

D THD Strategic Plan

ANS THERMAL HYDRAULICS DIVISION 2026-2031 Strategic Plan

The primary mission of the Thermal Hydraulics Division (THD) is to advance Thermal- Hydraulic engineering and science related to the nuclear power industry. It is also the goal of the THD to promote technology exchanges and social activities in the nuclear thermal- hydraulic community through various conferences, topical meetings, and webinars. In accomplishing this mission, the THD has the mission to promote publications and presentations relating to nuclear thermal hydraulics high-quality technical and to establish, stimulate, and maintain quality technical and professional approaches in the areas of nuclear thermal hydraulics. The last comprehensive Operational Plan was submitted to the Professional Division Committee (PDC) in 2012 and updated in 2016. It is our understanding that there is now no such requirement. This is a voluntary effort on the part of the division. This document outlines a 5-year (2026-2031) Operational Plan, which should not be considered a binding document, but rather a guide. It should be reviewed and updated as needed by the THD Executive Committee (EC), as appropriate, every year. This document is reviewed and updated in 2025-2026 to adapt necessary changes for the growth and development of THD.

Mission

To establish, stimulate, and maintain quality technical and professional approaches in all areas of nuclear thermal hydraulics. In furtherance of this mission, the Division shall devote itself specifically to:

- The advancement and dissemination of knowledge of thermal and hydraulic phenomena as they pertain to the steady-state design or transient performance of equipment in nuclear power plants and other segments of the nuclear fuel cycle.
- Aid in the integration and dissemination of thermal hydraulics information developed in research and design programs and from experience with operating nuclear reactors.
- Promote effective interchange of thermal hydraulics information among the many professional groups and organizations participating in the development and application of nuclear reactor technology.
- Provide a mechanism for interaction between the nuclear industry and regulatory groups.
- Enhance nuclear industry workforce development through support of student conferences and scholarships.

5-Year Goals

The Division has the following goals for the period 2026-2031:

- Maintain the high-quality topical meetings sponsored by the division, with focus, in order of priority, on NURETH, NUTHOS, ATH, and ANS national meetings.
- Develop additional technical exchange programs, such as webinars that leverage the increase of online professional activity in recent years.
- Promote the value of membership of the division to its members, in particular, those who do not attend the above technical meetings regularly.
- Innovate the communication approach of the division and make it consistent with the expectations of a changing demographic.
- Increase membership in the division, in particular with the under-represented groups, internationally and in industry.
- Establish a pipeline for the future leadership of the division, investing in young members and students

Division Finance

THD remains in a strong financial position. We expect to conclude 2025 with a balance of approximately \$90,000. We are in the process of transferring a portion of this balance into a new student fund so that it earns interest as do our scholarship funds.

All Scholarship and Award funds remain in a strong position with enough funds to cover foreseeable disbursements. Each fund has increased over the past couple of years and continue to grow possibly allowing for increases in future disbursements. The following table provides a recent snapshot of the fund balances.

Table 2: Award Funds Budget for 2024

Award	TAA	Service	Hochreiter	Esposito	Seghal
Balance 12/31/2023	\$48,480	\$20,816	\$79,430	\$74,199	\$20,132
Income					
Investment	\$4,712	\$2,023	\$7,721	\$7,212	\$1,957
Other					
Total Income	\$4,712	\$2,023	\$7,721	\$7,212	\$1,957
Expenses					
Awards			\$(3,000)	\$(3,000)	\$(2,000)
Plaques	\$(221)	\$(118)			\$(118)
other expenses					
Net change	\$4,491	\$1,905	\$4,721	\$4,212	\$(161)
Balance 12/31/2024	\$52,971	\$22,721	\$84,151	\$78,411	\$19,971

The Division's financial requirements are usually met through income from Topical Meetings, ANS Member Allocation, and investment growth. Success in meeting financial obligations and Division objectives depend on careful Topical Meeting planning as well as monitoring the overall financial health of the investments.

Membership

As of late 2025, the Division membership has remained relatively stable at approximately 1100 members. This number represents an increase from a low point of 919 in 2019 although it is less than the all time high of 1251 in 2016. During the period 2020 to 2024 there were fluctuations possibly due to the Covid pandemic, but by 2025 membership returned to above 1000 members. The figure below shows the trend in membership over the last five years.



Approximately 40% of the members identify themselves as a nuclear engineer and roughly 16% are students. Most of our members are young (in the age group of 20-40). The split between members from the United States and international has remained about the same over the past few years with our international continent at about 10%. ANS has clearly reached an international audience and our international members are encouraged to invite new members to meetings.

We intend to continue this gradual increase in THD membership over the next 5 year period. Further increases are reasonable given the significant interest in nuclear technology and development of a variety of nuclear reactor systems. However, the division hopes to increase membership by attracting more industrial and international practitioners. Increasing young and new professionals as well as women and underrepresented groups remains a focus as well.

While overall membership is an important metric of Division health, it is vital to our long-term goals of developing the human resources for governance and technical program activities. Student and young member participation is needed to provide the technical depth of the Division for supporting conferences and meetings as well as a sufficient number of members for Division governance.

International Engagement

Interest in nuclear technology and thermal-hydraulics is world-wide as many nations currently operate or plan on new nuclear units. As mentioned in the section on membership, increasing our international membership is an objective. Increased collaboration with international

organizations and coordination of common interests is also a benefit to all involved. To this end a new initiative was launched in 2025 with the mission to establish a global network of nuclear thermal hydraulics experts, to align activities and share resources. The initiative is called Global Alliance of Thermal Hydraulics Education, Research and Industrial NetworkinG (GATHERING).¹ The alliance is not intended to replace existing national or regional thermal hydraulics divisions and communities, rather it should serve as a platform to enhance interaction and communication between the various existing thermal hydraulics networks.

As part of our five year plan, we intend to participate in GATHERING and enhance communication between organizations. This cooperative effort is expected to help guide the timing and location of future meetings such as ATH and NUTHOS so they do not conflict with each other.

The Technical Program Committee (TPC) of the Division has been a sustained source of leadership that has enabled the Division to organize and conduct technical sessions at both Topical and National meetings. The THD hosted NURETH-20 in 2023 and will be hosting NURETH-22 in 2027. In addition, the TPC provides support for ANS national meetings, NUTHOS, and the embedded ATH.

The Division intends to continue its support for Topical and National meetings and look forward to NURETH-22 in 2027 (and possibly NURETH-24 in 2031), and the Advances in ThermalHydraulics (ATH) meetings in 2026 and 2028. The ATH will be an embedded topical meeting in 2026 at the ANS Winter meeting. We note however, because ANS will no longer hold its Summer annual meeting after 2027 the ATH will no longer be an embedded topical meeting. We anticipate ATH be held in Europe in 2028 and possibly alternate between North America and Europe. The Division intends to work with GATHERING to coordinate ATH and NUTHOS.

Success Metrics

Progress can be measured through several metrics. While subjective, these are proposed to determine how well the Division is meeting our general objectives. These metrics are:

1. The sum of papers published in the last NURETH, ATH, NUTHOS and the ANS national meetings held over the previous two years. This will provide a two-year summary of papers published and “balance” the statistic since NURETH, NUTHOS, and ATH are held every other year. We strive to increase this total sum.
2. The membership as of December each year will provide a quick estimate of Division size. Our goal is that the membership exceeds 1000 at the end of 2025 and remain at that level or gradually increases. Of more interest is tracking active membership by the number of people doing reviews, chairing or organizing technical sessions, and first-time session chairs.
3. Communication will be maintained by continuing our distribution of 2 newsletters per year, holding bi-annual Executive Committee and Technical Program Committee meetings and regular Team Leadership meetings.

4. Student and young member participation will be tracked through membership with a goal of keeping the student membership above 20% of the total membership.
5. International member participation will be tracked with the goal of exceeding 15% of the total membership. In addition, international membership on the Executive Committee will be maintained at roughly 20% (4 members) or more.

THD Annual Plan

The THD annual plan is a summary of tasks performed each year on a regular basis. These are as follows:

1. Organize at least five sessions or ATH embedded topical at each ANS national meeting.
2. Support the next NURETH topical meeting.
3. Support the next NUTHOS topical meeting.
4. Support the Young Professional Research Competition.
5. Implement budget and spending plan for sustainable THD operation including costs for THD awards.
6. Encourage publication of THD member's papers in ANS technical journals and other journals devoted to TH topics or a recent THD co-sponsored topical meeting.
7. Contribute financial support to ANS National Student Conference
8. Contribute to NEED/ANS scholarships.
9. Contribute to ANS for student travel support to national meetings.
10. Select the recipient of the THD Awards (Sehgal, TAA, Service, NURETH Fellows)
11. Present THD Best Paper Award (BPA) to deserving candidate from past year.
12. Issue two THD newsletters
13. Use broadcast e-mail to communicate upcoming THD special sessions and topical meetings.
14. Update succession plan for THD governance.
15. Update THD web page.

List of Strategic Objectives:

- Maintain or increase quality timeliness of the technical content of the division, with a particular focus on advanced reactor thermal-hydraulics.
- Increase EC member activity assigning specific outreach task. The chair shall be responsible for these assignments in coordination with EC members.

- Identify representatives in EC and/or create a position as industrial liaison or leading special function committee. This EC member would be organizing, in collaboration with other division members, functions dedicated to outreach. These may include: Special Sessions for industrial members, social gatherings, special events, invited industrial speakers.
- Increase international collaboration by nominating foreign members to the THD Executive Committee and by appointing non-U.S. members to the THD Technical Program Committee. International EC members are to be tasked to increase partnership with foreign societies and stimulate membership.
- Develop joint activities with international societies that go beyond co-sponsorship of meetings.
- Increase online activities of the division, including webinars with a regular schedule, and use them to actively recruit hosts. The webinars should target audiences of particular relevance, in particular, industry speakers.
- Appoint and support a YMG liaison.
- Nominate at least one student member and one young member to serve or have one student member serving on THD Executive Committee. These EC members (and the YMG liaison if she/he/they is not a member of EC) are to organize a specific activity EACH targeting young members and EC members.
- Develop outreach to university department concerning thermal-hydraulics research and THD.
- Advertise the scholarships of the Division broadly.
- Empower Membership committee to develop strategies to improve value for the division members.
- Develop an effective communication strategy for THD, including a social media presence.
- Support ANS Student National Conferences and student attendance at National and Topical Meetings by making contributions from THD funds. Aggressively advertise the activities of the division at ANS Student Conferences with at least one EC member representing the division.
- Support the Young Member Group by serving as Technical Division sponsor of YMG-organized technical sessions.
- Develop proposal to use funding in the division (and ANS as a whole) for mission support activities.
- Develop fundraising to fund activities of the division.