

New Energy Times

ITER STAFF: It is of the utmost importance, and I request, that this letter gets to Dr. Bigot personally.

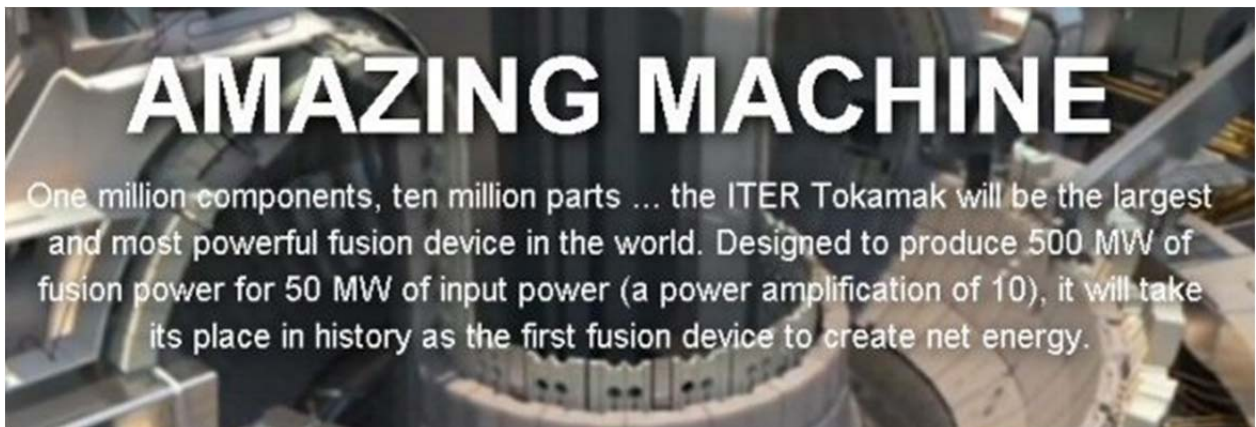
1 May, 2017

Bernard Bigot
Director General, ITER
Route de Vinon-sur-Verdon, CS 90 046
13067 St. Paul-lez-Durance (France)

Dear Dr. Bigot,

Information presented prominently on the ITER Web site has been misleading the public and the media for several years. I brought this to the attention of Laban Coblentz several months ago and nothing has changed. This causes me great concern.

The two images below are the primary source of the confusion that exists among the public and much of the news media.



"Amazing Machine," One of the Four Home Page Images

1) Produce 500 MW of fusion power

The world record for fusion power is held by the European tokamak JET. In 1997, JET produced 16 MW of fusion power from a total input power of 24 MW ($Q=0.67$). ITER is designed to produce a ten-fold return on energy ($Q=10$), or **500 MW** of fusion power from 50 MW of input power. ITER will not capture the energy it produces as electricity, but—as first of all fusion experiments in history to produce net energy gain—it will prepare the way for the machine that can.

Answer #1 to "What Will ITER Do?" from the <https://www.iter.org/proj/inafewlines> Web page.

When members of the public and news media who are not specialists in nuclear science see this information, they interpret the ITER statements in ways that conflict with the facts. I will show you three examples from just American news media. These journalists are certainly not alone; there are many other examples of this mistake in the news media. I'm sure the same thing is happening in news media published in other languages as well.

1. Henry Fountain, *New York Times*, March 27, 2017, "ITER will benefit from its larger size, and will produce about 10 times more power than it consumes."
2. Geoff Brumfiel, *Scientific American*, June, 2012, "It will generate around 500 megawatts of power, 10 times the energy needed to run it."
3. Nathaniel Scharping, *Discover* magazine, March 23, 2016, "ITER is projected to produce 500 MW of power with an input of 50 MW."

As you know, the statements, as written, which were not accompanied by any detailed disclaimers, are false and grossly misrepresent what ITER will do. These are experienced journalists, writing for highly reputable news media. I do not fault the journalists. The fault, I regret to inform you, stems from the misleading statements on your Web site.

The public's understanding, as represented by the Wikipedia page on ITER, also reflects the mistaken understanding.

The ITER project aims to make the long-awaited transition from experimental studies of plasma physics to full-scale electricity-producing fusion power stations. The ITER fusion reactor has been designed to produce **500 megawatts** of output power for around twenty minutes while needing **50 megawatts** to operate.

ITER - Wikipedia

<https://en.wikipedia.org/wiki/ITER>

Of course, you and I both know that the power requirements for the ITER reactor and the power requirements for heating the plasma for ITER are two very different numbers. And this is where and how the ITER Web site has been misleading people. And, because very little has changed on the ITER Web site since my extensive conversations with Coblenz about this in January, it continues to mislead people.

There are three primary reasons why your Web site misleads people.

1. You fail to make the distinction between reactor power requirements and plasma heating power requirements clear.
2. You fail to inform readers that sometimes when you use the term "fusion power" you are using it in the general sense, and sometimes you use it to represent the difference between plasma heat output and plasma heat input.
3. You fail to define in your glossary this crucial and secondary meaning of "fusion power," thus making it virtually impossible for a non-expert to realize that sometimes your use of "fusion power" doesn't mean what they think it means.

Each of these items, and more so, the combination of all three, indicate that the people responsible for the public communication of ITER have failed tremendously to accurately and correctly communicate the fundamental facts about ITER to the public and the news media.

While an amplification of plasma heat power output (500 MW) to plasma heat power input (50 MW) of 10 certainly accurately and correctly characterizes the primary goal of ITER, the common mistaken belief among many journalists and the public, as shown above, is that these values apply to the entire reactor.

We know that the power requirements for the ITER reactor, including all essential reactor systems, will consume far more than 50 MW. Based on the information given on your Web page <https://www.iter.org/mach/PowerSupply>, the power requirements for the reactor will be about 510 MW. This number comes from subtracting 110 MW from 620 MW. The former is the required power input for facilities alone, the latter is required power for facilities plus the reactor during peak plasma operation. Naturally, the 510 MW value does not include extraneous power requirements for things like administrative offices or streetlights.

Additionally, I understand that the projected achievements of ITER are based on power values rather than energy values. Therefore, the introduction of any factor of time would require a comparison of data in units of energy, and would require such on both sides of the output/input equation, and would require the inclusion

of the full time-series data from the start to the end to be scientifically precise and meaningful.

Secondarily, I understand that the current goal of ITER is to achieve this 10x amplification of plasma heating power rather than amplification of reactor power. There is an image on your website that says the goal of ITER is "harnessing fusion's power." Therefore, that statement as well, is inaccurate and misleading and should be revised to reflect the fact that the goal strictly regards plasma power amplification, not reactor power amplification.



"Unlimited Energy," One of the Four Home Page Images

I would appreciate hearing from you and of your intentions to correct the public communication of your important project. Please feel free to e-mail me at steven3@newenergytimes.com.

Thank you and kind regards,

Steven

Steven Krivit
Publisher and Senior Editor, *New Energy Times*