

It has become increasingly obvious that drastic things have to be done to help stem the flow of jobs overseas. Michigan, in particular, must build on the strengths and resources provided largely by its automotive industry, yet diversify its Rust Belt/roller-coaster economy and mindset away from automotive to a large extent--but in ways not harmful to the existing business infrastructure. To accomplish these and related goals, many efforts are underway in MI--e.g., Automation Alley; NextEnergy; Ann Arbor IT Zone; MI Economic Development Corp.; etc. All of these are focused on generating long-term, high-tech industries that will provide job growth.

In the minds of many of our greatest thinkers, the "highest tech"--and noblest goal--is the final development and industrialization/dissemination of hydrogen fusion. I propose the formation of a "Michigan Fusion Corporation" to help develop fusion to a practical reality, and thereby help insure Michigan's economic viability in major ways during the 21st Century. Some overall goals could be:

(1) Support current primary fusion R&D efforts--Inertial Confinement Fusion (laser-based), and Magnetic--in ways mutually beneficial to MI and the general fusion community. This would be structured to augment national fusion efforts/resources, not subtract from them--but with a basic eye towards developing truly long-term educational/industrial/job growth in MI that will, as a minimum, replace opportunities lost to overseas interests--and which cannot easily be offloaded overseas.

(2) Generate roadmaps, timing, and budgets to support development of "alternative" fusion concepts that are being short-sightedly thrifted out of national budgets in favor of "bigger science". Since MI is already strongly supporting alternative energy development--e.g., via NextEnergy in Detroit and similar projects--it seems logical to extend this support to fusion and related technologies. After all, what's more alternative than fusion, which powers our Sun, and thereby all the processes by which life on Earth depends? And, what's more alternative (and intellectually more fascinating) within the "Big Science" equation of fusion than, say, a "Mr.Fusion" micro-grid level of power source? This is a real possibility. Using what is generally termed Inertial Electrostatic Confinement as a convenient example, estimates by reputable scientists indicate it would not take much more than several million dollars per major development step--and not that many total steps involved--to make IEC practical. So, if we simply have the foresight, nerve, and money to structure a "micro-Manhattan Project" around IEC, this technology could become a long-term growth industry all by itself. Good models in the Midwest upon which to base Michigan efforts along these lines can be found by referencing activities of, for example, the Fusion Studies Laboratory/University of Illinois, as well as the Fusion Technology Institute/University of Wisconsin-Madison. By focusing some of its commercial development resources on fusion, and with the guidance/synergism of such research-oriented entities as these, Michigan could help something like IEC become a practical reality in years, not decades. Other possibilities abound.

(3) Develop practical, long-term industries around fusion spinoffs--such as waste incineration, which can be cost-effective in transforming really nasty wastes (e.g., chemical; medical; the relatively low amounts of radioactive wastes produced by fusion reactors themselves; etc.) to harmless ash and commercially-useful byproducts. This technology can also be structured to provide electrical power from the waste incineration process, and can be scaled down to micro-grid levels (e.g., 5 megawatts or so). [For example, SE MI in particular has an AWFUL lot of tires sitting around that could be burned for power generation.] Another general spinoff could be production of radioisotopes for cancer therapy and other medical applications. Fusion technology can also produce hydrogen-enriched fuels for automotive and other usage, as well as pure hydrogen (via electrolysis of water or other methods), in support of overall hydrogen/green economy needs. Besides such major applications, there will be myriads of smaller spinoff concepts/products that will come out of fusion development. MI would thus gain a totally diversified, niche industry, based on fusion spinoffs alone.

(4) Make full use of the improved educational and human resource levels (e.g. scientists, engineers,

technicians, etc.) that would be necessary for support/success of fusion, to uplift the general quality of life in Michigan. Existing local industries--e.g., automotive, energy, information technology, etc.--would benefit greatly from this improvement in such resources. Many good people--who would not normally be able to participate in fusion programs due to Federal budget/timing constraints--would jump at the chance for an opportunity to work on fusion projects in a "non-mainstream" environment--such as the Michigan Fusion Corporation.

(5) Make fusion power technology cost-effectively available on a global basis. This will greatly lessen international competition for energy resources and related strife--as well as help limit environmental consequences of the developing countries relying on typical energy resources (wood, coal, oil, etc.). If every nation in the world has all the energy it needs to insure at least decent living standards, the world will be a better--and safer--place overall. The worldwide dissemination of practical fusion power will go a long way in achieving this.

There are obviously risks that would have to be taken, but overall benefits to the MI economy could be staggering. However, life is risk, after all--and the local automotive industry, to use a good example, was built by risk-takers. Since MI is actively positioning itself to remain among the big game players of the 21st Century--in which fusion and the hydrogen economy will undoubtedly play a HUGE part--why not maximize MI's chances by making sure it has a significant number of chips in the fusion game?

As Gov. Granholm points out in what seems to be a favorite quote (attributed to Anne Frank): "How wonderful it is that nobody need wait a single moment before starting to improve the world." Bottom-line, I am one "nobody" proposing something that, on the surface, probably appears crazy. But all sorts of "crazy" people elevated Detroit and MI to the status of economic/business superpower. We are, however, losing that distinction and advantage to overseas/global interests that care nothing about our overall welfare. This situation is creating major holes in our economic structure that must be filled with something. Why not fusion technology as a viable option?

A somewhat whimsical embodiment of MI's potential is the Woodward Dream Cruise. This, as you probably know, was started by someone from Ferndale (coincidentally my childhood hometown). It essentially worships the Detroit-based car culture, and grew from a simple, local parade to an internationally-known event that stretches about 20 miles! If this sort of thing can catch on to drive people psychologically, why not the dream of a real "Mr.Fusion" industry? Detroit, and MI in general, has much experience with metals, chemicals, electronics, computers, volume manufacturing, quality control, construction, etc.--just the things to do advanced physics research (e.g., the MSU Cyclotron facility) and turn that into something practical/profitable. All we need is basically vision, money, people, time, and entrepreneurial spirit--all of which we have in abundance. It's a bit of a leap to go, say, from welding gas tanks to vacuum chambers--but all it takes, really, is re-training the good people we have and modifying facilities already in place.

Another thing to keep in mind is that MI has in fact already been involved in fusion development for many years, but in fragmented ways. The U of M, for example, has done fusion-related research. There was also a company called KMS Fusion at one time that was working on laser-based fusion technology. So, MI would simply be building on this "tradition" and expanding it greatly, both philosophically and practically.

In closing, I would like to offer this overall observation, sort of a variation on Gov. Granholm's quote: "Mighty oaks from little acorns grow". I have long been interested in hydrogen fusion research, and I think the time is right for MI to proactively help turn this research into practical reality--and, in doing so, help transform MI's educational/industrial base in fundamental ways to remain competitive globally. Fusion and related spinoffs can become a viable "engine" that will keep MI--and the nation--in the leadership seat for millennia, not merely our lifetimes. I can help in some initial ways--e.g., I have a few contacts in the fusion community that might be willing to provide initial roadmaps and other general guidance, should MI seriously indicate interest. However, even though I have an engineering background (BSEE/MSEE from Wayne State U.; 34+ years in Product Engineering at Ford Motor Co.), I'm not really qualified in fusion technology. About all I can offer are real possibilities--It's your job to decide to run with them on a long-

term basis.

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Listed below are initial key people/organizations to which this is being sent; to the best of my knowledge, these addresses are correct:

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(9/5/11 update: Sent to various others since 1/13/08 comment above)