

# SWOT Analysis — Fuel Cells

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## STRENGTHS OF THE FUEL CELL INDUSTRY:

The fuel cell industry has numerous strengths that make it one of the fastest-growing emerging technologies in the world. That is especially true here in the Rochester, N.Y., Region.

Among those strengths is the fact that fuel cell technology has moved from the phase of “trying to make it work” to the phase of “solving the issues” to get to commercialization. In the automotive area, which involves proton exchange membrane (PEM) fuel cells, these issues would be cost, durability and performance.

Another strength is the fact that there are new developments every day in the supplier community, as well as with the companies that are actually doing the development and application work.

In Rochester, we have two major fuel cell developers – General Motors, which specializes in PEM fuel cells, and Delphi, which focuses on solid oxide fuel cells (SOFC). This is a major strength for the region that cannot be underestimated, in large part because of the sheer size of the investments GM and Delphi are making in this fast-emerging technology.

In addition, we cannot forget the universal benefits of fuel cell technology, including its overall positive effect on the environment. Hydrogen fuel cells have a never-ending resource in hydrogen and are potentially pollution-free, and fuel cells in general have numerous applications in the portable, stationary and transportation markets.

## WEAKNESSES OF THE INDUSTRY:

While there are numerous strengths in the fuel cell industry, many acknowledge that there are weaknesses, too.

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Among them are the lack of focused development work by big supplier companies to solve problems in the areas of materials and cost. There is also a need for a more coordinated effort among universities, national labs, Tier 1 suppliers and end users to drive for results faster. This happens much more effectively in Japan.

Last but not least, we need a hydrogen infrastructure and comprehensive government policies to make this happen and encourage the growth of fuel cell technology in the U.S. over the next 20 to 30 years.

## OPPORTUNITIES FOR THE INDUSTRY:

Opportunities for the fuel cell industry are significant.

In particular, the opportunities in materials research and development for the fuel cell stack — membrane, diffusion media, catalysts and plates/coatings — are bountiful.

There is also an opportunity for component development, with specific automotive needs in mind, including cost, quality and durability. Testing capability for durability and performance is another opportunity waiting to be had.

Finally, we cannot forget the overriding, universal benefit: **energy independence**.

## THREATS TO THE INDUSTRY:

The success of the fuel cell industry comes down in large part to the consumers. Low gasoline prices in the United States — comparatively speaking — threaten the industry in that they weaken demand and fail to create a “pull” from customers toward more energy-efficient cars.

Another major threat is the overall cost of fuel cell systems, the cost of which is mainly related to materials. This threat is being addressed on an everyday basis by those in the industry, but much more needs to be done, especially in the United States.





One of the biggest threats we face is that the development of low-cost materials will be developed all in one country — and that country may not be the U.S.

## WHY ROCHESTER, N.Y.:

The Rochester, N.Y., Region has the potential of having excellent sources for materials development and supply from several major companies.

I expect that this could soon transform the Rochester, N.Y. area into the next phase of its “Technology Renaissance.”

In addition, the Rochester, N.Y., Region, as well as the larger central and western New York area, is home to an excellent university base, a necessity in the fuel cell industry. This university base offers countless opportunities for collaboration with the industry.

The region is also home to a highly skilled workforce with the technological know-how to support the fuel cell industry. Approximately 500 people are employed in the industry in the region — a sizable percentage of the total industry workforce. ❖