ANALYSIS

NEW: The annual market for Power Split Couplings and supporting patented technology has been estimated to exceed \$10 billion annually for new units and spares.

RETROFIT: In addition a substantial but not value estimated retrofit market is envisaged from adding tidal turbines to the numerous ocean installations along with the Power Split energy storage system on sea and land based turbines. Adding a secondary turbine will become a case by case study of suitability, along with the closeness of the next Wind Tower which can be impacted by removing extra energy from the wind.

DOWN STREAM PATENTS

This potential market dwarfs that of the product market and can either run in parallel with the product supply market or completely separately.

ROYALTY PROPOSAL

Operates similar to licence charges on computer software systems.

Assume:

1. A 2.5% royalty on the power generated as an example.
2. Assume a conservative 1,000 KW per hour is generated across all turbines for 10 hrs per day by 250 days and the royalty was 0.5 cents per KW hour.
3. Assume after 5 years of production there are 10,000 systems installed.

Value: \$125 million royalties.

MILESTONES AND OBJECTIVES

Raise \$30 million dollars to cover initial research on a 500KW turbine and prepare for field trials of the 1 megawatt unit. Test results within 15 to 18 months are expected from the 500KW trials.

1. Government research rebates and potential sponsorship support would exceed 50% of raising.
2. Sale of Research licences.

Potential Market for Research licenses: Major Wind Power manufacturers. Universities, Institutions and Governments.

Major Wind Power Manufacturer. To \$10 million dollars for the supply of equipment to carry out trials on a 500 KW size plus reserve a position for the supply of products and research licences for:

- 1 megawatt trial products.
- 2 megawatt trial products.
- 3 megawatt trial products.

Each licence with the technology will cost \$10 million dollars.



Identify additional partners to work with MHT, Keppel Prince & CSIRO on prototype and research trials

Identified partners:

- MHT
- Olitek engineering
- Keppel Prince

Other key business needs as nominated below will be included in the business model due in April/May. Interested parties should refer to the nominated advisor.

- 500 KW demonstration trial unit- Windflow NZ
 - 1 Mega Watt unit to be selected and nominated [Keppel Prince](#)
 - Hydraulic accumulators, control valves, filtration, coolers, etc [Dr. Phil McCluskey](#)
 - Retrofit potential on existing wind towers [Keppel Prince](#)

