

At a glance

Tuesday 24.05.2022

Room A			
09:00 - 09:30	Welcome		
09:30 - 10:30	Keynote - Dr. Paul Chün (KLM) - Vice President Technology Hub KLM Engineering & Maintenance		
10:30 - 11:00	Coffee break		
Room A	Room H	Room F	
11:00 -12:30	S1: Data limitations and IT enablers	S2: Advanced Maintenance Strategies I	S3: Operational Monitoring using Airframe Digital Twins in Aerospace-I
12:30 - 13:30	Lunch		
Room D	Room H	Room G	
13:30 - 15:00	S4: Predictive aircraft maintenance integrating RUL prognostics-I	S5: Advanced Maintenance Strategies II	S6: CBM Enablers
15:00 - 15:30	Coffe break		
Room D	Room H	Room G	
15:30 - 17:00	S7: Predictive aircraft maintenance integrating RUL prognostics-II	S8: Application of innovative health monitoring techniques I	S9: Establishing CBM
19:00 - 22:00	Dinner		

Wednesday 25.05.2022

Room F	Room H	Room G	
09:00 -10:30	S10: Prognostics Models	S11: Application of innovative health monitoring techniques II	S12: Health Monitoring on Helicopters and UAVs
10:30 - 11:00	Coffe break		
Room F	Room H	Room G	
11:00 - 12:30	S14: Application of innovative health monitoring techniques III	S15: SHM Solutions	
12:30 - 13:30	Lunch		
Room A			
13:30 - 14:30	Keynote - Dr. ir. Wim Verhagen (RMIT) - Senior Lecturer at RMIT University, Australia		
14:30 - 15:15	European Academy on Condition-Based Maintenance		
15:15 - 15:30	KLM Best ICCBMA22 Work Award		
15:30 - 16:00	Closure		

Detailed sessions

	Session 1	Session 2	Session 3
Tuesday	Data limitations and IT enablers	Advanced Maintenance Strategies I	Operational Monitoring using Airframe Digital Twins in Aerospace-I
Chair	Floris Freeman (KLM)	Kai Wicke (DLR)	Derk Daverschot (Airbus)
11:00 - 11:20	Federated quantum machine learning: overcoming data-sharing limitations, Niels Neumann, Bart Kamphorst and Frank Phillipson	Condition-Based Maintenance Planning of an Aircraft Fleet Under Partial Observability: a Reinforcement Learning Approach, Iordanis Tseremoglou and Bruno F. Santos	Digital Twins for military assets, V.S.Viswanath Dhanisetty and Marcel Bos
11:20 - 11:40	Measuring devices with sigmoidal response curves to simplify data evaluation and improve robustness in aircraft monitoring, Helge Pfeiffer and Martine Wevers	A Framework for Post-Prognosis Decision Making Utilizing Deep Reinforcement Learning Considering Imperfect Maintenance Decisions, Panagiotis Kominos, Dimitrios Zarouchas and René Alderliesten	Digital Twin based damage diagnostics of composite structures, Dimitrios Milanoski, Georgios Galanopoulos, Dimitrios Zarouchas and Theodoros Loutas
11:40 - 12:00	Maintenance of capital goods under incomplete information and constrained maintenance resources, Ragnar Eggertsson, Rob Basten and Geert-Jan van Houtum	Reinforcement Learning for Adaptive Fleet Maintenance Scheduling, Pedro Andrade, Catarina Silva, Bernardete Ribeiro and Bruno Santos	Transfer Learning to close the gap between experimental and numerical data, Hadrien Postorino, Eric Monteiro, Marc Rebillat and Nazih Mechbal
12:00 - 12:20	ReMAP IT Platform in support for automated aircraft condition-based maintenance, Iván Carillo and Miguel Angel Esbri	Designing aircraft condition-based maintenance considering reliability and cost-efficiency objectives, Juseong Lee and Mihaela Mitici	Operational Monitoring using Airframe Digital Twins, Derk Daverschot and John Van Doeselaar
	Session 4	Session 5	Session 6
Tuesday	Predictive aircraft maintenance integrating RUL prognostics-I	Advanced Maintenance Strategies II	CBM Enablers
Chair	Juseong Lee (TUD)	Robert Meissner (DLR)	Bastiaan van Griensven (Airbus)
13:30- 13:50	Integrating Remaining-Useful-Life prognostics into opportunistic maintenance of aircraft landing gear brakes, Juseong Lee, Ingeborg de Pater, Stan Boekweijt, and Mihaela Mitici	Impact of improved maintenance in the CleanSky II projects AIRMES and DEMETER, Hendrik Meyer, Christop Mostert, Christian Willberg, Joel Ferreira and Franz Zafra-Evers	Structural Health Monitoring (SHM) for in-service life extensions support, Pablo Caffyn, Alejandro Lopez Garcelan and Daniel Inesta
13:50 - 14:10	A Prognostic Framework to Detect and Predict Failures on Aircraft Systems, Marie Bieber, Bruno F. Santos and Wim J.C. Verhagen	A Comparative Study of Optimization Models for Condition-Based Maintenance Scheduling, Iordanis Tseremoglou, Paul J. van Kessel, Bruno F. Santos and Floris Freeman	Modes for Optimizing Aircraft Maintenance Processes, Onyedikachi Chioma Okoro, Maksym Zaliskyi, Serhii Dmytriiev
14:10 - 14:30	Application of PHM in a real-time and system of systems environment, Lorenz Dingeldein	Reinforcement Learning for Adaptive Fleet Maintenance Scheduling, Pedro Andrade, Catarina Silva, Bernardete Ribeiro and Bruno Santos	IVHM FOR UAVs FOR FUTURE MRO – OPERATIONAL FRAMEWORK, REQUIREMENTS, AND GAP ANALYSIS, Ann-Kathrin Koschlik, Hendrik Meyer, Jan Torben Dohmen and Florian Raddatz
14:30 - 14:50	Physics-based Induction on Deep Learning for Prognostics and Health Management of Complex Systems in Aerospace, Manuel Arias Chao	Airmedt – Aircraft maintenance and evaluation decision tool, V.S.Viswanath Dhanisetty	A conceptual approach and roadmap to HUMS for EVTOL, Christian Janke and Eric Bechhofer

Detailed sessions

	Session 7	Session 8	Session 9
Tuesday	Predictive aircraft maintenance integrating RUL prognostics-II	Application of innovative health monitoring techniques I	Establishing CBM
Chair	Mihaela Mitici (TUD)	Marcel Bos (NLR)	David Piotrowski (Delta Air Lines)
15:30 - 15:50	Federated Models for CBM via Adaptive Learning, Miguel Fernandes, Alberto Cardoso, Joel P. Arrais, Catarina Silva and Bernardete Ribeiro	Health monitoring for a helicopter Environmental Control System, Pauline Vos, Tiedo Tinga and Frank Hartvelt	Navigating Civil Aviation Regulations for Health Monitoring, David Piotrowski
15:50 - 16:10	Practical requirements for integrating Remaining Useful Life prognostics into predictive aircraft maintenance planning, Ingeborg de Pater and Mihaela Mitici	Evolutionary Algorithm for Enhanced Gas Path Analysis in Turbofan Engines using On-Wing Data, Tim Rootliep, Wilfried Visser and Michiel Otten	Roadmap for regulatory path and industry best practices to CBM implementation in civil aviation, Dragos Budeanu
16:10 - 16:30	A Health Index Framework for Condition Monitoring and Health Prediction, Alexander Kamtsiuris and Florian Raddatz	Condition-based Maintenance Considerations for Safety-critical Decision Support in Aircraft Engines, Asteris Apostolidis and Konstantinos Stamoulis	Adapting Commercial Best Practices to U.S. Air Force Maintenance Scheduling, Eric Klein, Kyle Blond, Anne Clark, Austin Himschoot and Steve Conley
16:30 - 16:50	Design of a Reinforcement Learning Enabled Tool for Aircraft Condition Based Maintenance Planning and Visualisation, Jorge Ribeiro, Pedro Andrade, Manuel Carvalho, Catarina Silva, Bernardete Ribeiro and Licinio Roque	Aircraft Environment Spectra and Corrosivity Monitor for Corrosion Management, Fritz Friedersdorf, Kevin Farinholt, Brandi Clark, Liam Agnew and Victoria Avance	Value of information analysis to reduce CBM investment risk – use case for retrofitting sensors on aircraft systems, Floris Freeman
	Session 10	Session 11	Session 12
Wednesday	Prognostics Models	Application of innovative health monitoring techniques II	Health Monitoring on Helicopters and UAVs
Chair	Arias Chao Manuel (ZHAW)	Vis Dhanisetty (DLR)	Marc Rebillat (ENSAM)
09:00-09:20	Time-frequency Health Conditions for Remaining Useful Life estimation, Raúl Llasag Rosero, Catarina Silva and Bernardete Ribeiro	Packaging of optical fiber sensors for CBM of composite aerospace structures, Daniele Inaudi	CBM benefit assessment on fatigue computation for rotor parts with in-service usage data, Emmanuel Laillet, Pierre-Loïc Maisonneuve and Roméo Byzery
09:20-09:40	Remaining Useful Life prognosis of representative aeronautical structures using novel strain based Health Indicators, Georgios Galanopoulos, Dimitrios Milanoski, Agnes Broer, Dimitrios Zarouchas and Theodoros Loutas	Lamb waves scattering model for identification of damage parameters, William Briand, Marc Rébillat, Mikhail Guskov and Nazih Mechbal	Usage Monitoring of Helicopter Gearboxes with ADS-B Flight Data, David Hünemohr, Jörg Litzba and Farid Rahimi
09:40-10:00	Data-Driven Prognostics of Delamination Growth under Fatigue Loading with Emphasis on Aeronautical Composite Structures, Ferda Gul, Rinze Benedictus, Rafik Hadjria, Yevgeniya Lugovtsova and Dimitrios Zarouchas	On the challenges of upscaling damage monitoring methodologies for stiffened composite aircraft panels, Agnes Broer, Nan Yue, Georgios Galanopoulos, Rinze Benedictus, Theodoros Loutas and Dimitrios Zarouchas	Monitoring Oscillating Ball Bearings Degradation for electromechanical Flight Control Actuators of Unmanned Aerial Vehicles, Mohamed A.A. Ismail, Robert Kowalski and Jens Windelberg
10:00-10:20	Probabilistic HUMS condition indicators thresholding using Gaussian process regression on conditioned quantiles estimated from gamma mixture model, Maxime Meuterlos, Valerio Camerini, Jérôme Antoni, Lucas Macchi and Gianni Naccarato	Fusion of SHM techniques for synergetic degradation monitoring of composite aircraft wing structure under compression fatigue, Nan Yue, Agnes Broer, Georgios Galanopoulos, William Briand, Marc Rébillat, Theodoros Loutas and Dimitrios Zarouchas	An Intelligent Fault Diagnosis Method for UAVs based on Few-shot Learning, Chuanjiang Li, Shaobo Li, Ansi Zhang, Zhiyuan He and Konstantinos Gryllias

Detailed sessions

	Session 14	Session 15	
Wednesday	Application of innovative health monitoring techniques III	SHM Solutions	
Chair	Jason Hwang (NLR)	Nan Yue (TUD)	
11:00 - 11:20	Health Monitoring in Civil Aviation, David Piotrowski	Numerical Simulations in Ultrasonic Guided Waves Analysis for the Design of SHM Systems – Benchmark Study based on the Open Guided Waves Online Platform Dataset, Jean Lefèvre, Christian Willberg, Enes Savli and Kilian Tschöke	
11:20 - 11:40	Health monitoring of aircraft systems: challenges and perspectives based on a real-life study case (SCU system), Luis Basora and Xavier Olive	Smart Sensor System based Damage Identification in Composite Structures, Richard Loendersloot	
11:40 - 12:00	Engine Condition Trend Monitoring for condition based maintenance, Jan Willem Wiegman, Pauline Vos and Anne Oldersma	Structural Health Monitoring of Aerospace structures using built-in sensor networks, Amrita Kumar, Susheel Yadav, Subir Patra, Serena Wang, Grant Chang, Douglas Furstinger, Cody Gray and Franklin Li	
12:00 - 12:20	Improving aircraft maintenance performance through prescriptive maintenance strategies, Robert Meissner and Kai Wicke	Use of the 3D -SLDV vibrometer for designing Structural Health Monitoring (SHM) measurement strategies: application to an aerospace composite panel, Dario Di Maio and Richard Loendersloot	
12:20 - 12:40		Advanced landing gear fibre optic sensing and monitoring system, Frank Grooteman, Raphaël Goutagny, Chris Davies, Thijs van Leest, Ian Platt and Jerry Symons	