

FUEL CELL VEHICLES IN LAW ENFORCEMENT
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Article

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Fuel Cell Vehicles in Law Enforcement

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Undercover agents from the California Department of Justice are heralded for the apprehension of twenty-two Libyan terrorists. Apparently, two months ago information was developed that there was a Libyan terrorist cell operating in the Sacramento area. Agents with the Joint Terrorism Task Force, FBI, shared this information with the California Department of Justice who took the investigation, on using their new advanced vehicles systems using hydrogen fuel cells. Agents were able to easily sneak up on the suspects in their new extremely quiet fuel cell vehicle. The group was staging to attack the Democratic National Convention, which was being held this year at the National Convention Center in Lincoln, California.

Kevin Sinor, Chief of the Intelligence Bureau, and spokesman for the California Attorney General's Office, stated that the department had just partnered with the Toyota Corporation. The deal allowed the Department of Justice the use of ten fuel cell vehicles for statewide undercover operations. The Intelligence Bureau was able to use two of the extremely quiet vehicles in this operation. The Libyans were surveillance-conscious and had lookouts stationed 24 hours a day. Even though the Libyan lookouts made every effort to warn their co-conspirators, agents were able to quietly sneak up on the Libyan strategy meeting and record their conversations. Sinor stated that, once the conversations were interpreted, agents had the group's entire plans and were able to capture the group as they prepared to deliver their explosives. Sinor stated that the complement of explosives would have easily demolished the National Center, killing over 10,000 people.

This scenario depicts a future where fuel cell technology could become a valuable asset of the Law Enforcement. Even though this scenario focuses primarily on the relative low sound created by fuel cell vehicles, there are other clear advantages. Fuel cells are an important enabling technology for the hydrogen economy and have the potential to revolutionize the way we power our nation. This technology will offer cleaner, more-efficient alternatives to the combustion of gasoline and other fossil fuels.

In the future, law enforcement, along with other governmental agencies, will have to embrace this technology either by necessity or by choice because we are running out of fossil fuels. As a result, we may be forced to make the change sometime in the future. And, of course, we are over ridden with an ample number of studies, which show that the combustion engine is bad for the environment and the health of our citizens.

This article is based upon an interview with Anthony Eggerts who is the Director of Research for fuel cell vehicles at the University of California, Davis.

According to Eggerts, automobile manufacturers are investing in the development of fuel cell technology.¹ He stated that the major companies are expending nearly one billion dollars a year on the new technology. He says that this trend will definitely continue and will likely increase year by year for the indefinite future.

¹ Anthony Eggerts, Director of Fuel Cell Reaseach, UC Davis, interview, December 2003.

At the present time, the Bush administration has invested over one billion dollars in the development and testing of fuel cell vehicles. Eggerts also stated that the development of fuel cells will be somewhat dependent on the sponsorship of the government and the government's support. The fact that the government has invested in this technology shows support for various reasons. He also stated that the Bush administration simply wanted to show their support because they didn't want to be painted as the administration that lathered its pockets with oil money. He felt that this was a gesture to dispel rumor and allow for the President to run on a platform in the upcoming election in support of the environment and new technology.²

Many citizens, as well as Eggerts, feel that the cost of fossil fuels will create the necessity for further advancement in research relating to an alternative. Phil Arnold, a WWII veteran, remembers when gasoline prices were 10 cents a gallon, while most people today are comfortable with gasoline prices less than \$2.00 a gallon. Yet, all indications reveal that gasoline prices will steadily climb because of U.S. involvement in the middle east countries and how OPEC has the market in a strangle hold.

One of the primary challenges facing the universal use of fuel cell vehicles is the lack of fueling stations. Eggerts stated that if a safe and efficient means of fueling fuel cell vehicles could not be developed, the concept of fuel cell vehicles being used by citizens across the country would have very little chance for success. However, literature and the research associates of Eggerts make a very compelling case that significant advances are being made. The most compelling idea is that hydrogen would be produced at the actual fueling station.

² Ibid.

Hydrogen production at an actual fueling station is being adopted as a leading solution; however, this concept requires a great deal of power. Solar technology could meet the energy challenge, but the most effective way of producing hydrogen is done by the burning of fossil fuel. This seems to be counter productive because it requires too much fossil fuel. However, Eggerts stated that this problem will be solved in the near future, but the general public would have to accept the change.³

Eggerts stated that the average citizen will have a difficult time changing from the noisy gasoline car to the quiet fuel cell car. They stated that people believe a great car has the power and noise associated with gasoline engines. They are accustomed to the passenger compartment makeup and the overall culture of the gasoline vehicle. A change in culture would have to take place before this technology could be accepted.

Eggerts stated that people will have to be comfortable with the new cars. After time, they will realize that fuel cell vehicles will provide additional advantages. He stated that the fuel cell vehicle would provide the power of a V-8 engine and be extremely quiet. For law enforcement, that means quiet surveillance of suspects. Additionally, the compartments could be conformed to almost any degree of likeness to a standard gasoline vehicle. The body could also be interchanged to be a pickup, passenger car or van depending on the specific need of the day. So, people would have to learn to get used to the advantages and switch from their old culture and trust the a new paradigm.

³ *ibid.*

UC Davis experts state that the another challenge the fuel cell industry is facing is the general opinion that fuel cell cars are dangerous. They stated that there is a perception that driving a fuel cell car is like driving a bomb, where many people reflect on the Hendenberg hydrogen dirigible incident. Fortunately, experts point out the many new advances in safeguarding the explosive characteristics of fuel cell vehicles and the relative properties of hydrogen. For instance, hydrogen is the lightest element on earth and when collision occurs, most of the gas escapes instantaneously, leaving very little volatile capability.⁴

Events that Could Sponsor Change

Currently, the United States is embroiled in a conflict in Iraq. Experts from the automotive industry state that many people feel angered by our military occupation and the eventful stories about the deaths of U.S. soldiers and Iraq citizens. Many people feel that we are at war with another country over fossil fuel supplies and that the war will continue with little or no end in sight. The automobile industry has done surveys that indicate many people feel that as long as we are a nation depending on other countries oil reserves we will continue to be a target for terrorism.

According to the FBI, gasoline storage facilities are on the top of the United State primary assets list to be protected.⁵ The possibility of terrorists attacking a fossil fuel storage facility is being heavily guarded against because of the tremendous loss and devastation potential. Generally, the FBI states that the current level of terrorist threats in the U.S. center around the protection of top terrorist targets. Among these targets are, oil refineries, fuel storage tanks and the transportation of this product would be easy targets for terrorists to exploit.

⁴ Ibid.

Eggerts said, with caution, that if one or several of these storage facilities were to be attacked, the public could then possibly see the benefits of moving away from gasoline into some type of alternative fuel source, like fuel cells.

Somewhat ahead of the game, Governor Arnold Schwarzenegger has been a very strong proponent of this technology. Recently, Schwarzenegger visited the Fuel Cell Program at UC Davis and drove a fuel cell vehicle, which was provided by Toyota Corporation. The Governor was then interviewed by Channel 3 News regarding fuel cell vehicles. In a short film clip, aired on Channel 3 News, the Governor offered his support of this technology. He said, "fuel cells are the wave of the future, and that he couldn't wait to power his Hummer with a fuel cell." Eggerts stated that the Governor did not know is that current technology would require several hundred fuel cells would have to be placed in his Hummer to have the power to give his vehicle the same performance that he currently enjoys with his gasoline engine. This engine design would be very expensive according to Eggerts.

Eggerts stated that the current cost of the fuel cell vehicle at UC Davis is over one million dollars. He stated that this vehicle was just a prototype and was hand built. He further stated that any vehicle that is hand built in this fashion would be very expensive. He said that another reason that fuel cell vehicles are so expensive is because the actual fuel cell incorporates a platinum screen. He said that alternate, less expensive materials, are being developed, but nothing as effective as the platinum has been discovered.

5 Dave Piccard, Assistant Special Agent in Charge, Sacramento, FBI. Interview December 2003.

According to Eggerts, once these challenges are overcome and the vehicles are in mass production, costs will drop tremendously, but may not reach the cost of our current gasoline vehicles in the near future. However, long term assessments by the automobile industry indicate that all of these challenges will be met and clean, less expensive transportation will be available for all.

Summary

Now, in September of 2004, law enforcement executives can evaluate this evolving technology and make a decision. They can align themselves and their agencies with the almost certain change in paradigm. They can embrace the new vehicle technology and design programs and hire individuals to support the necessary infrastructure or they can simply ignore the inevitable and let the change happen to them. Some will argue that the technology is too new and there are too many unknowns and challenges. But, those who pose this argument forget that history has shown us that taking an active role and becoming part of the solution is always the best course of action. Law enforcement could greatly benefit by exploring all the opportunities extended by this new and valuable technology.

- * Develop a new program incorporating the use of fuel cell vehicles and strive to serve as a model for other governmental agencies to collectively embrace this new technology.
- * The program should partner with governmental agencies and automobile manufacturers to collectively overcome known challenges.
- * The program should further enhance these partnerships to withstand unforeseen challenges.

- * The program should work with state legislatures to ease the way for legislation that would facilitate the establishment of a fuel cell vehicle support infrastructure.
- * The program should work with automobile manufacturers to help design specific tools for law enforcement.

Conclusion

Today's trends are rapidly changing how society feels about the continued burning of fossil fuels for transportation. The cost of fossil fuels has reached an all time high in the United States. The pollution across California and the entire country has now reached epic levels with thousands of people dying every year as a result of complications due to hydrocarbons in the atmosphere. The technology is now available and will soon become an inexpensive alternative. Law Enforcement should take the opportunity to partner with industry and front load the initial development of vehicles specifically designed to accommodate the needs of law enforcement.

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