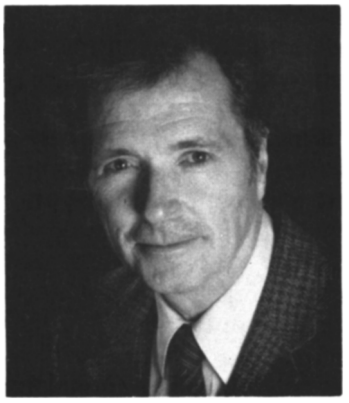
COMMENTS



Technology and development have undergone a number of changes in recent years, as I am sure the readers of *Fusion Technology* (*FT*) are well aware. In magnetic confinement research, for the first time, there have been important deuterium-tritium burns in both the Joint European Torus (JET) and the Tokamak Fusion Test Reactor (TFTR). These experiments signal the transition to studies of the physics of burning plasmas heated by alpha particles. In inertial confinement fusion (ICF), there has been continued progress with higher compression densities and neutron yields from target experiments by using the large laser facilities at Lawrence Livermore National Laboratory (LLNL), Osaka University, and the University of Rochester. Based on this steady progress, both communities, magnetic and inertial, are well along the path to designs for major next-step facilities.

In magnetic confinement, the plans for the final design and construction of the International Thermonuclear Experimental Reactor (ITER) are well known and widely publicized. ITER involves four major partners: the United States, the European Community, Russia, and Japan. Sometimes, ITER is likened to the Supercollider project (SSC), but there are some important differences. For one, the four international ITER partners have been working together, collaborating both technically and financially, for some years now. Thus, this is not a case where the United States began a project and *then* asked others for help. On the other hand, there are some similarities, the most obvious being that ITER, like the SSC, has a projected cost that amounts to many billions of dollars.

While the international involvement in ITER is widely acknowledged, a key issue that it, as well as all fusion research and development (R&D) in general must face, is the question of urgency: How quickly is fusion needed, and what are its advantages over other future energy sources? The answer, i.e., the sense of urgency, varies considerably among the partner nations, depending on their specific situation relative to their access to other energy sources, especially fossil fuels.

The corresponding development in ICF is the proposal to build a next-step laser facility at a site yet to be determined, but quite possibly at LLNL, to replace NOVA. Called the National Ignition Facility (NIF), this large laser would provide sufficient energy on target to get into a burn propagation regime, providing target implosions with significant fusion energy gain. A major

change that recently occurred in this field was the announcement by the U.S. Department of Energy/Department of Defense that a reduction in classification related to ICF target design had finally been authorized. Indeed, as a result, the NIF facility has been proposed as a user facility not only for U.S. participants but also for international participants, sharing experimental time on the device. Further, the announcement of reduced classification has caused renewed enthusiasm for a possible international laser facility, perhaps in Europe. Those supporting this concept have suggested that the community should use the ITER organization as a model and strive for a similar international ICF project. However, it is premature to predict what directions these developments are going to take. In addition to the challenge of raising the huge funds needed for such facilities, classification, while less of an issue, still remains a concern.

What do all of these developments have to do with *FT*? First, the development of these large facilities emphasizes that the direction of fusion R&D is gradually changing. Much of the next-step work will be dominated by design activities devoted to these new facilities and supporting research. Certainly, in the past, *FT* received some papers and had special issues devoted to these areas. Clearly, this trend will accelerate as these projects receive added emphasis in the future. Meanwhile, other R&D activities that deal with areas not directly supporting these main projects are already receiving much less funding. Because of this shift in directions, somewhat less diversity in papers coming to *FT* can be expected. That is not to say that we want to discourage papers not related to the ITER or NIF facilities. To the contrary, *FT* staff continues to welcome all papers and subjects related to fusion technology. Further, it has always been *FT* policy to ask readers to assist the Editor and the Advisory Board in identifying key areas where special issues, review papers, and so on should be focused. I hope that with the help of our readers and authors, a healthy diversity of topics will continue and that we will be able to count on your assistance as readers and as authors to maintain *FT* as a vanguard for communication in this exciting new era of fusion.

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