SMB/7534/SBP

STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:
TC 114	**United Kingdom**	**2021-12**

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

Are there any new or emerging trends in technology that will impact the scope and work activities of the TC? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another TC's scope or work activities?

If yes, describe how these will impact another TC(s) and list the TC(s) it would impact

TC114: Marine Energy – Wave, tidal and other water current converters,

TC114 was established by the IEC in 2007 and the inaugural plenary was held in Ottawa, Canada in May 2008. Since then, TC114 plenaries have been held in Seoul, Republic of Korea (2009), Edinburgh, Scotland (2010), Boston, USA (2011), Oslo, Norway (2012), Tokyo, Japan (2013), Vancouver, Canada (2014), Dublin, Ireland (2015), Guangzhou, China (2016), Madrid, Spain (2017), Seattle, USA (2018), and Delft, Netherlands (2019). Due to safety considerations surrounding the COVID-19 pandemic, the 2020 TC114 plenary originally scheduled to take place in Singapore was cancelled and in 2021 the TC114 plenary was held "virtually" during a four-day series of Zoom meetings.

The scope of TC114 was established at the 2008 plenary and modified in 2015. An updated TC114 scope is provided below:

To prepare international standards for marine energy conversion systems. The primary focus will be on conversion of wave, tidal and other water current energy into electrical energy, although other conversion methods, systems and products are included.

Tidal barrage and dam installations, as covered by TC4, are excluded.

The standards produced by TC 114 will address:

- terminology
- management plans for technology and project development
- performance measurements of marine energy converters
- resource assessments
- design and safety including reliability and survivability
- deployment, commissioning, operation, maintenance, retrieval and decommissioning
- electrical interfaces, including array integration and/or grid integration
- laboratory testing, manufacturing and factory acceptance
- additional measurement methodologies and processes as required

B. MANAGEMENT STRUCTURE OF THE TC

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

TC114 is comprised of Project Teams ("PT"), Maintenance Teams ("MT") and ad-Hoc Groups ("ahG"). In 2020, the TC114 Chair established two Advisory Groups ("AG") to better coordinate the work of the PTs, MTs and ahGs ("AG1") and to align content of TC114 publications ("AG2") with IEC publication standards.

As of October 15, 2021, the following countries were either participating (P) countries or observing (O) countries:

Participating ("P") Countries: Australia, Belgium, Canada, China, Denmark, France, Germany, Iran, Ireland, Israel, Italy, Japan, Republic of Korea, Netherlands, Singapore, Spain, United Kingdom, United States

Observing ("O") Countries: Brazil, Czech Republic, Finland, Norway, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, Sweden, Ukraine

Publications:

As of October 15, 2021, the following TC114 publications have been issued:

IEC/TS 62600-1:2020 Edition 2.0 (2020-06-16)
Marine energy - Wave, tidal and other water current converters - Part 1: Vocabulary

IEC/TS 62600-2:2019 Edition 2.0 (2019-10-18)
Marine energy – Wave, tidal and other water current converters – Part 2: Design requirements for marine energy converters

IEC/TS 62600-3:2020 Edition 1.0 (2020-05-14)
Marine energy – Wave, tidal and other water current converters – Part 3: Measurement of mechanical loads

IEC/TS 62600-4:2020 Edition 1.0 (2020-09-22)
Marine energy – Wave, tidal and other water current converters – Part 4: Specification for establishing qualification of new technology.

IEC/TS 62600-10:2015 Edition 1.0 (2015-03-27)
Marine energy – Wave, tidal and other water current converters – Part 10: Assessment of mooring system for marine energy converters (MECs)

IEC/TS 62600-20:2019 Edition 1.0 (2019-06-18)
Marine energy – Wave, tidal and other water current converters – Part 20: Design and analysis of an Ocean Thermal Energy Conversion (OTEC) plant - General guidance

IEC TS 62600-30:2018 Edition 1.0 (2018-08-29)
Marine energy – Wave, tidal and other water current converters – Part 30: Electrical power quality requirements

IEC/TS 62600-40:2019 Edition 1.0 (2019-06-18)
Marine energy – Wave, tidal and other water current converters – Part 40: Acoustic characterization of marine energy converters

IEC/TS 62600-100:2012 Edition 1.0 (2012-08-30)
Marine energy - Wave, tidal and other water current converters - Part 100: Electricity producing wave energy

converters - Power performance assessment.

IEC/TS 62600-100:2012/COR1:2017 Edition 1.0 (2017-04-11)
Corrigendum 1 - Marine energy - Wave, tidal and other water current converters - Part 100: Electricity producing wave energy converters - Power performance assessment.

IEC/TS 62600-101:2015 Edition 1.0 (2015-06-05)
Marine energy - Wave, tidal and other water current converters - Part 101: Wave energy resource assessment and characterization

IEC/TS 62600-102:2016 Edition 1.0 (2016-08-09)
Marine energy - Wave, tidal and other water current converters – Part 102: Wave energy converter power performance assessment at a second location using measured assessment data.

IEC/TS 62600-103:2018 Edition 1.0 (2018-07-19)
Marine energy - Wave, tidal and other water current converters – Part 103: Guidelines for the early-stage development of wave energy converters - best practices and recommended procedures for the testing of pre-prototype devices

IEC/TS 62600-200:2013 Edition 1.0 (2013-05-07)
Marine energy - Wave, tidal and other water current converters - Part 200: Electricity producing tidal energy converters - Power performance assessment.

IEC/TS 62600-201:2015 Edition 1.0 (2015-04-09)
Marine energy - Wave, tidal and other water current converters - Part 201: Tidal energy resource assessment and characterization

IEC/TS 62600-300:2019 Edition 1.0 (2019-09-12)
Marine energy - Wave, tidal and other water current converters - Part 300: Electricity producing river energy converters - Power performance assessment.

IEC/TS 62600-301:2015 Edition 1.0 (2019-09-12)
Marine energy - Wave, tidal and other water current converters - Part 301: River energy resource assessment

Liaisons:

As of October 15, 2021, TC114 has established official liaisons with the following organizations:

IEC: TC4 (Hydraulic Turbines); TC8 (Systems aspects of electrical energy supply); TC8/SC8A (Grid Integration of Renewable Energy Generation); TC8/SC8B (Decentralized Electrical Energy Systems); TC 56 (Dependability); TC82 (Solar photovoltaic energy systems); TC88 (Wind energy generation systems); IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications (IECRE)

ISO/IEC: JTC1/SC 41 (Internet of Things and Digital Twin)

ISO: TC43/SC 3 (Underwater Acoustics); TC 108/SC 5 (Condition monitoring and diagnostics of machines)

International Energy Agency (IEA) – Ocean Energy Systems (OES): Annex 1-5

International Towing Tank Conference (ITTC)

C. BUSINESS ENVIRONMENT

Provide the rationale for the market relevance of the future standards being produced in the TC.

If readily available, provide an indication of global or regional sales of products or services related to the TC/SC work and state the source of the data.

Specify if standards will be significantly effective for assessing regulatory compliance.

For countries involved in the marine energy sector, investments have continued over the past several years but at varying rates according to changes in economic conditions, regulation and government policies. While some countries have imposed government funding cuts because of reductions or eliminations of subsidies and tax credits, others have implemented consistent budget increases and policy changes aimed at reducing costs associated with prototype testing and regulatory compliance. As a result, Marine Energy (“ME”) technologies have continued to progress towards commercialization however they face competition from continuing reductions in costs and growing acceptance of wind and solar technologies.

Tidal, current and river energy converter technologies have continued to mature and converge towards a smaller set of technological configurations and several pilot-scale and full-scale commercial deployments

have taken place. Wave energy research and development is continuing to address a range of engineering and technology challenges with efforts focused on refining system and component designs and testing initiatives that yield cost reductions and increased operational reliability. There have been few commercial wave energy converter ("WEC") deployments and convergence towards a dominant WEC type has not occurred. Ocean Thermal Energy Conversion ("OTEC") technologies have progressed, but significant engineering and cost-related challenges remain.

The growing contribution of marine energy to the global energy mix continues to be a significant opportunity. Many nations are seeking alternatives to fossil fuel and nuclear power and climate change concerns have stimulated closer investigation of marine energy. However, while there may be exceptions to the rule, the overall cost of energy, often referred to as the Levelized Cost of Energy ("LCOE"), is a key driver of investment decisions and therefore reductions in capital costs and life-cycle operational costs will continue to be the primary focus of industry research and development efforts. An increase in the number of deployments has helped build operational experience and further inform design requirements. The marine energy industry is conducting tests of an increasing number of reduced-scale prototypes in tanks and sheltered sea areas as well as full-scale devices in open sea and in-stream river sites. With such additional experience and sharing of lessons learned, marine energy is steadily evolving and is approaching cost competitiveness in several commercial applications

D. MARKET DEMAND

Provide a list of likely customers of the standards (suppliers, specifiers, testing bodies, regulators, installers, other TC/SC's etc.). Do not specify company names, only categories of customers.

Customers for TC114 technical specifications and standards are as follows: industry (product and project developers), manufacturers, utilities, investors, insurers, national and local government bodies, test laboratories, certification bodies and regulators. The development of the IECRE Conformity Assessment System for renewable energies (wind, solar PV and marine) entitled "IEC System for Certification to Standards Relating to Equipment for use in Renewable Energy Applications" is proceeding and giving rise to growing demand for published technical specifications and, eventually, standards. Feedback from standards users, National Committees and the IECRE Marine Energy Sector Working Group ("ME-SWG") will generate additional demand for standards, operational documents, and clarification sheets.

E. SUSTAINABILITY DEVELOPMENT GOALS

INDICATE THE SUSTAINABLE DEVELOPMENT GOALS (SDGS) THAT ARE ADDRESSED BY WORK WITHIN THE TC/SC. INDICATE EACH SDG INDICATOR AFFECTED (REFERENCE SPREADSHEET AVAILABLE AT https://www.iec.ch/SDG/, AND PROVIDE SPECIFIC INFORMATION ABOUT HOW THE TC/SC IS ADDRESSING THE SDG. CONSIDER BOTH DIRECT AND INDIRECT IMPACTS OF THE WORK OF THE TC/SC.

- ☐ **GOAL 1:** No Poverty
- ☐ **GOAL 2:** Zero Hunger
- ☒ **GOAL 3:** Good Health and Well-being
- ☐ **GOAL 4:** Quality Education
- ☐ **GOAL 5:** Gender Equality
- ☒ **GOAL 6:** Clean Water and Sanitation
- ☒ **GOAL 7:** Affordable and Clean Energy
- ☒ **GOAL 8:** Decent Work & Economic Growth
- ☒ **GOAL 9:** Industry, Innovation & Infrastructure
- ☐ **GOAL 10:** Reduced Inequality
- ☒ **GOAL 11:** Sustainable Cities and Communities
- ☒ **GOAL 12:** Responsible Consumption & Production
- ☒ **GOAL 13:** Climate Action
- ☒ **GOAL 14:** Life Below Water
- ☐ **GOAL 15:** Life on Land
- ☐ **GOAL 16:** Peace, Justice Strong Institutions
- ☒ **GOAL 17:** Partnerships to achieve the Goals

Goal 3: INDIRECT – adoption of clean energy technologies, including marine energy converters, can contribute to good health and well-being.

Goal 6: INDIRECT – while the work of TC 114 focuses on electricity generation, marine energy converters are used in direct desalination and are well suited to produce clean water.

Goal 7: DIRECT – the work of TC 114 directly supports clean energy generation globally.

Goal 8: INDIRECT – clean energy offers significant opportunity for economic improvement; there is significant potential for workforce development in marine energy.

Goal 9: DIRECT – the work of TC 114, including IEC/TS 62600-4 on Technology Qualification, directly supports innovation.

Goal 11: INDIRECT – the work of TC 114 compliments the work of IEC SyC Smart Cities; Marine energy can contribute to sustainable cities and communities, particularly in remote communities.

Goal 12: INDIRECT – the members of TC 114 follow developments in circular economy considerations; The marine energy industry is considering recyclable materials; TC 114 has a representative on the IEC ACEA.

Goal 13: DIRECT – Clean energy generated by marine sources directly supports climate action.

Goal 14: DIRECT – The work of TC 114, including IEC/TS 62600-40 on Acoustics, directly supports consideration for life below water.

Goal 17: DIRECT – TC 114 has liaisons with the IEA-OES, ITTC, IECRE and ISO among others; TC 114 members are involved with the IEC ACEA, UNECE GERE among others.

INPUT FROM SINGAPORE NATIONAL COMMITTEE [UN SDG GOALS 3, 6, 7, 8, 9, 13, 14, 17]:

- Singapore's marine industries are turning towards marine renewables towards regional supply chain.
- The government has called for adoption of renewables in recent grant calls to reduce carbon footprint through marine renewables.
- Singapore along with southeast Asian countries are adoption blue economy framework where new industries like aquaculture and seawater desalination are promoted as part of its food self-sufficiency program of Singapore food agency (SFA) which needs clean energy and thereby looks into the marine renewables adoption with keen interest.

INPUT FROM SPANISH NATIONAL COMMITTEE [UN SDG GOALS 7, 9, 11, 13, 17]:

- The Spanish government has been making considerable efforts in the right direction to reach the Ecological Transition 2030 and the Climate Neutrality 2050, aligned with the European Directives and Sustainable Development Goals (SDGs). So that government has decided to consider marine energies, the so-called "Blue Energy" by the European Commission, as one of the levers for energy transformation at national, European and global level, as well as an industrial, economic and social opportunity for our country. All of this, in a coherent and compatible way with the protection of environmental values and connected to several of the Sustainable Development Goals (7. Affordable and Clean Energy; 9. Industry, Innovation and Infrastructure; 11. Sustainable Cities and Communities; 13. Climate Action).
- The Spanish Marine Industry, through APPA Marina, is taking part directly in the public consultation opened by the Government to collect the proposals of the entities potentially involved in the value chain of marine renewable energies.

ADDITIONAL GLOBAL ACTIVITIES IN MARINE ENERGY [UN SDG GOALS 6, 8, 9]

- The United States Department of Energy Waves to Water Prize "seeks innovators to design water desalination systems powered by marine renewable energy".

The IEA-OES Task 14 Ocean Energy Jobs Creation: Methodological Study and First Global Assessment "aims at delivering a validated methodology for job assessment in the ocean energy sector and building up from the existing know-how developed on other renewable energies and other maritime sectors. "

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

If any, indicate the current or expected trends in the technology or in the market covered by the products of your TC/SC.

Testing of individual devices at both full and reduced scales remains the primary focus of industry activity. Improvements in modelling tools, instrumentation, and data analysis techniques (among others) has yielded improved research, development, and deployment outcomes. Significant advances have been made in controls, materials, environmental effects measurement and analysis and stakeholder outreach/education. New methods for evaluating risk and measuring costs have helped the marine energy industry gain credibility with the investment community and continued efforts to assess global marine energy resources has spurred renewed awareness and interest in its potential.

A significant number of demonstration projects involving single ME devices has occurred and deployment and testing of arrays is the next major step. Issues specific to the deployment and testing of arrays may stimulate the need for new standards.

Test facilities are being established in more locations around the world which will increase the need to coordinate the ways in which testing is conducted and reported. In response, the IECRE Marine Energy Sector Working Group has several initiatives underway to incentivize test laboratories and certification bodies to adopt and use IEC standards. Several nations are developing centers of excellence and research consortia to complement their test facilities Additional applications and market opportunities for marine renewable energy are being explored as wind and solar PV technologies continue to be more competitive on a cost per kWh basis. Applications where marine renewable energy may find profitable commercial opportunities include, a) supplying power for islands and remote communities, b) producing hydrogen for energy storage or as an alternative transportation fuel, c) recharging autonomous underwater vehicles and ocean sensing and communications systems; d) providing power to offshore aquaculture farms, and e) supplying power to desalination systems that convert seawater into fresh water. New standards may be needed to ensure that marine energy technologies can be integrated into smart grids and thereby address many of the United Nations' 17 Sustainable Development Goals and contribute meaningfully to the development of the circular economy.

The rapidly growing floating offshore wind and PV sectors will create multiple opportunities for productive collaborations with the marine energy sector and the ME-SWG's efforts to establish stakeholder groups will provide incentives for various end-user groups, e.g., manufacturers, insurers and financiers, to actively participate in the advancement of the marine energy industry.

The lack of infrastructure necessary to connect ME systems to electrical grids may be a limiting factor to ME growth but may, at the same time, represent a commercial opportunity to serve remote and off-grid communities and enterprises. A growing trend towards locating energy generation assets much closer to sources of energy demand may spur growth of the ME industry because a great percentage of the world's population – over 50% by some estimates - lives within 50 km of a coastline.

Questions around the effects of marine energy devices on the environment are beginning to be definitively answered and research results are becoming more widely available. The skills, techniques and equipment needed for accurate environmental monitoring are steadily improving and the evidence to date is that there are negligible environment effects associated with the deployment and operation of single devices or a small number of separate single devices deployed in certain areas. Additional studies are on-going at sites where arrays are deployed and TC114 may consider developing standardized measurement methodologies for relevant physical and operational parameters of marine energy devices to support these studies.

Adoption of best practices and available tools aimed at maximizing sustainability must remain at the heart of marine energy projects and standardisation of approaches to environmental monitoring is needed to ensure consistency on an international basis. However, it is accepted that any detailed international guide to environmental impact assessment is problematic due to the varying legal and regulatory regimes that different countries may have. Significant dialogue among member countries must continue to harmonise approaches to sustainable development to the greatest degree possible.

G. SYSTEMS APPROACH ASPECTS (SEE DIRECTIVES PART 1 ANNEX SP)

Does your TC/SC have a need for a systems approach?

If so:

- Will the Systems work be in a single TC or in multiple TCs?
- Will a Standardization Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your TC/SC work of relevance to ISO?
- Is or are there fora or consortia working in parallel to IEC? Is there a chance to integrate this work in your TC/SC?

This should not only be restricted to the customer/supplier relationships with other TC/SCs indicating types of co-operation (e.g. liaisons, joint working groups) but be of a more generic nature.

The Technical Specifications which are under development and those which are being maintained may be found on the home webpage for TC 114: www.iec.ch/tc114/. The table below provides the TC 114 activities in the context of Technical Areas and includes additional international activities that are, or may be, relevant

Technical Area	**Foreground TC114 Activity**	**Background Knowledge & External Liaison Opportunities**
Terminology	AG2: Publication alignment support AG2: Moving 62600-1:2020 Edition 2.0 to the IEV 62600-1:2020 Edition 2.0	-IEC/TC 1: Terminology [IEC 60050 (all parts)]
Electrical Interface	ahG-10: Power quality 62600-30:2018 Edition 1.0	-IEC/TC 8/SC 8A: Grid integration of renewable energy generation -IEC/TC 8/SC 8B: Decentralized electrical energy systems -IEC/TC 8/SC 8C: Network Management in Interconnected Electric Power Systems -IEC/TC 18: Electrical installations of ships and of mobile and fixed offshore units -IEC/TC 18/SC 18A: Electric cables for ships and mobile and fixed offshore units -IEC/TC 20: Electric cables [IEC 63026] -IEC/TC 22: Power electronic systems and equipment -IEC/TC 82: Solar photovoltaic energy systems [IEC 61727] -IEC/TC 88: Wind energy generation systems [IEC 61400-21-1, IEC 61400-21-3, IEC 61400-24, IEC 61400-27-1]

Marine Structures, Moorings and Foundations	MT-2: Design 62600-2:2019 Edition 2.0 MT-10: Moorings 62600-10:2015 Edition 1.0 ahG-15: Measurement of mechanical loads 62600-3:2020 Edition 1.0 ahG-14: OTEC 62600-20:2019 Edition 1.0	-IEC/TC 37/SC 37A: Low-voltage surge protection [IEC 61643-11] -IEC/TC 56: Dependability [IEC 60812] -IEC/TC 81: Lightning protection [IEC 62305-3] -IEC/TC 88: Wind energy generation systems [IEC 61400-1, IEC61400-3-1, IEC61400-3-2, IEC 61400-6] -ISO/TC 8: Ships and marine technology [ISO 29400] -ISO/TC 61/SC 2: Mechanical behavior [ISO 527-1] -ISO/TC 61/SC 13: Composites and reinforcement fibers [ISO 13003, ISO 14125, ISO 14126, ISO 14129, ISO 14130, ISO 15024] -ISO/TC 67/SC 6: Processing equipment and systems [ISO 17776] -ISO/TC 67/SC 7: Offshore structures [ISO19900, ISO 19901 (all parts), ISO 19902, ISO 19903, ISO19904] -ISO/TC 98/SC 2: Reliability of structures [ISO 2394] -ISO/TC 156: Corrosion of metals and alloys [ISO 12473]
Renewable Energy Production	MT-100: WEC power performance assessment 62600-100:2012 Edition 1.0 62600-102:2016 Edition 1.0 MT-200: Tidal power performance assessment 62600-200:2013 Edition 1.0 ahG-12: River power performance assessment 62600-300:2019 Edition 1.0 ahG-14: OTEC 62600-20:2019 Edition 1.0	-IEC/TC 8/SC 8A:Grid integration of renewable energy generation -IEC/TC 8/SC 8B: Decentralized electrical energy systems -IEC/TC 38: Instrument transformers [IEC 61869-2, 61869-3] -IEC/TC 77/SC 77A: EMC - Low frequency phenomena [IEC 61000-3 (all parts) -IEC/TC 82: Solar photovoltaic energy systems [IEC 61724-1, IEC 61724-2, IEC 61724-3, IEC 61853-1, IEC 62253, IEC 62670-1, IEC 62670-2, IEC 62670-3] -IEC/TC 85: Measuring equipment for electrical and electromagnetic quantities [IEC 60688] -IEC TC 88: Wind energy generation systems [IEC 61400-12-1, IEC 61400-12-2, IEC 61400-12-4] -IHO
Environmental	MT-101: Wave resource assessment 62600-101:2015 Edition 1.0 MT-201: Tidal resource assessment 62600-201:2015 Edition 1.0 ahG-13: River resource assessment 62600-301:2015 Edition 1.0 ahG-11: Acoustic characterization of marine energy converters 62600-40:2019 Edition 1.0	-IEC/TC 4: Hydraulic turbines -IEC/TC 88: Wind energy generation systems [IEC 61400-11, IEC 61400-14] -ISO/TC 8: Ships and marine technology -ISO/TC 43/SC 3: Underwater acoustics -ISO/TC 67: Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries -ICES -IHO

Marine Testing	ahG-15: Measurement of mechanical loads 62600-3:2020 Edition 1.0 MT-103: Scale testing of wave energy converters 62600-103:2018 Edition 1.0 PT-202: Scale testing of tidal energy converters [no TS issued as yet]	-IEC/TC 88: Wind energy generation systems [IEC 61400-13, IEC 61400-23] -ISO/TC 8: Ships and marine technology -ISO/TC 67: Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries -ITTC
Electro-Mechanical Power Conversion Systems	MT-2: Design 62600-30:2018 Edition 1.0 ahG-15: Measurement of mechanical loads 62600-3:2020 Edition 1.0	-IEC/TC 4: Hydraulic turbines -IEC/TC 18: Electrical installations of ships and of mobile and fixed offshore units -IEC/TC 18/SC 18A: Electric cables for ships and mobile and fixed offshore units -IEC/TC 88: Wind energy generation systems [IEC 61400-4, IEC 61400-5] -ISO/TC 60: Gears -ISO/TC 108/SC 5: Condition monitoring & diagnostics of machines -ISO/TC 131: Fluid power systems

H. CONFORMITY ASSESSMENT

With reference to Clause 33 of Part 2 of the ISO/IEC directives, are all you publications in line with the requirements related to conformity assessment aspects?

Will the TC/SC publications be used for IEC Conformity Assessment Systems (IECEE, IECEx, IECQ, IECRE)?

Will any of your standards include test specifications, reproducible test requirements, and test methods?

Are there likely to be special conformity assessment requirements generated by any standards projects? If yes, list which projects.

The technical specifications and standards developed by TC114 are used to support the work of the ME-SWG of the IECRE System. Given that conformity assessment protocols are the primary determinant of the pace at which marine energy technologies and projects become commercially viable, e.g., insurable and bankable, it is critical that TC114 and the ME-SWG build and maintain communication channels through which information can be exchanged. Accordingly, priority is given to the development and dissemination of standards and technical specifications that are most urgently needed for certification purposes. The ME-SWG and TC114 are actively collaborating to ensure these priorities are identified and considered for new TS initiation.

In developing its roadmap for the creation of new standards, TC114 will actively monitor approaches undertaken by related sectors such as the wind industry and will adapt them for application to the marine energy sector. As practically possible, TC114 will establish formal liaisons to facilitate this exchange.

I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
TS Ed 1 transition to TS Ed 2 and IS Ed 1	TC114 intends to transition existing 1st Edition Technical Specifications (TS) into 2nd Edition Technical Specifications and 1st Edition International Standards (IS) over the next 3-5 years. The resourcing of these tasks is considerable due to the immaturity of the industry so	3 – 5 years

	there may be a need to sequence work in a prioritized manner. TC114 intends to transition 62600-1:2020 Edition 2.0 (Terminology) to the IEV within 1 – 3 years.	
Publish PT documents	TC114 will make a concerted effort to publish all existing and in process Project Team documents within 1-3 years. During this time there will be a need to balance the needs of the industry and the need to support developing certification requirements.	1 – 3 years
Incorporate ME-SWG input	TC114 will request input from the IECRE ME-SWG on standards' priorities in addition to those listed in Section H. This input combined with the needs of the industry will inform the priority list of new standards for development.	1 – 3 years
Review New Work Item Proposal ("NWIP") recommendations	The SBP committee will carefully review recommendations for new work items in the next 12 months to assess the priorities in Section H and reflect input from the IECRE ME-SWG and industry. a. Assess how many new work items can be supported as the existing work is completed. b. Coordinate with National Committees to submit NWIPs based on a revised priority list of standards for development. c. Submit 1-3 NWIPs	12 – 18 months
Receive information on TSs	Establish ad hoc groups to receive information from users of published Technical Specifications to quickly turn around next editions or transition to an IS.	0 – 5 years
Note: The progress on the actions should be reported in the RSMB.		

The over-arching objective of TC114 is to support the development and implementation of marine energy technologies and facilitate progress towards the realization of commercial-scale projects and applications. During the next 3 to 5 years, TC114 will: (1) complete the TSs currently under development, (2) initiate Project Teams to draft new TSs, (3) support Maintenance Teams and ad-Hoc Groups for several recently developed Technical Specifications, and (4) collaborate with conformity assessment initiatives underway at the ME-SWG. All four of the above are geared toward the ultimate completion of first edition International Standards.

TC-114 must address issues related to climate change and diversity as they may apply to the development and maintenance of standards and certification protocols. Specifically, IEC Council Board has established a

Task Force on Diversity and has created a Joint ISO/IEC Strategic Advisory Group on gender responsive standards. Additionally, ISO Guide 84 developed by its Climate Change Coordinating Committee ("CCCC") shall, to the greatest extent possible, inform TC-114 PTs, MTs and ahGs with respect to climate change. Key ISO notes about the CCCC include:

1) that the purpose of the CCCC is to support ISO groups in their coordination activities with the IEC and ITU-T on the topic of Climate Change; and

2) (to promote) information sharing among ISO/IEC committees involved in standardization related to climate change.

The engagement of all stakeholder groups in standards-making activity, particularly technology developers, is encouraged. Possible approaches to achieve this include assigning formal liaisons to funded projects that provide feedback and inform present and future technical specifications and spur their transition to International Standards. It is likely, however, that public funding mechanisms will be needed to formalize and incentivise such collaborations. Member country delegations have been largely successful in collaborating with their national government agencies to ensure that funded R&D efforts are conducted in concert with TC114 standards and technical specifications and, in turn, inform the further development of requirements therein.

The Technical Specifications under development and those being maintained may be found on the home webpage of TC114 (www.iec.ch) and are identified in Section F above. These TSs have been highlighted as being fundamental to the early-stage development of marine energy converters and future TSs will be undertaken as the needs of the marine energy sector evolve. To facilitate this strategy, TC114 has established a prioritised list of new TSs to be developed. This list may be rearranged and expanded as new information and understanding of the sector becomes available; however, it currently provides a baseline for the committee to use when deciding upon convening new Project Teams.

In establishing the priority of standards, both those underway and those being planned, TC114 has considered both the stage of development of marine energy converters and the impact that particular standards will have on the progress of the sector. The IECRE will provide input to TC114 regarding Technical Specifications necessary to support certification of marine energy converters.

International Standards under development address the full range of engineering stages, including:

- Modelling and analysis
- Full- or sub-scale testing
- Prototype deployment and testing
- Operational devices and arrays

To determine the next round of standards development initiatives TC114 should undertake, the Strategic Business Planning committee solicited input from the National Committees of all eighteen TC114 P-Member countries and compiled the results into the three categories shown below. Several of the initiatives shown in the "High Priority" category may be presented to the P-Member National Committees in the form of New Work Item Proposals (NWIP) and, if a majority of P-Member National Committees approve a NWIP and, furthermore, if enough subject matter experts are nominated to support a new Project Team, the NWIP will be approved, and a new Project Team will be established.

When considering new specifications, the committee seeks to avoid creating new work item proposals which do not address the most urgently needed specifications. Members may propose new specifications to be added to the list above, and the committee will decide on the prioritization of the proposed new specification based on a consensus as to the urgency of need. Of particular importance is to time the establishment of new Project Teams so as not to over-extend the availability of members to support new work.

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2021 RANKINGS	2021 POLL TITLES	ABBREVIATED TITLE	PRIORITY	LIAISONS
1	Guidelines - I,O&M procedures	IO&M	HIGH	ISO TC 207; MT62600-2, -10
2	O&M principles			
6	Commissioning/decommissioning procedures			
NEW	Life Cycle Assessment			
NEW	Health & Safety			
NEW	Technical Safety			
3	Design guideines - connections to mini grids	Interconnection	HIGH	IEC SC 8A, 8B, 8C; TC 88; TC 82
NEW	Evaluation of Hybrid Systems e.g. wind/wave, wave/solar			
NEW	Technical requirements for marine energy system grid-connection to power system			
4	Design guidelines - subsea cables	Cables	HIGH	TC 88
5	Cable Lay Guidelines			
NEW	Biofouling mitigation PART OF DESIGN/RESOURCE/IO&M	Extreme Conditions	HIGH	MT 62600-2, -10, -101, -201, -301, AG 2, ahG 14
NEW	Heavy weather and climatic impacts (storms, ice, etc.) PART OF DESIGN/RESOURCE/IO&M			
7	Array performance	Arrays	MED	
NEW	Manufacturing	Manufacturing	MED	
8	Classification of devices/resources	Classification	MED	AG 2
NEW	Cyber security	Cyber Security	MED	
NEW	Harmonization amongst the TC-114 standards suite	Standards Improvement	MED	AG 2
NEW	Standards implementation guidelines			
9	Measurement methodologies inc;/ physical parameters	Measurements	LOW	
10	Cost analysis	Cost	LOW	
11	Data acquisition and communications	SCADA	LOW	

	OUT OF SCOPE [SEEK ALTERNATIVE FORUMS]
NEW	Fish safety (tidal stream turbines)
NEW	Environmental monitoring
NEW	Consent principles for coastal and ocean area utilization by marine energy
NEW	Guidelines for marine environmental impact assessment

NOTE: Initiatives shown in the “Medium Priority” and “Low Priority” categories will be re-considered when the next Strategic Business Planning is convened in 2023.