2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

http://icre.org/

ICRE RELIABILITY ENGINEERING

Special Session 13

Intelligent Operation & Maintenance and Reliability for Ships and Marine Engineering Equipment

Goal

The maritime industry is undergoing a profound transformation driven by digitalization, autonomy, and the growing complexity of ship systems and offshore engineering equipment. Vessels and marine structures—including merchant ships, offshore platforms, subsea pipelines, deep-sea mining systems, dredging vessels, and specialized engineering vessels—operate under harsh and dynamic environmental conditions, making their safe and reliable operation both critically important and technically challenging. Unplanned failures or degraded performance not only lead to significant economic losses but also pose severe safety and environmental risks. In recent years, the rapid advancement of artificial intelligence, industrial Internet of Things (IIoT), digital twin technology, and big data analytics has opened new frontiers for intelligent operation and maintenance (O&M) of marine assets. Condition monitoring, fault diagnosis, remaining useful life (RUL) prediction, and prognostics and health management (PHM) are increasingly being integrated into the lifecycle management of shipboard machinery, propulsion systems, mooring systems, and offshore facilities. Of particular note, emerging sectors such as deep-sea mining and large-scale dredging engineering introduce additional reliability challenges, as their equipment—including seabed crawlers, lifting pumps, cutter suction systems, and trailing suction hopper dredgers—must sustain continuous operation under extreme pressure, abrasive loading, and remote deployment conditions with limited maintenance accessibility. This special session aims to bring together researchers, engineers, and practitioners from academia and industry to share the latest advances and emerging challenges in intelligent O&M and reliability assurance for ships and marine engineering equipment. It provides a platform for interdisciplinary exchange across reliability engineering, marine engineering, mechanical engineering, and artificial intelligence.

Topics

- Condition monitoring and fault diagnosis for shipboard machinery and propulsion systems
- Remaining useful life (RUL) prediction and prognostics for marine equipment
- Digital twin modeling and simulation for ships and offshore structures
- PHM frameworks for marine assets
- Fatigue and fracture mechanics of ship hulls, offshore platforms, and subsea structures
- Reliability modeling and failure analysis of offshore engineering equipment
- Reliability and health management for deep-sea mining systems (seabed crawlers, lifting pumps, riser systems)
- Condition monitoring and maintenance optimization for dredging equipment (cutter suction dredgers, trailing suction hopper dredgers)
- Corrosion monitoring, fatigue assessment, and structural health monitoring
- Risk-based inspection and maintenance optimization for marine systems
- Autonomous and remote O&M technologies for unmanned vessels and offshore facilities
- Data-driven decision support for fleet maintenance management
- Case studies and industrial applications in ship and marine engineering reliability.....

Chairs

Bin Wang, Politecnico di Milano, Italy

Enrico Zio, Politecnico di Milano, Italy

Ting Xiong, Wuhan University of Technology, China

Publication

We provide a good opportunity by presenting your updated research knowledge and also by publishing it in the conference proceedings. submitted paper will be peer reviewed by conference committees, and accepted papers will be included into conference proceedings which will be indexed by SCOPUS and Ei compendex.

Submission

1. Full paper (presentation and publication)
- The paper must be written in English.
- All submissions will undergo a peer-review process by the conference committee.
- The paper should be at least FIVE pages including all figures, tables, and references.
- The paper should be submitted as a PDF document in .pdf format.
- submitted paper must be unpublished.
- Accepted papers will be invited for oral presentation or poster presentation and will be included in the conference proceedings.

2. Abstract (presentation only)
- Abstracts will be considered for presentation (oral/poster) only without publication.
- The abstract must be written in English.
- Abstracts should be no more than 300 words and clearly outline the title, purpose, methods, and outcomes of the research or practice being described.
- All submissions will undergo a peer-review process by the conference committee.

* Welcome to submit the paper or abstract by Electronic submission system: https://www.zmeeting.org/submission/icre2026
More details about submission, please visit at: https://www.icre.org/sub.html

Conference Program

July 19, 2026 I CONFERENCE
July 20, 2026 I CONFERENCE + COURSE + TRACKS
July 21, 2026 I TECHNICAL EXCELLENCE & TRIBUTE
July 17-22, 2026 I Young Scholar Symposium + 2026 Beihang International Summer School

Conference Venue

Hangzhou International Innovation Institute of Beihang University
Address:
No. 166, Shuanghongqiao Street, Pingyao Town, Yuhang District, Hangzhou City

Hangzhou, China

Hangzhou, a renowned Jiangnan city blending millennia of heritage and poetic scenery, boasts three world cultural heritage sites. west Lake ripples with romance; Liangzhu Ruins hold ancient wisdom; the Grand canal carries folk vibes. Timeless song Dynasty elegance meets trendy fun, and delicious local cuisine delights the taste buds. A perfect mix of classic and modern, it awaits visitors from all over the world.

Important Dates

Submission Deadline: May 15, 2026
Notification Deadline: June 10, 2026
Camera-ready Date: June 25, 2026

Sponsors LASAR³ Co-sponsors

杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院）

哈爾濱工業大學 HARBIN INSTITUTE OF TECHNOLOGY

Technical Suppot

IEEE 75th anniversary Reliability Society

Contact
conference secretary: Ms. Lesley
Email: icre_conf@outlook.com
web: http://www.icre.org

2026 10th International Conference on RELIABILITY ENGINEERING

Hangzhou, China July 19-21, 2026

http://icre.org/

ICRE RELIABILITY ENGINEERING

特别专题 13

船舶与海洋工程装备智能运维及可靠性

专题目标

当前，在数字化、自主化以及船舶系统与海洋工程装备日益复杂化的驱动下，海事行业正经历深刻变革。各类船舶与海洋结构物 —— 包括商船、海洋平台、海底管道、深海采矿系统、挖泥船及特种工程船 —— 均在恶劣、多变的环境条件下运行，使其安全可靠运行既至关重要，又极具技术挑战。非计划故障或性能下降不仅会造成重大经济损失，还会带来严重的安全与环境风险。

近年来，人工智能、工业物联网（IIoT）、数字孪生技术及大数据分析的飞速发展，为海洋装备的智能运维（O&M）开辟了新领域。状态监测、故障诊断、剩余使用寿命（RUL）预测、故障预测与健康管理（PHM）正日益融入船舶机械、推进系统、系泊系统及海洋设施的全生命周期管理。值得特别关注的是，深海采矿、大型疏浚工程等新兴领域带来了额外的可靠性挑战：其装备（包括海底履带车、提升泵、绞吸系统、耙吸式挖泥船等）需在极端压力、强磨损载荷、远程部署且维护可达性极差的条件下持续运行。

本专题旨在汇聚学术界与工业界的研究人员、工程师及从业者，共同分享船舶与海洋工程装备智能运维及可靠性保障领域的最新进展与前沿挑战，为可靠性工程、海洋工程、机械工程、人工智能等多学科交叉交流提供平台。

专题主题

- 船舶机械与推进系统状态监测及故障诊断
- 海洋装备剩余使用寿命（RUL）预测与故障预测
- 船舶与海洋结构物数字孪生建模与仿真
- 海洋装备故障预测与健康管理（PHM）体系
- 船体、海洋平台及水下结构疲劳与断裂力学
- 海洋工程装备可靠性建模与失效分析
- 深海采矿系统（海底履带车、提升泵、立管系统）可靠性与健康管理
- 疏浚装备（绞吸式挖泥船、耙吸式挖泥船）状态监测与维修优化
- 腐蚀监测、疲劳评估与结构健康监测
- 海洋系统基于风险的检测与维修优化
- 无人船舶与海洋设施自主及远程运维技术
- 船队运维管理的数据驱动决策支持
- 船舶与海洋工程可靠性案例研究及工业应用

专题主席

王斌，米兰理工大学，中国

Enrico Zio，米兰理工大学，意大利

熊庭，武汉理工大学，中国

会议出版

会议收录的文章将出版在会议论文集中出版，并提交EI Compendex, Scopus等其他检索机构审核检索。

投稿方式

1). 上传文章到电子投稿系统: https://www.zmeeting.org/submission/icre2026
2). 或发送文章至会议邮箱: icre_conf@outlook.com
提示:
1. 全文投稿（含报告与出版）
- 稿件须以英文撰写。
- 所有投稿均由会议委员会进行同行评审。
- 稿件篇幅不少于 5 页，包含所有图表及参考文献。
- 稿件须以 PDF 格式提交。
- 投稿稿件须为未发表的原创成果。
- 录用稿件将受邀进行口头报告或海报展示，并收录至会议论文集。
2. 摘要投稿（仅作报告）
- 摘要仅用于申请报告资格（口头报告 / 海报展示），不纳入出版范围。
- 摘要须以英文撰写。
- 摘要字数不超过 300 词，须清晰阐明所涉研究或实践的标题、研究目的、研究方法及研究成果。
- 所有投稿均由会议委员会进行同行评审。
• 详细信息请见----https://icre.org/sub.html

会议日程

2026年7月19日- 签到注册
2026年7月20日- 开幕式+主旨报告+作者报告
2026年7月21日- 开幕式+主旨报告+作者报告
2026年7月12-25日- 青年学者论坛 + 2026北航国际暑期学校

会议地址

杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院）

地址：杭州市余杭区瓶窑镇双红桥街166号

中国杭州

杭州，一座融千年文脉与诗画风光的江南名城，三大世界文化遗产勾勒其独特魅力。西湖碧波漾诗意，良渚遗址藏远古智慧，大运河流淌南北烟火。宋韵风雅浸润红墙古社，新潮玩法解锁别样体验，鲜醇杭帮菜抚慰味蕾。古典与现代交织，漫步街巷皆是惊喜，正静待八方游客前来探寻。

重要日期

投稿截止日期：2026年5月15日
审稿通知日期：2026年6月10日
注册截止日期：2026年6月25日

Sponsors LASAR³ Co-sponsors 杭州市北京航空航天大学国际创新研究院（北京航空航天大学国际创新学院） 哈尔滨工业大学 HARBIN INSTITUTE OF TECHNOLOGY 技术支持 IEEE 75th Anniversary Reliability Society

Contact
conference secretary: Ms. Lesley
Email: icre_conf@outlook.com
web: http://www.icre.org