



**30TH INTERNATIONAL TOWING TANK CONFERENCE
22–27 SEPTEMBER 2024 | HOBART TASMANIA AUSTRALIA**

Report of the Executive Committee

1.1 INTRODUCTION

The roles and responsibilities of the Executive Committee are defined in the ITTC Rules and include:

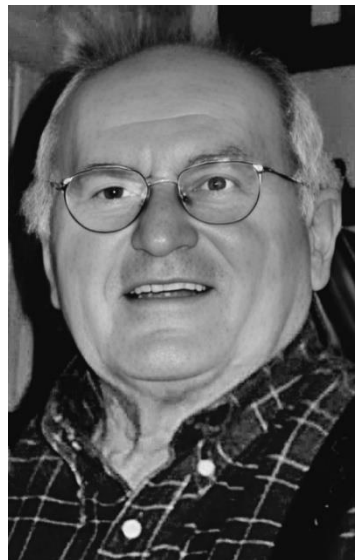
- Implementing the decisions of the Full Conference
- Representing ITTC between Conferences
- Appointing chairmen and members of Technical Committees and Groups
- Replacing members of technical committees and groups as necessary between Conferences
- Accepting new member organisations to the ITTC
- Appointing members of the Advisory Council and reviewing the members on a regular basis
- Appointing the ITTC Secretary
- Managing the finances
- Approving the host, arrangements and associated costs and registration fees for the Conference
- Reporting on its activities to the Full Conference

During the 30th ITTC, the Executive Committee has performed its duties in accordance with the above. The Executive Committee has worked together with the Advisory Council on the presentation of recommendations to be adopted by the 30th Full Conference.

2. OBITUARIES

2.1 Dr. Ulderico Bulgarelli

Dr. Ulderico Bulgarelli, widely known as Paolo, an applied mathematician deeply involved in ship hydrodynamics for part of his life, passed away on January 22nd, 2024.



Paolo started his scientific career in the late 1960s, at the “Mauro Picone” Institute for Calculus Applications, National Research Council of Italy (CNR). There he had fruitful cooperation with leading scientists in numerical analysis and scientific computing, followed, in the 1970s, by long term scholarships at prestigious institutions abroad, like the Mathematical Institute of the Polish Academy of Sciences, Warsaw, Poland, the Department of Computer Sciences, University of Wisconsin, Madison, USA, and the Department of Mathematics, University of Texas, Arlington, USA.

In the 1980s, his teaching activity in mathematics extended to fluid mechanics, starting with a course in computational fluid dynamics for PhD students at the University of L'Aquila. It was the initial stage for the development of a mathematical-numerical modelling research group for fluid dynamics that will change the course of ship hydrodynamics in Italy. In fact, with the advice and support of Prof. Renzo Piva, University of Rome La Sapienza, in 1986 Paolo moved to INSEAN, the so-called “Naval Tank”, the national ship model basin. The activities of the institute were then limited to conventional model testing of naval and commercial vessels. There, with little funding by the Ministry of Transport, Paolo started to set up a research

group that, in few years, made INSEAN a worldwide recognised leading institution in ship hydrodynamic research: they were “on the map”, as David Taylor director, Bill Morgan, once said.

Paolo has long been active in the ITTC community, serving in technical activities (he was a member of the Resistance and Flow Committee in the 19th, 20th and 21st ITTC, of the Resistance Committee in the 22nd ITTC) and on governance bodies (as a member of the Executive Committee and Advisory Council in the 24th, 25th and 26th ITTC).

Paolo retired in 2009. On 1st January 2011, INSEAN became part of the CNR (where it all started fifty years earlier), subsequently taking its current name “Institute of Marine Engineering” (INM).

Paolo was a scientific father for many researchers: he asked for the best and, at the same time, encouraged us to look at the “pieces of the puzzle that remain”. He always invited, as Nobel Prize winner Elias Canetti said: “Don't always get to the end. There's a lot in between!”.

2.2 Prof. Knut Minsaas



Knut Minsaas was born in Trondheim, Norway, on December 17, 1936. He passed away on March 12, 2022, at the age of 85.

Completing his education in Naval Architecture at the Norwegian University of Science and Technology in 1961, Knut Minsaas

conducted his master's thesis at the Ship Model Basin in Trondheim (now SINTEF Ocean), focusing on ducted propellers. The following year, he began his employment at the same institution. Throughout his professional life, Knut Minsaas diligently engaged in research and development concerning resistance and propulsion systems for ships and high-speed vessels.

In 1967, his compendium "Propeller Theory" was published, later recognized as a seminal work within SINTEF Ocean. Subsequently, he contributed to numerous scientific studies and publications. In 1997, Knut Minsaas commenced his tenure as a Professor in ship hydrodynamics at the Norwegian University of Science and Technology, NTNU.

Internationally oriented in his professional endeavors, Knut Minsaas possessed an exceptional grasp of the scientific literature in his field, often reaching far back in time. He actively participated in various international conferences and forums, notably the ITTC. Serving on the Cavitation Committee for the 18th and 19th ITTC (1984-1990) and as a member of the Waterjet Committee for the 21st ITTC (1993-1996).

He demonstrated a unique ability to apply theoretical principles in practical analysis and design. His contributions to the development of hydrofoil catamarans for Norwegian shipyards in the 1980s earned him SINTEF's research award.

Knut Minsaas will be deeply missed, particularly by his family and colleagues at SINTEF Ocean and NTNU. Renowned for his warm-hearted demeanor, ability to spread good cheer, and his unwavering dedication to his profession, he left an indelible mark. A curious individual with a keen interest in new ideas spanning technology, history, and politics, conversations with Knut were always enriching and engaging.

Kourosh Koushan on behalf of SINTEF Ocean

2.3 Prof. Shen Hong-cui



Prof. Shen Hong-cui, former technical director of China Ship Scientific Research Center (CSSRC), passed away at the age of 83 on January 25th 2023.

Born in Shanghai on September 19th 1940, Prof. Shen got his bachelor degree from Shanghai Jiaotong University in 1963. He joined the Ship Model Test Institute of China (later CSSRC) in the same year. He served as technical staff in the towing tank during his early career, and then worked as director of Ship Overall Performance Department of CSSRC. He was promoted to be technical director of CSSRC in 1993. He retired from CSSRC in 2005, but he was soon invited by CSSRC to be an adviser and he devoted himself to CSSRC until December 2022.

Since 1993, Prof. Shen had been a member of the 21st ITTC Resistance & Flow Committee. He joined the 22nd ITTC Executive Committee, representing East Asia. As local organizing committee chair of second half of 22nd ITTC Full Conference (Seoul/Shanghai), he hosted the conference events in China from September 9th to 11th, 1999. It was the first time that ITTC held its full conference in China. As representative of

CSSRC in ITTC, he joined the 23rd ITTC Advisory Council.

Prof. Shen Hong-cui was a very famous research scholar in hydrodynamics, especially in resistance and propulsion performance of ships, turbulence boundary layer theory and its application on underwater vehicles. He was granted Special Allowance by the State Council of China. He received seven National Science & Technology Awards. He was also a great tutor who had instructed 18 students for master's and Ph. D degrees.

We extend deepest condolences to Prof. Shen's family and mourn the loss of a great colleague.

Prof. He Chun-rong on behalf of

China Ship Scientific Research Center

2.4 Antonio Baquero Mayor

Antonio Baquero Mayor died in Madrid the 18th of February of 2023 at the age of 73.

Antonio, graduated of the Universidad Politécnica de Madrid (UPM-ETSIN), has been one of the most significant Naval Architects of the El Pardo Model Basin (CEHIPAR) and a long-time supporter of the ITTC and CRS community; from 1981 to 1990 he was a member of the ITTC Manoeuvring Committee and part of the Cooperative Research Ships (CRS) Steering Group at various periods from 1995 to 2003.

Antonio Baquero was the author of many rigorous technical papers yet easy-to-understand motivated by a strong academical vocation as he always arranged his work at the CEHIPAR tanks with university teaching within the UPM-ETSIN in Madrid and the United States.

Hard worker at CEHIPAR since 1979, he developed his professional activity within several departments, starting as head of the Manoeuvring Basin to later dedicate the main

part of his professional life to the Research and Development of Hydrodynamics.

At all the stages of his working life he was committed to promote the passion for hydrodynamics among young naval architects. His greatest legacy is the large group of well-prepared in hydrodynamics professionals he left behind and that will always miss him.

2.5 Jaakko Pylkkänen



Jaakko Pylkkänen was born in Helsinki in 1943 and died on 31st December 2021.

He was M.Sc. in Naval Architecture from Helsinki University of Technology 1968, and in 1977, he defended his doctoral thesis “A Theoretical Study of a Propeller with Skew and Rake, An Application of the Asymptotic Matching Technique.”

In 1991, he became professor in hydrodynamics at Helsinki University of Technology, and from 1984 to 2007, he was employed by the VTT Ship Laboratory as Senior Scientist.

In ITTC context, Jaakko was member of the Propulsion Committee of the 20th and 21st ITTC and Chairman of the same committee of the 22nd ITTC.

2.6 David Clarke

Dr David Clarke (BSc, PhD, DSc, Ceng, FRINA)



Dr David Clarke passed away on 29 August 2024 after a short illness in his hometown, South Shields, Northeast England. He was very well-known to many generations of ITTC members and delegates through his sterling contributions as the chairman, secretary and member of various Technical, Advisory and Executive committees.

He was born in 1938 in Sunderland. Following his DLC degree in Loughborough (1960), David obtained his BSc degree in Aeronautics at Imperial College, London (1961), and this was followed by a PhD degree (1976) in the field of Ship Manoeuvring and control from the same university as a part-time student, while he was employed by the British Ship Building Research Association (BSRA) in Wallsend, Newcastle upon Tyne. Before joining the BSRA in 1963, he worked for the Bristol Aircraft Company on the TSR2 project, which was followed by a short spell at Palmers Ship Yard.

Later, in his teaching career at Newcastle University, he obtained a certificate in Teaching and Learning in Higher Education (1997) as well as a distinguished DSc degree (2002) based on his invaluable contributions in the field of manoeuvring and control of ships. In addition to these academic qualifications, Dr Clarke also

had a CEng degree (1971), and he was accepted as a Fellow of the RINA (1980).

Dr Clarke joined the BSRA in 1963, where he became the Senior Manager of Hydrodynamics until 1992. During this period, he went through the transformation of the BSRA to British Maritime Technology (BMT Ltd) in 1985 by amalgamation with the National Physical Laboratory (NPL) in Teddington. During his BSRA/BMT employment period, Dr Clarke was responsible for initiating and managing research activities on a wide range of topics, including marine hydrodynamics, structures, and other naval architectural topics. In particular, he carried out research into ship manoeuvring and control over many years. In the same period, together with his team, Dr Clarke initiated the pioneering Analogue Computer-based, real-time and interactive simulation using fully non-linear ship motion equations, which allowed them to conduct more realistic harbour simulations for many major stakeholder shipping companies. In the late 1980s, the analogue simulation system was transformed into a digital one by Dr Clarke's team in BMT, also using pioneering transputer-based digital parallel processing and Ocaml programming language, which led to the development of the well-known REMBRANDT system of BMT in those days. Dr Clarke also took leading roles in chairing several technical committees at IMO (through MEPC) and ITTC (through the Executive, Advisory, Manoeuvring and Symbols & Terminology Committees). He was also the secretary to the Executive Committee of ITTC, with which the School of Marine Science and Technology at Newcastle University was closely involved with the organisation of the 24th ITTC Conference in Edinburgh in September 2005. During his teaching days at Newcastle University, Dr Clarke contributed to lecturing on Marine Dynamics, Ship Structures, Planing Craft and Dynamic Positioning lectures. In the same period and after his retirement, he also lectured on Marine Dynamics at the Naval Architecture and Marine Engineering Department of the

University of Strathclyde in Glasgow and Newcastle Universities as a visiting lecturer.

During his teaching career, Dr Clarke conducted pioneering research activities through four years of the national Engineering Physics and Science Research Council (EPSRC) funded managed programme (MOSES project) concerned with the effect of trailing vortices on the calculation of ship stability derivatives. He also made significant contributions to the EU Framework Programmes, especially in manoeuvring and controlling Azimuthing Podded propulsor-driven ships (e.g. through FP5-OPTIPOD and FASTPOD projects) and supervised a number of PhD students in the Newcastle and Strathclyde Universities.

Through his activities in industry and academia, Dr Clarke made profound contributions to the development and progress of the contemporary IMO ship manoeuvring criteria, as well as establishing close collaboration between the ITTC and IMO by preparing the proposal in 2005 for the ITTC to become the non-governmental organisation (NGO) with the observer status to IMO.

There are many people through ITTC, academic institutions, and the maritime industry who will have fond memories of David Clarke for his friendship with his witty character and his invaluable technical contributions to the manoeuvring and control of ships through the legacy of his published work. He is survived by his wife, Elizabeth, his daughters, Helen and Caroline, and his son Simon.

3. COMMITTEE MEMBERSHIP

Membership of the 30th Executive Committee has been the following:

ITTC Association Chairman: Kourosh Koushan, SINTEF Ocean, Norway

Northern Europe representative: Claus D. Simonsen, FORCE Technology, Denmark

Central Europe representative: Janou Hennig, HSVA, Germany

Southern Europe representative: Lanfranco Benedetti, CNR-INM, Italy

Pacific Islands representative: Toru Katayama, Osaka Metropolitan University, Japan

North and West Asia representative: Chunrong He, CSSRC, China

South and East Asia representative: Yonghwan Kim, Seoul National University, Korea

Americas representative: Art Reed, NSWCCD, USA.

Non-voting ex-officio members of the Executive Committee were:

Michael Woodward, Australian Maritime College, Australia, as Chairman of the 30th Conference

Gerhard Strasser, Vienna Model Basin, Austria, as Advisory Council Chairman,

Didier Fréchou, DGA Hydrodynamics, France, as past Chairman,

Aage Damsgaard, FORCE Technology, Denmark, as ITTC Secretary.

4. COMMITTEE MEETINGS

Due to the continued COVID threat, the first three EC meetings were held virtually. Finally, in September 2023, it was again possible to meet physically, in Seoul, Korea, and then in April 2024 in Wageningen, The Netherlands. Further virtual meetings are foreseen before the final physical meeting at the conference in Tasmania September 2024.

The first meeting was held virtually during the 29th Conference. The committee reviewed the actions following the Conference and the ITTC.A General Assembly.

The General Assembly had voted on two changes to the Statutes, the first allowing members not having physical test facilities, the second dividing East Asia into two areas, North and West Asia, and South and East Asia, respectively, and changing the number of Executive Committee members accordingly. The first item was considered to constitute a change of the aims of the Association, which required a quorum of two thirds of the members to be present. As this was not the case, an Extraordinary General Assembly was required to decide on the change. The second item just required that a majority of the members present voted in favour, which was the case.

The General Assembly had elected Kourosh Koushan as chairman of ITTC.A.

The committee appointed Kourosh Koushan as chairman of the Working Group on the Future of ITTC, the continuation of which had been endorsed by the Full Conference.

The ITTC.A Extraordinary General Assembly was held as an Outlook voting in December 2021. 61 members voted, 44 in favour and 17 against the proposed change allowing members not operating physical test facilities.

The second committee meeting was planned to be held in Japan, hosted by NMRI. However, as COVID travel restrictions were not yet lifted everywhere, it was decided to hold a virtual meeting.

Yonghwan Kim was elected Vice Chairman of the Executive Committee.

Two non-experimental organisations had applied for membership of ITTC following the opening for such organisations. The applications were on hold because the criteria for accepting them had not been decided. The committee

agreed on these criteria and on creating a membership application form to be used by such organisations.

The WG on the Future of ITTC reported on its activities, including the above-mentioned criteria for membership of non-experimental organisations, the possibility of establishing an ITTC Journal, cooperation with ISO, IMO and classification societies, and payment by non-members for access to ITTC documents.

Five members of Technical Committees had been replaced since the conference.

The effect of sanctions on Russia on work in the Technical Committees was discussed. One out of four committees with Russian members had experienced problems caused by this, and no contact could be established with the Russian AC member. It was decided to await further development.

The Advisory Council Chairman continues to participate in IMO MEPC meetings, and the Executive Committee accepted to cover the associated expenses.

The secretary presented audited accounts for the 29th ITTC secretariat and the status of fee payments for the 30th ITTC. The option to pay the fee annually had been chosen by 17 members. As it increases the administrative burden and bank costs, this number should hopefully not increase.

The 30th Conference arrangements and programme were discussed, as well as the venue for the 31st Conference, which will be held in Central Europe.

The ITTC Secretary announced that after having served for six periods, this period would be his last. The Advisory Council Chairman would send the job description to the AC members and invite candidates.

The third meeting was an intermediate virtual meeting held in February 2023 to catch up on some critical issues.

The performance of the Resistance and Propulsion Committee was a matter of great concern, and possible actions were discussed.

Further progress on the possible ITTC Journal and other ways of publishing ITTC work were presented.

The sanctions on Russia were causing increased impact on Technical Committee work and action might be required in order to avoid too much disruption.

The cooperation with ISSC has not been functioning well, so ITTC has presented a new proposal to ISSC for organising the joint committee. The answer is awaited.

Two candidates for the position as ITTC Secretary had been identified. However, neither of the two met the two fundamental criteria for the ITTC Secretary, i.e. being employed and supported by an Advisory Council member, and having experience with ITTC. No decision was made, and the search will continue.

The Advisory Council Chairman declared that he was willing to serve another period.

The fourth meeting was held physically in Seoul, Korea, hosted by Seoul National University with the support of Hanwha Ocean and Hyundai.

Several members were absent and had asked if they could be represented by a proxy. It was accepted this time, but the Executive Committee decided that proxies shall not be allowed.

The committee discussed a proposal by the AC Working Group on Correlation on further actions to be initiated with the participation of all ITTC members. The committee was authorised to proceed with asking members to test the method for speed/power prediction at

different drafts prepared by the Working Group and to develop a guideline. However, for the moment, the method should be kept internal in ITTC.

The problems in the Resistance and Propulsion Committee, now enhanced because of the resignation of the Chairman, were again discussed, and it was endeavoured to find a solution.

On proposal by the Working Group on the Future of ITTC, it was decided that all procedures and guidelines, in addition to being copyrighted, shall include the information for DOI registration. DOI registration will then be followed up during the 31st ITTC.

It was also decided that, in the future, ITTC documents shall not be freely available to non-members. An arrangement with a pay wall shall be organised during the 31st ITTC.

Furthermore, it was decided that a survey shall be performed among ITTC members on the interest in publishing ITTC related work in an ITTC Journal.

ISSC has not responded to ITTC's proposal for organising the future cooperation, so ITTC will terminate the participation in the joint committee and remove any mention of the cooperation from the ITTC website.

Further details on the arrangements for the 30th Conference were presented. The budget and proposed registration fee was accepted by the commission. Area Representatives were asked to identify observers to be invited and send the information to the organisers.

The committee accepted the proposal from Central Europe that the 31st Conference should be hosted by University of Ghent, Belgium.

The Advisory Council proposed John Koch Nielsen, FORCE Technology, Denmark, as the next ITTC Secretary. He will be supported by FORCE Technology in his work, but has no former experience with ITTC. The present ITTC

Secretary will make sure that he is properly introduced to the work as secretary and to the functioning of ITTC.

The fifth meeting was held physically in Wageningen, The Netherlands, hosted by MARIN.

Some Technical Committees had reported in their progress reports that they intended to or had already submitted papers to conferences or workshops on subjects related to their work in the Technical Committee. To make it clear that publication of the ITTC work shall first be done at the ITTC Conference, the committee will propose a revision of the ITTC Rules and the ITTC.A Statutes regarding this. In addition, this rule shall be included in the Terms of Reference for the committees.

The committee had observed that quite few of the about 35 participants in the AC meeting had participated actively in the discussions. Suggestions were made how to increase the active involvement of the participants.

The subject of an ITTC Journal and publication of ITTC work was again on the agenda. Some committee members mentioned that we should be careful that ITTC was not being seen as an academic organisation by the industry.

The committee reviewed and accepted the structure of Technical Committees for the next period proposed by AC.

The budget for the 31st ITTC was presented and slightly adjusted. Based on this budget, the committee will propose to keep the present membership fee.

Some items were not covered in this meeting, so it was decided to arrange an intermediate meeting to take care of these.

The sixth meeting was held virtually as a TEAMS meeting in May 2024.

The meeting covered the items which were not finished at the previous meeting, and also reviewed the first draft of the EC report to the Conference.

5. COMMITTEE ACTIVITIES

5.1 Revision of ITTC Rules

The committee decided to recommend to the 30th Full Conference to revise the ITTC Rules to clearly define the issues of copyright and publication of work performed in the Technical Committees. In addition, the revisions will resolve some small differences between the ITTC Rules and the ITTC.A Statutes.

The present version of the Rules is found as Procedure 1.0-01 in the 2021 version of the Quality Systems Manual, and the proposed revised Rules are included as an appendix in the Proceedings of this Conference.

5.2 Revision of ITTC.A Statutes

As a consequence of the proposed revision of the ITTC Rules, a number of revisions of the ITTC.A Statutes are required.

The proposed revised Statutes are included in Appendixes to the Proceedings of this Conference.

5.3 Appointment of ITTC.A Chairman

The Executive Committee has sent all members the invitation of candidates for the position as Chairman of ITTC.A to be elected at the General Assembly. The deadline for proposing candidates is after the publication of this report.

The present Chairman Prof. Kourosh Koushan, SINTEF Ocean, Norway, is willing to continue.

5.4 Criteria for non-experimental organisations to be member of ITTC

At the 29th Full Conference, it was decided to accept that organisations that do not operate physical experimental facilities could become members of ITTC. The Executive Committee decided that the applicant shall:

- carry out work in support of the designers, builders and operators of ships and marine installations
- document related R&D activity
- work with verification and/or validation and/or collecting full scale data related to ships and marine installations
- be willing to share knowledge and data
- perform related projects as a main part of the business
- document conducting related projects at least for the last 3 years.
- have at least 2 dedicated employees working full or main portion of their time with related projects
- be a liable company or an accredited academic institution
- be in possession of self-developed and or licensed recognized software for analysis and/or simulation in related projects.

5.5 Committees and Tasks of the 31st ITTC

Based on input from the technical committees, AC members, ITTC members and the Executive Committee Working Group on the Future of ITTC, the Advisory Council prepared the document proposing the structure and Terms of Reference of technical committees and groups of the 31st ITTC enclosed as an appendix to the Proceedings of this Conference.

5.6 Changes in ITTC Membership

The following new members of ITTC have been approved during this period (or late last period):

- Technomar, Brazil, as the first non-experimental organisation allowed according to the revised ITTC Rules
- NSTL India
- TCOMS, Singapore.

Membership was terminated for the following:

- University College Cork, Ireland
- Indian Institute of Technology Madras, India
- Technical University Delft, The Netherlands
- Oregon State University, USA.

The membership of Krylov Institute was put on hold due to the sanctions against Russia.

Several members have changed their Designated Representatives. The member information as known by the secretariat on 1st May 2024 is included as an appendix to the Proceedings of this Conference.

The total number of members is 103.

5.7 Changes in Advisory Council Membership

One additional member has been accepted in the Advisory Council, DSME, Korea, later changed to Hanwha Ocean. The Advisory Council now has 40 members.

The membership of Krylov Institute is on hold due to the sanctions on Russia.

5.8 Changes in Technical Committee Membership

The Executive Committee has endorsed a number of changes of membership of the technical committees. An appendix to the Proceedings includes a list of all past and present members of the committees of the 30th ITTC.

Due to the sanctions on Russia, membership of Technical Committees was terminated for all Russian members. The consequence was that

some of the tasks given to the Technical Committees could not be performed.

5.9 Advisory Council Membership Review

During this period, approximately half of the Advisory Council members were reviewed using the evaluation form that was revised during the 27th ITTC. All the organisations reviewed were accepted as members.

One member, VTT, Finland, decided to withdraw from the Advisory Council after this period as their model tank facility was being decommissioned.

5.10 ITTC Secretary

As the ITTC Secretary during the past six ITTC periods decided to step down, the Advisory Council invited candidates to take this position. Two candidates were put forward, but one of them later withdrew the candidature. Consequently, the Advisory Council recommended to the Executive Committee to appoint John Koch Nielsen, FORCE Technology, Denmark, as ITTC Secretary.

5.11 ITTC Website

The website is continuously updated with member information and provides links to ITTC Recommended Procedures and Guidelines, Symbols and Terminology, Dictionary, and the Sample QA Manual.

The website furthermore holds the Proceedings of all ITTC Conferences and the Catalogue of Facilities. Under the News menu, you will find the ITTC News, and under Miscellaneous, other relevant information may be found. The menu Benchmark Data holds links to the available benchmark data.

The password protected Member's area holds information for the Executive Committee and Advisory Council and has been very useful for the preparations for and follow-up after the meetings.

5.12 ISBN and ISSN Number on Publications

In 2020, the ITTC Association registered as publisher at the Swiss ISBN Agency. The association bought a quota of 1000 ISBN numbers for 861,60 CHF that can be assigned to digital and printed publications. After publication, a copy of the published document must be submitted to the Swiss National Library.

The request of the ISSN (International Standard Serial Number) assignment for the ITTC proceedings series is in progress.

5.13 DOI Registration of Procedures and Guidelines

As part of the efforts of making ITTC documents better known to the public, the committee decided that all Technical Procedures and Guidelines shall be DOI registered. This implies that they shall identify the authors and include an abstract and, preferably, keywords. The Quality Systems Group has designed a new layout of the documents to accommodate this information.

5.14 IMO Activities

The ITTC AC Chairman attended the following meetings, with travel and hotel costs paid by ITTC:

MEPC 76 (Marine Environment Protection Committee): 10 to 17 June 2021

MEPC 77: 22 to 26 November 2021

MEPC 78: 6 to 10 June 2022

MEPC 79: 12 to 16 December 2022

MEPC 80: 3 to 7 July 2023

The following submissions have been made by ITTC:

MEPC 78/6 Updated ITTC Recommended Procedures and Guidelines concerning the determination and verification of EEDI

MEPC 79/6 Draft amendments to the 2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)

SDC 8/INF.2 Physical background and mathematical models for stability failures of the Second-Generation Intact Stability Criteria (prepared by the Stability in Waves Committee)

SDC 10/INF.5 Review of the 2014 Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life (MEPC.1/Circ.833)(2014 Guidelines) and identification of next steps (prepared by the SC on Cavitation and Noise)

SDC 10/INF.7 ITTC support to the trial application of direct stability assessment within the Second-Generation Intact Stability Criteria (prepared by the Stability in Waves Committee)

Several members of ITTC participate via the member states to IMO.

5.15 ISO Activities

The Advisory Council Chairman and the Full Scale Ship Performance Committee has participated actively in the revision of the ISO speed/power sea trial standard 15016.

5.16 IEC Activities

The SC on Ocean Renewable Energy represents ITTC in the liaison with IEC TC 114 in order to harmonise ITTC procedures and guidelines and IEC standards on marine energy conversion systems.

5.17 ITTC Accounts

The final accounts of the 29th ITTC and the projected accounts for the 30th ITTC are shown below. All amounts are in USD. The accounts for the 29th ITTC were checked and approved by the internal auditors Marco Ferrando, University of Genova, and R. U. Franz von Bock und Polach, Technical University of Hamburg.

Account item	30 th projected	29 th Final
ITTC fee	70,000	85,175
AC fee	120,000	150,150
Financial income	0	2,670
Total income	190,000	237,995
Secretariat hours	110,000	119,621
Secretariat expenses	10,000	4,916
IMO/ISO activities	10,000	17,735
Support to Conference	6,000	6,000
Financial costs	1,500	1,510
Website	2,000	1,981
ITTC Association	15,000	15,093
Total costs	154,500	166,856
Net Result	35,500	71,140
Total equity capital	135,587	100,087

5.18 Budget for 31st ITTC

The proposed budget (in USD) for the 31st ITTC is shown below. The budget is based on the assumption that the ITTC membership fee is kept unchanged 225 USD annually and the additional fee for AC membership is unchanged 1,000 USD annually.

Account item	31 st ITTC Budget
ITTC fee	69,525
AC fee	120,000
Financial income	0
Total income	189,525
Secretariat hours	117,000
Secretariat expenses	10,000
IMO/ISO activities	8,000
Support to Conference	6,000
Website	3,000
ITTC Association	10,000
Financial costs	1,500
Miscellaneous costs	15,000
Total costs	170,500
Net Result	19,025

6. RECOMMENDATIONS TO THE FULL CONFERENCE

The Executive Committee recommends the following to the Full Conference:

- Adopt the new and revised procedures and guidelines prepared by the technical committees and group as listed in the report of the Quality Systems Group
- Delete and remove the procedures and guidelines from the ITTC Recommended Procedures and Guidelines, as being obsolete as listed in the report of the Quality Systems Group
- Adopt the revised Register of ITTC Recommended Procedures and Guidelines as prepared by the Quality Systems Group
- Adopt the revised ITTC Rules as reflected in the revised procedure 1.0-01
- Adopt the committee structure and Terms of Reference for the 31st ITTC as presented in the appendix to the Proceedings of this Conference
- Accept the proposed chairs and members of the technical committees and groups
- Accept that the Executive Committee continues the Working Group on the Future of ITTC

- Accept that the Executive Committee pursues the idea of an ITTC Journal and encourages members to publish their work in this
- Accept University of Ghent as host of the 31st ITTC Full Conference and Guillaume Delefortrie as chairman of the conference
- Accept Mr. John Koch Nielsen, FORCE Technology, as ITTC Secretary for the 31st ITTC
- Accept the continued involvement of ITTC in IMO and to support this activity financially
- Accept the formal liaison with ISO and IEC on subjects relevant to ITTC
- Accept the proposed budget for the 31st ITTC and general membership fee of 225 USD annually and an additional fee of 1000 USD annually for Advisory Council members.

7. RECOMMENDATIONS TO THE ITTC.A GENERAL ASSEMBLY

The Executive Committee recommends the following to the ITTC.A General Assembly:

- Adopt the revised Statutes and Articles of ITTC.A
- Accept the person proposed and communicated by the Executive Committee in the invitation to the general Assembly as the next Chairman of the ITTC Association
- Accept internal auditors that will be named at the General Assembly.