



American Nuclear Society

Georgia Section

Leadership message

It has been a very active summer in energy news and we're looking forward to hearing what happens this fall. The war in Ukraine and the current energy crisis has been a catalyst for positive developments in nuclear power by both government and private organizations.

First of all, we are very excited that in our own backyard, a fuel loading permit has been issued by the regulator for the new AP1000 unit at the Vogtle 3 site. We look forward to hearing more details at our upcoming quarterly meeting with our speaker Brad Adams from Southern Nuclear.

Second, there has been a flurry of announcements by the SMR and advanced reactor vendors identifying regulator certification progress and agreements with utilities for site specific design work. NuScale is the first ever small modular reactor (SMR) to receive NRC design approval and GE Hitachi's BWRX-300 SMR was selected by SaskPower for deployment in Saskatchewan.

Finally, looking across the pond, the acute energy crisis looming for this winter has motivated the Green party in Germany to keep their existing nuclear plants Isar 2, Emsland and Neckarwestheim 2 operating past the end of this year.

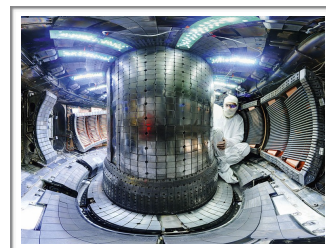
In our recent memory, there have never been so many positive signals for nuclear energy and its importance for a balanced generation portfolio. We're excited! What about you?

Cheers,

Your ANS GA Section Leadership Team:

Juan Villarreal, Dom Napolitano, Andrew Hummel, Ronald Borel and Dan Glassic

Nuclear Fusion Update by Dr. Dom Napolitano



It was my great pleasure to attend the 2022 ANS annual meeting this past June in Anaheim, Calif. This particular meeting had the usual ANS division sessions in I&C, M&C, PRA, RPSD, D&D, etc., but also covered three embedded topical meetings which were Advances in Thermal Hydraulics, Nuclear Criticality Safety and Technology of Fusion Energy (TOFE).

My primary reason for traveling to the conference was to attend the TOFE technical sessions for my client Commonwealth Fusion Systems (CFS) and to learn more about fusion technology. The TOFE sessions were extremely well attended by the US national labs and the international community. [See link here.](#)

Many aspects of fusion technology were discussed including....

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Upcoming meeting at Georgia Tech, September, 14, 2022, 6 p.m.

Join us to hear Brad Adams, Vice President of Technical Compliance, Alvin W. Vogtle Electric Generating Plant speak about the ***"Digital Transformation of the Southern Nuclear Operating Fleet."*** Brad is vice-president of technical compliance at Plant Vogtle, Units 3 & 4. Prior to this role, Brad served as engineering vice president for Southern Nuclear Operating Company. He is a member of the Southern Nuclear management council. We look forward to welcoming Brad to our event. [Click here to register now!](#)



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the status of the International Thermonuclear Experimental Reactor (ITER), recent fusion milestones at the Joint European Torus (JET) and at the National Ignition Facility (NIF). In particular, the presentation by Dr. Omar Hurricane from NIF was an excellent discussion on the problems (technical and political) and solutions to using laser beams to implode a pellet of Deuterium and Tritium (DT) the size of a pencil eraser. Note the laser facility producing the beams covers the area of two football fields. It took ten years of fine tuning the lasers and the target to achieve the Lawson criterion or break even. This approach to fusion is truly angels dancing on the head of a pin.

Other significant talks were given on plasma physics, neutronics simulations, materials damage due to 14 MeV neutrons produced in DT fusion, activation, and radioactive waste management for fusion reactors. It is important to note that the estimated amount of activated low level waste from a commercial fusion reactor is significant and much greater than the amount of high-level waste generated from fission reactors. This is a significant issue on the commercial viability of fusion power generation.

Commercial nuclear fusion is still decades away. The technology is very challenging, but so cool in many ways. I've come to appreciate this in my work with CFS on the SPARC device which is currently under construction in Devon, Massachusetts. — **Dr. Dominic Napolitano**



Which country is one of the most energy secure in Europe?

During my recent visit to France, I visited EDF's Cattenom Nuclear Power Station located in eastern side of the country near the border with Luxembourg and Germany. Cattenom is the 12th largest nuclear plant in the world, with 4 reactors each having an electric output of 1,300 MW. The electricity produced by this power plant provides energy to about 7 million homes each year. The power plant is currently undergoing maintenance which is the normal process during the summer season.

As a result of the Ukrainian crisis, Nuclear Power has become an important source not only of clean electric power but also of energy security. And France is better prepared to manage the impact of gas and oil supply curtailment resulting from the Russian invasion because almost 70% of its electric power comes from nuclear power plants located within its borders, like Cattenom.

Realizing this strategic energy advantage, President Emmanuel Macron recently announced a major buildup of France's existing nuclear program, pledging to build up to 14 new-generation reactors and a fleet of small nuclear plants.

France is not the only country in Europe that has embraced nuclear power as key element for energy security and for reducing greenhouse gases. In Eastern Europe, Romania, Czech Republic, Slovakia and Hungary are all beginning or expanding their nuclear capabilities.

The Cattenom Nuclear Power Station has delivered safe and clean electric power since the late 1970's. Today it is also a key part of France's energy security strategy in response to the Ukrainian crisis.

France's unique energy security strategy is not without challenges. The discovery of stress corrosion cracking on the safety injection system at the Civaux Unit 1 station has driven the need for an accelerated program to inspect and repair other affected units before the winter peak demand season. — **Juan Villarreal**

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