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## The Science Behind Genesis

The most abundant and practical source of pure hydrogen and oxygen on the planet is ordinary water. However, previously it had not been possible to break water down into its molecular state in practical terms from an energy consumption standpoint. The process consumed more energy than could be extracted from the resulting hydrogen and oxygen gases. As an example, 1000 watts of energy would be consumed to break water down to its molecular state and only 900 watts of usable gas energy would be yielded from the process. Recently, two new processes have been developed that are capable of breaking water down at lower energy consumption rates; however, those processes have proven to be costly and impractical. One requires the use of a very specialized chemical additive on a continuous basis that is in relatively short supply. Furthermore, the chemicals left over from the process must be disposed of without contaminating the environment. The other process is only accomplishable in highly controlled centrally located facilities. Therefore, it would involve establishing new hydrogen and oxygen gas distribution and transportation channels from scratch.

In order to make Genesis viable, the team needed to develop the ability to breakdown any type of water into its basic molecular state, using a small amount of space and consuming far less energy than could be realized as a result of the process. Major scientific and technological breakthroughs were required to accomplish this.

Since the objectives of the Genesis Project were very specific and unique, the team started entirely fresh, creating every aspect of the new technology from scratch. Therefore, the conventional thinking and the technological accomplishments of other scientists and engineers did not limit the team.

### Extracting Hydrogen and Oxygen from Water: The gCell Process

In common terms, the essence of the Genesis technology involves a process that excites the hydrogen and oxygen molecules contained in water and detach them with very little electrical energy, much the way magnets with opposing polarities push away from each other. This was accomplished by creating a series of molecular level reactions within a specialized cell (the Genesis gCell), which in appearance looks similar to a fuel cell. Within this cell, three simultaneous processes occur. The first process produces electrical voltage from water passing over special catalytic reactants. This electrical voltage aids in the excitement of the hydrogen and oxygen molecules in the water. The second process involves a thermo, electro-catalytic reaction that results in the complete separation of the hydrogen molecules from the oxygen molecules. This yields maximum efficiency in the extraction of ultra pure hydrogen and oxygen gas. During the third process, small amounts of the hydrogen and oxygen gas molecules created in the second process reattach, providing additional electrical current to subsidize the overall gas generation process.

The result of this landmark technological breakthrough allows hydrogen and oxygen gas to be created from ordinary water, using only a fraction of the total resulting energy. The amount of water used to generate hydrogen and oxygen gases from this process are negligible, usually only a few ounces of water a day, much of which is ultimately recovered within the process and reused.

A single Genesis gCell stack (about the size of a small car battery), consisting of several individual gCells, is capable of producing hundreds of cubic feet of gas per day. In comparison, a typical American home located in cold climates consumes approximately five metered cubic feet of natural gas a day.

### Creating Electricity from the Hydrogen and Oxygen: The eCell Process

As was the case in creating the technology for extracting hydrogen and oxygen gases efficiently, the Genesis Team elected to start completely from scratch in developing its own special fuel cells. While Genesis' electrical generating cells (eCells) are in fact "fuel cells", they share very little in common with any other type of fuel cell in existence. Using the molecular technology developed for the Genesis gas generating gCell provided significant advantages over existing fuel cell technologies. These advantages include a low manufacturing cost, substantially higher electrical generation yields and catalytic reactant formulations that are not subject to normal degradation, providing substantially longer service life.



Utilizing a reverse reactant process (similar, but less complicated than the gCell gas generation process) hydrogen and oxygen molecules are excited and attracted to each other (much like aligned magnets pulling themselves together), and water is then recreated as a result. Substantial amounts of electricity and heat are generated as a byproduct. The Genesis technology is so efficient that a single compact eCell stack (about the size of a gCell stack) can produce over 1000 amps of electrical current. The electricity extracted from the eCells then replaces the electricity provided by utility companies. Water generated from the eCells is recovered and reintroduced into the gas generation system, while heat generated during the process is converted to usable energy.

The Genesis gas and electrical generation processes are so compact and efficient that devices based on the technology are easily capable of replacing traditional forms of energy using very little space.

[View the process here.](#)

### **Bringing It All Together: The Edison Device**

While the gCell and eCell technology is breathtaking in its simplicity, it needed to be incorporated into a mechanism that could viably meet residential and commercial energy requirements. This has been accomplished through the Edison Device: a self-contained energy generation system consisting of stacks of gCells and eCells. The Edison Device is roughly the size of a typical residential outdoor air conditioning unit.

Installing the electrical generation feature of the Edison Device to any home or business simply requires attaching three wires to existing electrical service connections, typically located in the electrical box that contains the utility company's power meter. Installing the gas generation feature of the Edison Device simply requires connecting the device's gas feed line directly into the existing natural gas line on the customer's side of the utility company's gas meter. At that point, customers are fully independent from energy provided by utility companies. Appliances that use natural gas or propane are easily converted to use hydrogen gas by installing gas line flow restrictors that can be accomplished simply and easily by any average do-it-yourselfer.

As a safety precaution, if a gas leak develops in a customer's appliance, the Edison Device has the ability to detect the leak and immediately shut the gas supply off until repairs can be performed. As a result, gas supplied by the Edison Device will be safer than using natural gas or propane.

### **Market Ready**

The Genesis Project has developed two market ready models of the Edison Device: a residential version and a commercial version. The residential model is capable of producing up to 30 total kilowatts of combined gas and electrical power per day (a typical home uses between five to six kilowatts), and the commercial model can generate up to 100 total kilowatts of energy. For heavier commercial requirements, multiple Edison Devices can be linked together.

The design of the Edison Device has proven that less is more. The energy-generating portion of the device has no moving parts - in fact, the only "mechanical" aspects of the Edison Device are the small circulation pumps and micro-valves that control the flow of water and gases. As a result, maintenance is limited to the occasional replacement of inexpensive water filters that can easily be accomplished by consumers themselves, while water usage is minimal over the device's projected 20+ years of service life!

### **The Ultimate Green Machine**

Using only small amounts of water to meet residential and commercial energy requirements, producing no noise or emissions beyond the creation of ultra pure water, and utilizing an energy generation technology that is self-sustaining, the Edison Device is truly a "green machine."

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