Nuclear power: The future of human civilization

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 This is not an article about the environment. This is not an article about oil. This is an article about the long-term future of human civilization. Are you with me so far? Are you in favor of human civilization having a future, not just for another hundred years, but for thousands ... tens of thousands?

Good. Now what are our options?

Don’t get me wrong on this. The weekend place [1] I’m building for retirement uses solar heat and photovoltaic power. I’m into conservation and living lightly on the land. I walk the walk when it comes to resource use. But just how far can civilization go on conservation and sunshine?

What set me off was a blog earlier this week by a fellow who thought the only solution to our present problem was higher energy taxes to make everyone use less. My immediate response was that this is not a solution at all and fails to recognize the basic requirements of our civilization. The taxation approach dooms us to limits.

Industry has an even stronger incentive to conserve than private individuals do. This incentive is called "the bottom line." More efficient use of energy and raw materials has been an on-going effort in industry since the dawn of the Industrial Revolution. This will continue. But during that same period, energy use and raw material consumption have risen dramatically. Our whole civilization depends on the fruits of industry. The demand inevitably increases as more of the world’s population joins the party. We can and will recycle the raw materials, but to do that will require even more energy. The savings possible from conservation cannot possibly match increasing demand.

Where will this energy come from? In the short-term, only fossil fuels provide the steady and abundant supply needed for industry. Regardless of your views on global warming, these resources will not last forever. Solar and wind are fickle. Hydroelectric resources are pretty much tapped out and have their own

environmental problems. Geothermal is abundant in a few regions but limited. Space enthusiast that I am, I have a hard time believing we can do the job with powersats. Fission nuclear plants could provide much of the need if society could take a rational and unemotional view of the risks and benefits compared to other options. But none of these are a true long-term solution.

Fusion, the power source for the Sun, is the source I favor. I hear the moans. Yeah, you've been hearing this for fifty years and you're still waiting. And if you are waiting for big government research programs to feed power lines with fusion energy, you'll probably be waiting for fifty more. In part, this is because fusion is a very hard problem. In part, it is because the tokamak and laser fusion approaches the Department of Energy has been pursuing are particularly hard ways of doing it. Part of this is because the government is running the programs. And part of it is because the "massive" funding these programs have had over the last five decades or so is actually a trickle, unworthy of the magnitude of the problem, or the benefits fusion power would bring.

Working in the background are a few small research firms intent on finding a more practical way of tackling this difficult problem. I worked for Energy/Matter Conversion Corporation, the brainchild of Robert W. Bussard. EMC2 is still on the job. I'm sworn to secrecy regarding their progress, but maybe I can say they're familiar with a couple of other outfits in the hunt, and instead of claiming the others will never work, my old friends are smiling at the progress they see. Tri-Alpha [2] is bending tin, closing in on a trial of their promising scheme. I used to snicker at the Focus Fusion [3] effort, but no longer. Compared to the big government programs, these three are on a shoestring, and they could be getting closer to finding out if they are on the right track.

What if they fail? Should we stop trying? We should try ten times harder ... a hundred times harder. There is nothing as important as finding the power source for our future. We can't go back to 1800. We can't allow ourselves to accept limits.

It is great fun watching a new wave of space entrepreneurs take the bull by the horns and build their own rockets [4]. We're on the cusp of taking over the solar system. The Great Truth that my old boss, Dr. Bussard [5], realized is that only nuclear energy gives us the power to do this. So, do you believe in the future of human civilization, or do you believe we must accept limits?

Links:
[1] http://www.tomligon.com/ATE/Whitepapers/SolarThermal.pdf
[2] http://www.alternative-energy-action-now.com/tri-alpha-energy.html
[3] http://focusfusion.org/
[4] http://www.spacex.com/
[5] http://www.askmar.com/Fusion.html