

ANS THERMAL HYDRAULICS DIVISION 2022-2027 Operational 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 high-quality technical publications and presentations relating to nuclear thermal hydraulics 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 (2022-2027) 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.

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 basis for interaction between the nuclear industry and regulatory groups.

5-year Goals:

The Division has the following goals for the period 2022-2027:

- Maintain the high-quality topical meetings offered 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. We seek to significantly increase the membership of the division in 5 years (target goal = 25%).
- Establish a pipeline for the leadership of the division, investing on young members and students.

Trends:

- After a decade of sustained growth of the membership of the division that has brought us to over 1200 members, the last two years have seen a significant decrease. In 2021, the membership of the division is at 971.
- Prior to the COVID pandemic, non-U.S. participation in the division-sponsored topical meetings (NURETH, NOTHOS, ATH, etc.) continued to be strong. However, the international membership had not captured the benefit from the growth of the international conference participants.
- While the THD continues to contribute high-quality technical papers to both Topical and National meetings and represents a significant fraction of the papers that are contributed to National Meetings, due to the COVID-19 pandemic, the THD has not hosted a topical meeting since November 2019 (ATH'20 and NUTHOS-13 to be held in 2020 were both cancelled).

Resource Requirements:

- The Division's financial requirements are usually met through income from Topical Meetings and the ANS Member Allocation. However, no topical meeting has been held since November 2019.
- The Thermal Hydraulics Division enjoys a continuing good supply of human resources for governance and technical program activities. However, student and young member participations need to be stimulated as communication with these groups is increasingly challenging. The Officer/Committee structure and Succession Plan are included in Appendix A.

Proposed Metrics corresponding to goals:

- *To track program activity.* Sum of papers published in the last NURETH, ATH, NUTHOS and the past four ANS national meetings. This value should be computed every year and track upwards. Variations of +/-10% each year should be considered normal but the overall trend over five years should be positive and ideally surpass 5%.
- *To track program quality.* Sum of papers published in special issues as a fraction of the papers published in the topical meeting as a whole (previous metric). This number should keep constant (yearly variations of +/-5% should be considered normal) or track upwards after five years.
- *Total membership.* The membership as measured at a fixed point in time (it varies within the year). It should trend upward year by year. The ambitious goal of doubling the division membership is set for 2027.
- *Improved communication.* Regular (yearly) surveys should be conducted evaluating division communications. Surveys results should be trending upwards in time. An alternative could be social media participation metrics.
- *Student and young member participation.* Proactive plans should be implemented to promote the number of Young members and student members' participation, especially, in specific activities organized by the division.
- *International member participation.* The total number of international member participation in the activities of the division should trend upwards.

THD One-Year Tactical Plan for 2021 (Partial)

	<u>Status</u>
1. Nominate a THD representative for ANS Young Member Group.	Complete.
2. Organize at least five sessions or ATH embedded topical at each national meeting	Complete.
3. Support NURETH topical meeting (biannually)	Complete.
4. Support NUTHOS topical meeting (biannually)	Complete.
5. Support the Young Professional Research Competition (annually)	Complete.
6. Implement budget and spending plan for sustainable THD operation	Complete.
7. 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	Complete. Special issues of ATH'20.
8. Contribute to ANS National Student Conference	Complete for 2022 student conference.
9. Contribute to NEED/ANS scholarships	Complete.
10. Contribute to ANS for student travel support to national meetings	None this year due to uncertainty.
11. Cover ANS THD Honors and Awards costs as needed	Complete.
12. Select the recipient of the THD Awards (Sehgal, TAA, Service, NURETH Fellows).	Complete.
13. Present THD Best Paper Award (BPA) to deserving candidate from past year	None planned this year.
14. Issue two THD newsletters	Complete.
15. Use broadcast e-mail to communicate upcoming THD special sessions and topical meetings	Complete.
16. Update succession plan for THD governance	Complete.
17. Update THD web page.	Complete.

THD Five-Year Strategic Plan for 2022-2027

List of strategic activities:

- 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 tasks. 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.

APPENDIX A

THD Office/Committee Structure and Succession Plan

These names are tentative. Officers and committee chairs/vice-chairs must be nominated by the nominating committee and approved by the Executive Committee, according to the bylaws and rules of the division.

<u>Office⁽¹⁾</u>	<u>2021-2022</u>	<u>2022-2023</u>	<u>2023-2024</u>	<u>2024-2025</u>	<u>2025-2026</u>
Chair	E. Merzari	B. W. Yang	A. Manera	I. Bolotnov	S. Bajorek
Vice-Chair	B. W. Yang	A. Manera	I. Bolotnov	S. Bajorek	
Secretary	A. Manera	I. Bolotnov	S. Bajorek		D. Shaver
Treasurer	I. Bolotnov	S. Bajorek		D. Shaver	
<u>Committee</u>					
Technical Program					
Chair	I. Bolotnov	D. Shaver	D. Shaver	D. Shaver	I. Gutowzka
Ass. Chair	D. Shaver	I. Gutowzka	I. Gutowzka	I. Gutowzka	
Secretary	A. Manera	I. Bolotnov	S. Bajorek		D. Shaver
Honors & Awards ⁽²⁾					
Chair	X. Sun	X. Sun	X. Sun		
Vice-chair	W. D. Pointer	C. H. Song	W. Marcum	E. Merzari	B.W. Yang
Web Page	M. Delgado/ T. Howard	T. Howard	T. Howard		
Newsletter	B. W. Yang	A. Manera	I. Bolotnov	S. Bajorek	
Nominating ⁽³⁾	W. Marcum	E. Merzari	B. W. Yang	A. Manera	I. Bolotnov
Membership	M. Zimmer	M. Zimmer	M. Zimmer		
Scholarship	D. Pointer	D. Pointer	D. Pointer		
Conference Screening	F.B. Cheung	F.B. Cheung	F.B. Cheung	F.B. Cheung	

(1) Candidates selected by Nominating Committee, preferably selected from the current Executive Committee or Technical Program Committee.

(2) This committee includes the most recent four EC chairs of the THD and three members that are elected by the Nominating Committee.

(3) This committee includes the immediate past division chair, the current division chair, and the current vice-chair of the THD. It is chaired by the immediate past division chair.