MATHERS HYDRAULICS TECHNOLOGIES Wind Power Patented Technology

INNOVATION BENEFITS OF MATHERS LOW COST BALANCED VANE TECHNOLOGY IN WIND POWER GENERATION





- A. Power Split Coupling: Increases productivity by 40%.
- B. Second Wind turbine: Doubles output at low cost.
- C. Wind and Tidal power combination: revolutionises power generation.

BUSINESS OPPORTUNITIES WITH GOVERNMENT INNOVATION SUPPORT

- Enter patented high value sophisticated \$10 billion market.
- Employment opportunity for up to 40,000 engineers, blue and white collar workers.

UNLIMITED NEW RESEARCH OPPORTUNITIES

- Add further patents in system control, combination gear box and power split coupling.
- Wind farm integration. Retrofit of existing turbines.
- Introduction into new fields: marine use of turbine power on barges and mobile trailer units for emergency use after cyclones, earthquakes, bushfires, tornadoes.

Initial private investment for the first 2 years research to complete proving trials will be limited to \$15 million.

BENEFITS

A. CORE TECHNOLOGY OVERVIEW OF BENEFITS AND KEY POINTS

- The core technology has a 90 year history of utter reliability. This reliability is combined with a moderate production cost due to the simplicity of the mechanical drive process.
- Consequently the risk of unforeseen service problems are extremely low.
- Careful testing will quickly and economically validate performance on both test benches and field trials.
- Uses environment friendly fire safe Water Glycol for power generation.
- Provides safe dynamic hydrostatic braking versus high wear and overheating risk disc braking use.

B. POWER SPLIT COUPLING FITMENT FEATURES AND BENEFITS

- Elimination of damaging and fire producing electrical jitter.
- Elimination of jitter and weight balancing will increase tower life.
- Brings the generated cost of power down to that of new coal. Note this will be 10 years ahead of forecast.

C. A SECOND WIND TURBINE DRIVING ENERGY STORAGE HYDRAULIC PUMP

- More than doubles the power generation at a lower cost than doubling the turbine power size.
- Counter balances the uneven weight distribution that can cause tower collapse.

D. WATER TURBINE ENERGY STORAGE HYDRAULIC PUMP

- Adds energy at moderate cost to simply, practically and efficiently combine natures energy sources.
- Adds highly efficient fluid cooling capability if required.

E. CRYOGENIC ENERGY STORAGE USING COMPRESSED AIR

- All the technical features and products are in place; including compressed air accumulator storage.
- Adding energy storage during quiet grid periods would be at negligible cost or machinery wear and tear.
- Challenging but solvable: the holy grail of wind power technology.
- The principles are well proven: but never on this scale.
- Ideal CSIRO research opportunity: ideal patent territory.

F. REVENUE/ MACHINERY REQUIREMENTS/ EMPLOYMENT OPPORTUNITIES

- Keppel Prince estimate 20,000 to 25,000 turbines were installed in 2015.
- Patented and associated equipment value would exceed \$10 billion.
- Assuming a 25% success rate would employ in excess of 10,000 staff.

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