

# Griffin Report - Excerpt

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The following is an extract from the lecture given by Admiral Sir Anthony Griffin to the Maritime Division of the Southampton Institute, Warsash, UK as part of the symposium on the Impact of New technology on the Marine Industries, September 1993.

## Water As Fuel

### ABSTRACT

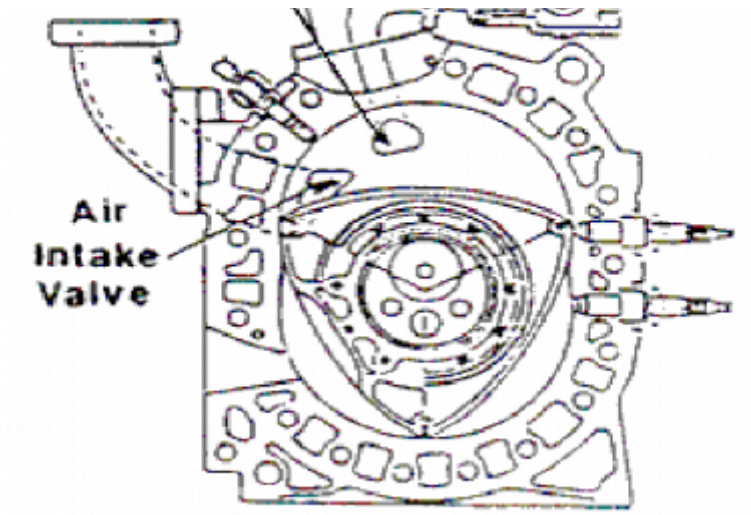
The earth's main sources of non-solar energy are fossil fuels, which cause severe pollution and cannot last indefinitely; nuclear, which is capital intensive, and whose waste disposal is problematical; tidal and wind schemes which are inefficient; and thermal and hydro installations which are efficient but lack flexibility and require major capital investment.

An alternative is water (salt, fresh or distilled) as a cheap and inexhaustible source of global energy which has none of the foregoing disadvantages. The theoretical evidence in support of the relevant technology is briefly described and related to the first and second laws of thermodynamics.

Practical evidence is illustrated and the impact of this revolutionary development on the marine industries, with ships floating on their own fuel and thus having no need for either bunkers or ambient air, is indicated.

Much wider and global implications for the environment, industry, defence and political stability are discussed.

### INTRODUCTION



In 1972, the Royal Navy examined how

the Fleet should be fuelled when current fossil fuels become too scarce, say in the year 2030. They concluded that the fuel of the future was hydrogen but since the gas was not normally available in usable form, it would have to be extracted through either electrolysis of water or nuclear fusion. Neither appeared to be immediately practicable. Electrolysis needed more power than that of the hydrogen it yielded and was too slow a process to meet the demands of an internal combustion

This meant that it would have to be stored in either liquid form or in a fuel cell, both of which involved substantial weight or safety problems. Nuclear fusion appeared to be too distant and expensive an

This position remains the current generally accepted view of hydrogen as a fuel. It has not however, deterred numerous investors from producing, for example, over 100 hydrogen fuelled cars in the USA, at least 12 in Germany and 3 in the UK. The latest is Japan's Mazda HRX car and its Wankel engine shown here.

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This car was described in June 1992 to the 9th World hydrogen Energy conference in Paris. Here the papers referred only to various aspects of hydrogen generation through electrolysis, or its storage or its subsequent application.

It is worth recalling that in April 1988, the starboard engine of a three-engined Tupolev 255 airliner was modified to run on hydrogen which was seen to be embarked in liquid form from a fuel bowser. The aircraft flew for about twenty minutes on its hydrogen powered engine which showed no exhaust except a trail of water vapour. The main attraction in all of these cases has been the absence of pollution at the scene of action. However, the pollution problem has merely been transferred to the source of the power required to drive the electrolytic process.

## PRACTICAL DEMONSTRATIONS

Many practical demonstrations of Water Fuel Cell technology have already been made and more are planned.

Most of Meyer's patents were filed under a particular clause of the US Patent Regulations which requires a claim to be demonstrated before it can be granted.

### The 1980 Patent

The first and probably the most frequently demonstrated patent is based on the actual equipment used in 1980 to support Meyer's claim for his hydrogen fracturing process. I have now personally witnessed it 4 times. In outline, the apparatus consists of 9 concentric stainless steel cylinders, with about a 1 mm gap between them. They are 14 inches long and are effectively waveguides. They are immersed in tap water contained in a glass vessel.

The top of the vessel is normally gas tight but has a pressure gauge and a valve to allow gas to pass to atmosphere when required. Electrical power with opposite polarities is applied in pulses to the inner and outer cylinders and at a power of 10 watts, i.e. 5 volts at 2 amps. A considerable quantity of gas immediately accumulates in the top of the vessel and, within 10 seconds, reaches a pressure of about 10 pounds per square inch.

When the valve is opened, a jet of cold gas can be felt, but on this being lit with a match, the temperature instantly rises to about 3000F and the flame burns through a stainless steel wire in about 2 seconds. The glass vessel and its attachments remain at room temperature throughout, thus ruling out any normal electrolytic process. Plainly, the generation of such a quantity of gas and its immediate application at such a high temperature, demands more than 10 watts of electrical energy. Furthermore, as the stainless steel cylinders have not noticeably been consumed over several years, the balance of the energy required can only come from the zero-point energy in the water. Meyer points out that all the parameters involved in this demonstration have been

deliberately de-optimised, e.g. 5 volts instead of 20,000 volts and 2 amps instead of 0.5 milliamp, 14 inch tubes instead of an optimum of 27 inch tubes, etc. in order to allow the principle of the water fracturing process to be demonstrated without risk of explosion.

## The 1985 Dune Buggy

In 1985, a dune buggy powered by a standard 1600 cc Volkswagen engine was modified through Water Fuel Cell technology to run on water fuel. It was a breadboard quality experiment which was successfully demonstrated as broadcast on American TV and reported in the press. A video tape record is held by London University.

## The 1993 Dune Buggy

This will be the first demonstration of a complete system, manufactured to a pre-production standard as a conversion kit for a typical car. The rig is designed for powers up to 400 hp and, in production, Meyer expects to market it for \$1500. The date has yet to be settled, but is expected to be within the next 2 months in Ohio.

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This project is under consideration as a convenient means of demonstrating how zero-point energy can impel water without any moving parts as shown here.

