



# Mace Group's Pivotal Piston Engine Now Ready

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Mace Group's Pivotal Piston Engine Now Ready For Global Hydrogen Mass Automotive Market

Precision machinist Mace Group of Christchurch, New Zealand, has positioned its two stroke pivotal piston as the engine block of choice for the pending hydrogen-powered mass automotive market. The company's design pivots, in fact, on circulating coolant so that water flows through the engine's moving parts instead of just the engine jacket. This overcomes the main obstacle to hydrogen engines which has hitherto been temperature control.

Mace Group took the long-term bet that mass produced hydrogen internal combustion would prevail in terms of cost-efficiency over the much more widely publicised fuel cell technique.

Mace Group's decade-long development of its pivotal engine stands to deliver New Zealand the much sought-after production-engineering propulsion to follow in the wake of the CWF Hamilton jet marine engine which also stemmed from the South Island.

The pivotal engine, as its name suggests, quite literally hinges on a flap rather than a piston. In domestic terms its action is that of an opening and closing door compared to that of a plunger. The cooling system solves the central problem of hydrogen engines which is that of ignition control.

The two stroke format allows a power to weight ratio which effectively sees the engine occupying half the area of a four stroke engine while delivering much more power.

Its optimum design is for hydrogen. The company though has also positioned the engine for a variety of other fuels.

With seemingly cast iron world-wide patents in place, Mace's Pivotal Engine subsidiary appears immune to having its flag ship product copied.

Mace Group's established role in international precision machining also reinforces its position now athwart the mainstream global hydrogen engine market.

The family-controlled company has a gilt-edge international client list for its varied precision machining contracts. It is considered to be exceptionally well-financed and was thus able without breaking stride to embark on the long development and refinement needed by its new concept engine.

Mace was left in place after the Christchurch earthquake and fortuitously had re-structured its immense inner city site holdings just before the series of earthquakes hit the city.

Mace Group is no stranger to the bread-and-butter automotive business having for many years run a large engine rebuilding division.

The company can reasonably lay claim to having invented the internal combustion hydrogen engine. Its pivotal, hinge-acting, propulsion block is the first such engine to be designed and built for hydrogen. Its competition is engines which have merely been tweaked or re-engineered for hydrogen.

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