

## Re: World's First Fuel Cell–Powered Train Locomotive Slated for 2008

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*From:* Ian St. John ([istjohn\\_at\\_noemail.ca](mailto:istjohn_at_noemail.ca))

*Date:* 08/12/04

Date: Thu, 12 Aug 2004 05:18:25 -0400

Stephen Sprunk wrote:

> "Ian St. John" <[istjohn@noemail.ca](mailto:istjohn@noemail.ca)> wrote in message  
> [news:TevSc.14860\\$a65.713212@news20.bellglobal.com...](mailto:news:TevSc.14860$a65.713212@news20.bellglobal.com...)  
>> *Even a single car ( 24 passenger weighing 7 tons ) can have a  
>> variation from +400 kw draw to –380 kw ( if regenerative braking is  
>> used to save 40% of power demands) See Figure 3.2 at  
>> <http://www.monorails.org/pdfs/Magnemotion.pdf> While passenger trains  
>> have lighter weight, the higher speed and acceleration compared to  
>> freight more than compensates. Just think what the draw would be for  
>> a simple 7 car passenger train ( Acela is 3 to 10 cars) with weights  
>> of about 65 tons per car  
>>*

[http://www.bombardier.com/index.jsp?id=1\\_0&lang=en&file=/en/1\\_0/1\\_10/1\\_10\\_2\\_2.jsp%3Fmenu%3D1\\_1](http://www.bombardier.com/index.jsp?id=1_0&lang=en&file=/en/1_0/1_10/1_10_2_2.jsp%3Fmenu%3D1_1)

>>  
>> *It would probably have a erratic draw of about +/- 6 megawatts and  
>> if you have more than one active on a track...*  
>  
> *Acela draws a peak of 9.2MW during accelerationm but during  
> deceleration it feeds a similar amount of power back into the grid;  
> average consumption is probably under 3MW. With states like  
> California having a total power output in the tens of GW, this is a  
> rounding error even with dozens of trains running.*

I was being conservative. You are just illustrating the large demand loads and surges that are produced by electric trains. And the 'average' is like saying that my feet are in the freezer while my head is in the oven but 'on average' I'm comfortable.

The large VARIATIONS in load are the problem for the grid, you dimshit. You cannot suddenly 'switch on' 9 MW without having it noticed and the power grid is NOT designed for such rapid changes in demand and surge. It requires a lot more 'spinning reserve' that adds costs without producing revenues as well major control systems to keep the grid stable.

>  
> *A single modern powerplant has an output in the 500–1500MW range;*

- > *that's more than enough to feed all the HSR in a state with enough*
- > *left over to power a decent–sized city.*

Are you congenitally stupid or did you study?

- >
- >>> *Like you, I can't see a value for a traction engine that can pull a*
- >>> *train safely at above 100–MPH, without a very state–of–the–art track*
- >>> *bed that can support operations at such speeds (at least here in the*
- >>> *US, including the Northeast Corridor). Due to the physics involved,*
- >>> *I am of the opinion that to support very high–speed rail traffic*
- >>> *requires a "captive rail system" similar to that used on roller*
- >>> *coasters. To my knowledge, no such system has been implemented*
- >>> *anywhere in the world.*
- >>
- >> *Not sure if I agree there. That might be going a bit far. But you*
- >> *definitely*
- >> *need a high stability roadbed, with wide curves, no level crossing,*
- >> *and continuous rail, separate from the freight lines. At least, that*
- >> *is what it*
- >> *took in Europe.*
- >
- > *The NEC has no grade crossings and a solid roadbed; it just has too*
- > *many curves (hence tilting trains) and the junctions need upgrading*
- > *so that through trains don't have to slow down.*

So? The fact that you need a complicated system to deal with the rapid curves just illustrates one of my points and you have confirmed the others from the fact that the NEC developed them.

- >
- > *Europe built brand–new tracks for most of their HSR routes, and if we*
- > *want the same speeds we'll end up doing the same.*

NOW you support my point. However, you seem to miss the fact that the NEC, despite having the only HSR system in use, make adapted the train to the existing tracks rather than creating a new corridor. It is just one indication that the U.S. is not moving towards HSR systems.

- > *But that takes a*
- > *lot more money than Amtrak has available -- they can't even cover the*
- > *operating costs of most of their routes, much less pay for captial*
- > *improvements.*

Poor Americans. No stain on HSR but the U.S. will always be defeated on this issue. It takes too many parties cooperating instead of being at each others throats. Ergo the Europeans and Japanese have HSR but the U.S. is stalled in a 'competitive war' with the many parties either competing with rail or who would be affected by the HSR routes.

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