

			PHME26					
07/07/2026	Short Courses							
	Doctoral Symposium							
1730-1930	Day 0: 7th July Welcome Reception with Poster presentations (9 technical papers + 8 Doctoral Symposium posters)							
Guidelines for posters	A0 size.	Posters will be displayed throughout the conference	Organization templates can be used.					
General guidelines for presentations	Presentation duration: 20 minutes	15 min presentation and 3-5 min q&a	16:9 Presentation format.	Organization templates can be used.				
					Room C (Møterom 1)		Room D (Vinterhaven)	
	Room A (Storesal)		Room B (Lillesal)					Room E (Møterom 2)
	Day 1: 8th July							
8:30-8:45	Welcome Note							
8:45-9:45	Keynote 1: "From EVM to PHM, a personal journey" - Dr. Richard Greaves, Fellow of SAE, REng and Institute of Physics							
9:45-10:05	Coffee break							
10:05-11:30	Tutorial 1: Predicting the Future with Confidence: A Tutorial on Uncertainty-Aware Prognostic (Chair: Steve King)		Paper 1B 4 papers	RUL Prognostics Chair: Pierre Dersin	Paper 1C 4 papers	Anomaly Detection Chair: Sławomir Nowaczyk	Paper 1D 4 papers	Fleet-level PHM architectures and metadata standards Chair: Octavian Niculita
			12640	Failure Mode-informed Development of Remaining Useful Life Prognostics	12882	Integrating Deep Autoencoders and Bayesian Inference for Diagnostics and Health Management of Industrial Inkjet Systems	14009	Through-life Monitoring of Resource-constrained Systems and Fleets
			14127	Remaining Useful Life Prediction Using Constraint Guided Learning with Limited Physical Knowledge	14143	A Methodology for Progressive Physics Integration in Data-Driven Anomaly Detection: Application to Circuit Breaker Monitoring	14096	System-Level CBM/PBM Aggregation: A Unified Framework for Proactive and Reactive Metrics in Redundant Architectures
			14431	Neural network online learning-assisted particle Gibbs framework for system degradation estimation considering sensor degradation impacts	14156	A Spatiotemporal Graph Neural Network Framework for Fault Detection and Diagnosis under Dynamic Operating Conditions	14128	A Reliability Digital Twin Architecture for Real-Time Fleet Monitoring and Predictive Maintenance of Hydrostatic Transmission Components
			14334	Integrating Survival-Based Aging Models with Data-Driven RUL Prognostics	14382	AI for Sustainable Building Operations: Data-Driven Anomaly Detection in Ventilation Systems	14250	IUPHM Invited Paper: ISA-PHM – a Standardized Format for Storing and Utilizing Meta-data of Diagnostic and Prognostic Tests
11:30-12:35	Special Session: PHM for Maritime Safety 3 Papers	(Chair: Knut Erik Knutsen)	Paper 2B 3 papers	Mechanical Diagnostics Chair: Kamal Mejdaher	Paper 2C 3 Papers	Cyber-physical AI, drift and uncertainty-aware health analysis Chair: Marcos Orchard	Paper 2D 3 Papers	System-level PHM, reviews and digital twin integration Chair: Ian Jennions
	14691	Edge AI–Enabled Smart Sensors for Predictive Maintenance of Marine Vessels	14536	Frequency-Domain Feature Analysis for Early Gear Damage Detection in Planetary Gearboxes	14133	Monitoring Model Drift in Feedback-Controlled Systems via Efficacy and Efficiency Metrics	12785	Bridging Methods and Data in System-Level Prognostics: A Comprehensive Review
	14008	Reinforcement Learning Control for Natural Circulation in a Marine Pressurised Water Reactor Cooling System	14251	Diagnostics for Mechanical Systems with Unknown Fault Modes: A Novel Open Set Recognition Approach	14134	Meets Expectations: System Health Analysis and Prognosis for Embedded and Cyber-physical AI	14110	A Framework for the Integration of Hybrid Models in Digital Twin Architectures for PHM
	14095	A Comprehensive Literature Review of State of Safety (SoS) for Maritime Battery Management Systems (BMSs)	14341	A Two-Stage Machine Learning Approach for Quantitative Gear Crack Detection Using Vibration Signal Analysis	14170	Estimating the Battery State of Health with Quantified Aleatoric and Epistemic Uncertainty	14360	Shape of complexity
12:35-13:35	Lunch							
13:35-15:00	Panel Session 1: Reliable, Robust, Explainable, and Trustworthy AI and Data Science for Prognostics and Health Management		Paper 3B 4 papers	RUL uncertainty, conformal prediction and foundation embeddings Chair: Octavian Niculita Co-chair (Student) :Melvin Fernandes Novo	Paper 3C 4 papers	Bearing and Vibration PHM Chair: Jeff Bird	Paper 3D 4 papers	Renewable Energy PHM Chair: Mihaela Mitici
			14281	Uncertainty-Aware Bearing Remaining Useful Life Prediction Based on Conformal Prediction	14098	An Explainable Large Language Model Framework for Bearing Fault Diagnosis Using Grad×Input	14135	Cost-Efficient Prognostics Framework for Heliostat Drive Units
			14362	Bifurcated Remaining Useful Life Prediction: A Hybrid Approach for Realistic Uncertainty Characterization	14125	Development of Bearing Fault Diagnosis Models using Multibody Simulation Training Data	14138	A Graph Auto-encoder Framework for Spatio-temporal Anomaly Detection of Corrosion across a Fleet of Offshore Wind Turbines Using ICCP Data
			14358	Leveraging Time Series Foundation Models Embeddings for Remaining Useful Life Prediction	14379	Physics-Informed Domain Generalization for Bearing Prognostics Under Unseen Operating Conditions	14335	A study on the Impact of Categorical Alarm Data in Power Estimation and Anomaly Detection of Photovoltaic Inverters
			14660	Time Series Retrieval for Grounding Multimodal Language Models in Remaining Useful Life Prediction	14393	Leakage-Safe, Reproducible Benchmarking for Vibration-Based PdM	14386	Uncertainty-aware Surrogate for Fatigue Assessment of Moorings in Offshore Wind Turbines
15:00-15:20	Coffee break							
15:20-16:45	Panel Session 2: Fielded Implementation of PHM: Successes and Obstacles		Paper 4B 4 papers	Energy Systems PHM Chair: Alexandre Voisin	Paper 4C 4 papers	Transfer learning and Autoencoders Chair: Steve King	Paper 4D 4 papers	Aerospace PHM Chair: Nick Eleftheroglou
			13948	Predictive Analysis for Safe and Optimal Operation of the CoBra High-Temperature Heat Pump	14300	Reducing Negative Transfer in Domain Adaptation for Vibration Fault Diagnosis	14113	Uncertainty-aware and risk-controlled identification of abnormal parametric changes in space launcher electrical valve actuators
			14122	Hybrid Detection for Heat Pump Contamination Using Physics-Informed Machine Learning	14141	Domain Adaptation of Automatic Speech Recognition Models for Diagnostic Applications	14329	Evaluating the Impact of Data Partitioning and Client Participation on Federated RUL Prediction in Aviation
			14193	Load-Aware Stochastic Degradation Modeling and Lifetime Characterization for PEM Fuel Cells	14411	Contrastive, Autoencoding, and Variational Representations for Telemetry-Driven RUL Prediction	14364	Edge-Deployed Generative Language-Based Retrieval for Aerospace Asset Health Management
			14426	Comparative Evaluation of Prognostic Models for Medium-Term Pressure Prediction in Gas Transmission Units	14430	A Convolutional Autoencoder for Fast Compressive Sensing Reconstruction of Vibration Signals	14381	A Methodological Framework for Prognosis Using Control-Oriented Models: Application to an Aeronautical Power Converter
	Day 2: 9th July							
8:30-9:30	Keynote 2: Beyond Functional Safety – Leveraging Prognostics and Health Management to Achieve Next-Level Safety - Frank Børre Pedersen, Dr.-Ing. Vice President, DNV AS, Norway							
9:30-9:50	Coffee break							
9:50-10:50	Panel Session 3: Maritime Applications of PHM		Paper 5B 3 Papers	Virtual sensing and edge PHM for energy assets Chair: Pierre Dersin	Paper 5C 2 Papers	Advanced uncertainty methods for RUL Chair: Maneesh Singh Co-chair (Student) :Melvin Fernandes Novo	Paper 5D 3 papers	Prescriptive maintenance and operational decision support Chair: Phuc DO

			14155	Virtual Temperature Sensors in Power Transpircs Using Neural Ordinary Differential Equations	14357	Quantum-Aided Bayesian Learning for the Prediction and Uncertainty Quantification of Remaining Useful Life	14307	A Novel High-Level Reasoning Architecture for Aircraft Prescriptive Maintenance	
			14298	Edge-Server Collaborative System for Real-Time and In-Depth Damage Detection of Wind Turbine Blades using Acoustic Signals	14173	Robust Multi-Modal Hamilton-Jacobi Reachability Prognostics. An Application to Battery Health Management	14333	Solving the cold-start challenge: translating human expertise into early-stage criticality assessment for building systems	
			14396	Physics-Informed Virtual Sensing for Isentropic Efficiency: Enabling Sensor Reduction in Heat Pumps	14418	Manufacturing Quality–Informed Prognostics: A Novel Approach to Past State Uncertainty Management	14387	Prescriptive Maintenance through Workload Allocation for Synchronizing Parallel Machines	
10:55-12:20	Tutorial 2: Data-Driven Optimization for Maintenance and Spare-Parts Logistics: From Data to Actionable Decisions (Chair: Steve King)		Paper 6B 4 papers	Railway maintenance and sensor-to-action optimization Chair: Lilach Goren	Paper 6C 4 papers	Wind Turbine PHM Chair: Khahn Nguyen	Paper 6D 4 papers	Electrical, EV and aerospace actuator PHM Chair: Kamal Medjaher	Mathworks Hands on Demo
			14150	A Prognostic Framework for Railway Track Geometry: Tamping Detection, Settling-Aware Estimation, and Spatially Resolved RUL Prediction	14092	AI-Driven PHM for Floating Offshore Wind Turbines: Review and Main Challenges	14112	PHM Framework for Discrete IGBTs in EV Applications: A PoF-Based Approach with a State-of-Damage Metric	
			14158	Decision at First Sight: An Attention Network for Direct Maintenance Optimization from Sensor Data	14225	Ontology-Grounded Large Language Models for Reliable Querying of Wind Turbine Inspection Knowledge	14114	Developing Generalized Health Index of Electric Vehicle Drivetrain	
			14422	Cost-effective Inspection and Maintenance Rule for Train Control Beacons	14311	A Probabilistic Baseline Learning Framework for SCADA-Based Wind Turbine Aging Diagnosis and Multi-Scale Performance Degradation Analysis	14153	Scalable Model-Based Discrete Mode Estimation for a Lunar Rover Power System	
			14145	Maintenance planing for prognostic health management of multi-component systems: a case study of Multi-Objective Optimisation for railway vehicles	14106	Video Motion Magnification for Vibration Measurement in Hydropower Applications	14372	Development of a hybrid PHM system for flight control actuators fusing data analytics with physical knowledge	
12:20-13:20	Lunch								
13:20-14:45	Special Session: Sustainability in/for PHM 4 papers (Chair: Deepti Mishra)		Paper 7B 4 papers	Rotating Machinery PHM Chair: Steve King	Paper 7C 4 papers	Transformers and LLMs Chair: Alexandre Voisin	Paper 7D 4 papers	Maintenance planning and industrial PHM applications Chair: Mihaela Mitici	
	14235	From Machine Health to Elderly Health: A Sustainability-oriented Elderly-centric Social Robot System enabled by PHM	14166	Vibration Analysis for Damage Detection and Classification for Condition Monitoring on Worm Gears	16633	Comparing Large Language Models, Time Series Foundation Models, and Classical Deep Learning for Anomaly Detection in Multivariate Industrial Signals	16399	A Conceptual Framework To Integrate Prognostics And Health Management With Maintenance Repair And Overhaul For A Hydrogen-Electric Aircraft Propulsion System	
	14308	Sensor Fault Detection via Virtual Smart Heat Metering with Spatial-Temporal Graph Neural Networks	14324	Physics Based and Data Driven Anomaly Detection Methods Using Vibration Data for Early Gear Damage Detection in Planetary Gearboxes	14432	API-Based Integration Framework for Dual-LLM Prescriptive Maintenance Report Generation in PHM-Enabled Digital Twin Applications	14176	A Metric-Driven Framework for Evaluating Prognostic Based Failure Estimation on Spare Part Inventory Management	
	14352	Towards Green PHM: Adaptive Early Stopping for Sustainable Neural Architecture Search in Industrial Applications	14347	Estimating Spall Severity in Rolling Element Bearings: A Supervised Learning Approach With Naturally Progressing Spalls	14348	Learning the Language of Vibration: A Self-Supervised Transformer Foundation Model for PHM	14332	Predictive maintenance of building assets using a collective intelligence prognostic	
	14306	Direct and indirect Structural Health Monitoring of steel railway bridges: A state-of-the-art review and future challenges	14433	Strain-based condition monitoring of inner raceways of deep-groove ball bearings using FBG sensors	14397	Transformer-Based Architectures for Machinery Prognostics : A Review	14408	From Sensor Data to Maintenance Actions: An Industrial PHM Application for UltrasonicWelding Assembly Machines	
14:45-15:05	Coffee break								
15:05-16:30	Panel 4: Health-Aware Control Design and Learning – Closing the loop between Prognostics and Control		Paper 8B 3 Papers	Reliability and Causality Chair: Ferhat TAMSSAOUET	Paper 8C 3 papers	Sim-to-Real Learning Chair: Lilach Goren	Paper 8D 3 papers	Degradation Monitoring Chair: Arvind Keprate	
			14413	ACE – Automating Causal Extraction: Leveraging Large Language Models for Bowtie Diagram Generation in Failure Analysis and System Dynamics	14354	Active Sim-to-Real Gap Reduction for Industrial Inspection via Digital Twin and Embedding Analysis	14412	Bayesian Online Changepoint Detection Algorithm for Degradation Monitoring and Prognostics of Electrical Devices	
			14428	Quantifying Reliability and Resilience in Interdependent Infrastructure Networks	14390	Simulation-Based Inference for the Amortized Determination of Physical Model Parameters of a Mechanical System for Diagnostics and Prognostics	14404	Turbofan Sensor-FDI-Bench: A Synthetic Dataset for Sensor Fault Detection & Isolation under Degradation and Operating Variability	
			14336	Understanding the Impact of Temporal Aggregation on Uncertainty in Quality Indicator Prediction for Industrial Processes	14115	Prognosis of Mission-Aware Remaining Useful Life for ROV Thrusters Using a Physics-Consistent Simulation Framework	14275	Analysis of fault-induced electromechanical disturbance effect in a closed-loop system	
17:30	City walking tour								
19:30	Gala dinner (OSLO Fjord Cruise)								
	Day 3: 10th July								
8:30-9:30	Keynote 3: Quantum Computing for Prognostics and Health Management - Enrique Lopez Droguett, Profressor, UCLA								
9:30-9:50	Coffee break								
9:50-11:15	Data Challenge Chair: Moncet Soualhi/ Ferhat TAMSSAOUET		Paper 9B 4 papers	Mechanical diagnostics and stochastic degradation estimation Chair: Christophe Berenguer	Paper 9C 4 papers	Autonomous Systems PHM Chair: Mayank Jha	Paper 9D 4 papers	Battery and Mobility PHM Chair: Marcos Orchard	
		Introduction of challenge							
		Agentic AI for PHM Pipeline Development: A Human-Supervised Case Study in the PHME 2026 Data Challenge	13707	Fault Diagnosis of Harmonic Reducers Used in Industrial Robots via DWT, MS-FFT, EMD and Machine Learning Classifiers (RF and K-NN)	13912	Sustainable Anomaly Detection Framework for Autonomous Surface Ship: Adaptive Subsystem-Level Anomaly Detection Algorithm via MLOps	14094	Improved State of Health assessment for Lithium-Ion Batteries Based on Electrochemical Impedance Spectroscopy Measurements	
		Gated Residual End-of-Life Prediction for Variable-Prefix RUL in the PHME2026 Data Challenge	14313	Evaluation of Input Presentation in Transfer Learning for Bearing Fault Detection	14351	Supervised and Unsupervised Methods for Detecting Anomalies in an Autonomous Long-Range Lunar Rover	14400	Trolley-Assisted Charging Strategies to Ensure Battery Autonomy for Electric Load-Haul-Dump Vehicles in Large-Scale Underground Mining	
		Subway Door System RUL Estimation Using Extra Trees and Leaf Similarity	14124	Benchmarking Time-Series Anomaly Detection Algorithms for Photovoltaic Plants	14420	Classification and Assessment of Propeller Faults in Electric Unmanned Aerial Vehicle Drive Trains	14402	Risk-Aware Optimization of Charging Time and Route Selection for Electric Vehicles Under Uncertainty	
			14168	Bayesian Post-Repair Prognostics for Reliable RUL Prediction	15097	Hybrid As-Operated Digital Twin of an Aircraft Brake	14556	Physics-Constrained Deep Learning for Interpretable Anomaly Detection in Large Battery Packs with Limited Monitoring Granularity	
		Closing session							
11:15-12:20	Prognostics and Health Monitoring (Chair: Steve King)		Paper 10B 3 Papers	Fault Detection and Isolation Chair: Maneesh Singh	Paper 10C 3 Papers	Trustworthy AI and Advanced learning methods Chair: Mayank Jha	Paper 10D 3 Papers	Autonomous Systems PHM II Chair: Ian Jennions	
			14302	Robust Anomaly Detection Under Contaminated Data: A Comprehensive Evaluation Across PHM Contexts	14359	Trustworthy Abnormality Detection from Welding Images Through Class-Conditional Conformal Learning and Bayesian Cost Minimization	14361	RUL-Aware RRT*: Degradation-Balanced Motion Planning for Robotic Manipulators	
			14339	Early fault detection in rotating machinery via multivariate autoencoder-based indicator fusion.	16427	From MCU to Neuromorphic Chip: A Zero-Gradient Spiking-Compatible Engine for Cross-Domain Predictive Maintenance	14325	Particle Filter-based Degradation Modeling and SOH Prediction for Lithium-ion Batteries of Autonomous Systems	

			14369	A Proposal for Application of Physics-Informed Digital Twin and Particle Filtering for the Detection and Prognosis in Harmonic Drives	14328	Structural Representation Learning for Thermal Turbulence Detection in Infrared Imagery using YOLO	14290	Robust Real-Time Thrust Fault Diagnosis for UAVs: A Physics-Informed Framework Decoupling Wind Disturbances	
12:20-13:40	Lunch + Student track (Speed Mentoring session)								
13:40-15:05	Panel Session 5: University–Industry Partnerships in a Multinational Environment: Diversity, Collaboration, and Impact		Paper 11B 3 papers	Battery, transformer and hydraulic degradation models Chair: Jeff Bird	Paper 11C 4 papers	Asset Health Monitoring Chair: Arvind Keprate			
			14407	Impact of Reactive Power Assumptions on Physics-Informed Assessment of Transformer Ageing in Distribution Networks	14181	Cloud-Enabled autoencoder-based Anomaly detection for gas turbine faults.			
			13016	Aging States Estimation and Monitoring Strategies of Li-Ion Batteries Using Incremental Capacity Analysis and Gaussian Process Regression	14246	TurboGrad: An Open-source Differentiable Performance Model for Aeroengine Condition Monitoring			
			14409	Dual-Threshold Maintenance Optimisation for Hydraulic Floodgates under Runaway Stochastic Degradation	14537	Interpretable Operational Regime Classification for a Wind Turbine PHM Digital Twin Architecture			
15:05-15:25	Coffee break				16332	An Engine Health State Index Based on Aggregated Failure Risk Estimates			
15:30-16:00	Concluding remarks and Feedback Session								