Monday, 6th October 2025

9:00	*Registration, Small Breakfast & Get together*	
9:20	Opening of MPA Conference by Prof. Dr.-Ing. Stefan Weihe (Director of MPA Stuttgart)	
9:30	Opening Keynote: Prof. Ali Fatemi "Effects of Process and Post-Process Treatments on Fatigue Performance of Additively Manufactured Safety-Relevant Structures" in V27.01	
	Session: Structural Materials Modelling – Fatigue (Room V27.01)	Session: Advanced Manufacturing (Room V27.02)
10:20	"Evaluation of fatigue life using the seam geometry obtained by scanning - an overview of previous research projects" by Prof. Dr. tech. R. Lang (University of Innsbruck)	"Microstructures and their critical role for implementation of additively manufactured nickel-based superalloys in turbomachinery" by A. Karapuzha (Siemens Energy)
10:40	"Digital Visual Testing of Local Weld Geometries and Machine Learning-based Fatigue Assessment of Welded Joints" by Dr.-Ing. M. Braun (DLR)	"Development and Testing of a 550 N Additively Manufactured Liquid Rocket Engine Using Green Propellants" by L. Hoffelder (HyEND e.V.)
11:00	"Investigating fatigue life assessment of scanned weld geometries" by G. Veile (MPA Stuttgart)	"In-Situ Alloying of Ti-6Al-7Nb with Copper Using Laser Powder Bed Fusion for Enhanced Biocompatibility in Permanent Implants" by P. Steinmeier (Paderborn University)
11:20 Communication break		
11:40	"Fatigue life evaluation for high-purity copper welded joints with the NuMeSiS concept" by M. Lauf (ZF Friedrichshafen AG)	"Optimization and development of scanning strategies in PBF LB/M" by R. Hofmann et al. (MPA Stuttgart)
12:00	"Stress-Optimized Welding Repair for High-Strength Offshore Steel Joints" by Reichel (BAM)	"Thermographic Process Monitoring of Selective Laser Sintering Processes" by B. von Stackelberg (Edevis GmbH)
12:20	"Model-Based Determination of Local Fatigue Strength in EN-GJS-500-14 Heavy-Section Castings Under Varying Load Spectra Using the Tanaka-Mura Approach" by F. Weber (RWTH)	"In-Process Monitoring for Material Property Assessment in Parts Manufactured by the Calibur3 NeuBeam Additive Manufacturing System" by S. Periane (Wayland Additive)
from 12:40 to 13:40 - Lunch at MPA Stuttgart (Building No. 32)		
13:40	"Weldment Fatigue: Experiments and Modelling" by Prof. A. Fatemi (Uni Memphis)	"Particle-based modelling of the laser powder bed fusion of metals" by A. Wahn (Fraunhofer IWM)
14:00	"Fatigue life improvement by robot-guided automated HFMI treatment" by L. Wendler (Hochschule München)	"Digital process twin for quality assurance and advance planning in wire arc additive manufacturing" by A. Henneböhle (Heggemann)
14:20	"Impact of HFMI on Fatigue Performance of AISI 347 at Elevated Temperatures" by G. Klenk (MPA Stuttgart)	"Manufacturing of thick-walled components with Wire Arc Additive Manufacturing" by T. Fritschle (MPA Stuttgart)
14:40 Communication break		
15:00	"Pragmatic approach to a full lifecycle calculation" by F. Mailänder (CADFEM)	"CoaxPrinter – Direction Independent Laser Wire DED" by Nothnagel (Precitec)
15:20	"Thermo-mechanical fatigue in austenitic stainless steel: phase transformation kinetics at elevated temperatures" by V. Lyamkin (HS Kaiserslautern)	t.b.a.
15:40	"Methods for material modelling in metal processing" by H. Autenrieth (Bosch)	t.b.a
16:00 Communication break		
16:20	"Fatigue of metastable austenitic steels" by Dr.-Ing. M. Smaga (RPTU)	"Nanocluster Manufacturing of Pt-Y Alloys: First Optimization Steps with a Sputter Gas Aggregation Source" by M. Fenker (fem Forschungsinstitut)
16:40	"Material Behavior of 4D-Printed Iron-based Shape Memory Alloys" by M. Loewe (University of Hannover)	"Penetration Depth Induction and its intriguing applications in material joining" by T. Vauderwange (VauQuadrat GmbH)
17:00	"Ti and Nb influence on the HAZ microstructures of weld-simulated high-strength structural steel S690QL" by M. Rhode et al. (BAM)	"Friction Stir Welding of Hydrogen Tanks" by S. Kallee (Stirweld)
After the presentations we invite you to our get together in the halls of MPA Stuttgart (Building No. 32), including Dinner, an evening event and the award ceremony for the "Carl von Bach" medal.		

Tuesday, 7th October 2025

	Session: Hydrogen (Room V27.01)	Session: Non-destructive testing (Room V27.02)
9:00	“Detection and evaluation of complex anomalies like welding defects in hydrogen pipelines” by Dr. T. Neuhauser (Terranets BW)	“State-of-the-Art Ultrasonic Testing Techniques at the Leibstadt Nuclear Power Plant, KKL” by J. Schors
9:25	“Component test for simulation of in-service welding on hydrogen pipelines” by M. Rhode (BAM)	tba
9:50	“Component design in hydrogen environment – A Status Quo” by H. Schwarz (SWM gGmbH)	“The quest for a common NDE data format” by A. Schumm (EDF)
10:15 Communication break		
10:40	“Reliable and efficient testing of materials under the influence of hydrogen using the hollow specimen method” by J. Ganzenmüller (DLR)	“Monitoring of laser powder bed fusion with integrated laser heat treatment based on in-process eddy-current measurements” by H. Jacob (Fraunhofer IZFP)
11:05	“Crack initiation due to low cycle fatigue in X60 pipeline steel tested in high pressure gaseous hydrogen using hollow and conventional specimens” by T. Michler (Fraunhofer IWM)	“Investigation of the reflective properties of additive manufactured reference blocks for ultrasonic testing” by S. Keuler (MPA Stuttgart)
11:30	“Influence of hydrogen on the strain-induced martensitic transformation and crack development in metastable austenitic steels” by M. Herzig (MPA Stuttgart)	“Fast Non-Destructive Determination of Dynamic Material and Structural Properties at room temperature or low/high-temperature” by S. Reich (Grindosonic)
11:55	"Suitability of Additively-manufactured 316L for Hydrogen Applications" by B. Kagay (MPA Stuttgart)	“Temperature measurement for the calibration of welding and heat treatment simulations” by M. Husniddin (Polito.it)
from 12:20 to 13:20 - Lunch at MPA Stuttgart (Building No. 32)		
13:20	“Influence of Microstructural Features on Hydrogen Susceptibility: A numerical study” by B. Tekkaya (IBF RWTH)	“Non-destructive testing methods in the Mibaleb 2 project” by N. Grözinger (MPA Stuttgart)
13:45	“New characterisation methods for hydrogen facing materials” by P. Felfer (FAU)	“Evaluating the potential of SMR radiation measurements for Non-Destructive Testing” by M. Batora (MPA Stuttgart)
14:10	“Ti and Nb microalloying of HSLA steels and its effect on hydrogen diffusion and trapping” by N. Masoud Nia (BAM)	“tba” by G. Klenk (MPA Stuttgart)
14:35 Communication break		
14:55	“Effect of oxide sol-gel coating on protection of steels during exposure to hydrogen and to mechanical loading” by Dr.-Ing. M. Smaga (RPTU)	“Acoustic monitoring of an ultrasonic welding process” by T. Reindl (IKT Uni Stuttgart)
15:20	“Influence of hydrogen on the tensile and fatigue behaviour of nickel-base alloys and steels at elevated temperature” by P. Dasari (MPA Stuttgart)	“Ultrasonic Inspection of Polyethylene Pipes Joints” by F. Seviaryn (Tessonics Inc.)
15:50 MPA Laboratory Tour in Building No. 32: Additive Manufacturing, Hydrogen Testing Facilities, NDT Lab, Fatigue Testing, and more….		
17:20 Demonstration of the HyEND Rocket Engine		
17:40 Public Transport to Gala Dinner		
18:10 Gala Dinner in Stuttgart City at “Brauhaus Nesenbach”		

Wednesday, 8th October 2025

	Session: Energy Revolution & Structural Modelling of Nuclear Components (Room V27.01)	Session: Big Data & AI Methods (Room V27.02)
9:00	"A decarbonized future requires pipelines for CO2? A brief overview on perspectives and challenges" by M. Rhode (BAM)	"Automated Machine Learning for Production Processes: Bringing Technology into Production" by T. Bäck (divis GmbH)
9:20	"Discussion on the Application of Ni Fe Based Superal loys for High efficiency Ultra Supercritical Steam Turbines" by X. Zhang (Shanghai Tubrine Works)	
9:40	"Fatigue and Creep-fatigue Properties of Long-term Used Grade 91 Steel" by M. Yaguchi (CRIEPI)	"Data-Driven Fatigue Assessment in Steel Structures: Challenges and Potentials of Machine Learning Applications" by S. Röscher / H. Bartsch (KE - University of Stuttgart)
10:00 Communication break		
10:20	"Additive Manufacturing of certified Pressure Equipment – Certifications, Opportunities & Challenges" by P. Schwarz (Rosswag GmbH)	"AI-Based Bunker Management for Waste to Energy Plants" by T. Freudenmann (StableFlame GmbH / EDI GmbH)
10:40	"Exploring Additive Manufacturing of Prototypical Heat Pipes for Passive Heat Exchange in Micro Modular Reactors" by S. Biswas (IKE)	"Enhancing reduced model approximations with Kalman filters for thermal management" by A. Ignatius (ISD – University of Stuttgart)
11:00	"High temperature corrosive and mechanical testing of additively manufactured materials and their critical evaluation in the use of future SMR-concepts" by S. Gürtler (MPA Stuttgart)	"From Traditional Lab Notebooks to Digital Transformation: Electronic Lab Notebooks, Structured Data Storage and Data Retrieval at Fraunhofer IWM" by J. Tlatlik (Fraunhofer IWM Freiburg)
11:20 Communication break		
11:40	"Changes of paradigm in nuclear materials science: the EERA JPNM pathway" by L. Malerba (CIEMAT)	"Application of Neural Networks in the Design of Unstiffened Plated Structures" by R. Lang (University of Innsbruck)
12:00	"Improved fatigue life assessment of nuclear reactor internals for operation extensions of NPP" by G. Veile (MPA Stuttgart)	"Topology and Fiber Orientation Optimization of Variable-Stiffness Composites using Lamination Parameter Interpolation" by E. Raponi (Leiden University)
12:20	"Engineering methods of multiaxial fatigue assessment of power plant components" by Dr.-Ing. habil. J. Rudolph (Framatome SE)	"Optimization of Resistance Spot Welding (RSW) on Aluminium Alloys through Big Data Generation from a Fully-automated Robotic RSW Cell using AI to capture temporal dependencies (Project OptiWAL)" by R. Nagel (MPA - University of Stuttgart)
from 12:40 to 13:40 - Lunch at MPA Stuttgart (Building No. 32)		
13:40	"Fatigue crack initiation: Interface between fatigue life and fracture mechanical assessment" by J. Arndt (GRS)	"LLM-Based Knowledge Management – AI Agents for Joining Connections" by T. Freudenmann (EDI GmbH)
14:00	"Environmentally assisted fatigue testing of notched specimens within the frame of the project Incefa-Scale" by L. Grau (Framatome SE)	"Real-time Process and Quality Assessment for Disturbed Resistance Spot Welding using Machine Learning" by S. Ramakrishnan (TU Dresden)
14:20	"Fatigue testing of AISI 316 specimens of nuclear pipe material under medium conditions" by N. Grözinger (MPA Stuttgart)	"pyiron - Developing and managing materials science workflows" by T. Lakshmipathy (BAM)
14:40 Communication break		
15:00	"Understanding Fatigue and Material Aging in PWRs during Long Term Operation" by R. Magnusson (Vattenfall)	"Machine learning to support materials microscopy workflows" by A. Jansche (HS Aalen)
15:20	"EPRI EAF Component Test Benchmarking and NDE Qualification" by T. Damiani (EPRI)	"A Method for fast identification of material model parameters from cantilever tests based on machine learning" by F. Bauer (fem Schwäbisch Gmünd / Fraunhofer IWM Freiburg)
15:40	"Characterization of RPV Materials from Decommissioned Zion Nuclear Generation Station Unit 1" by M. Sokolov (Oak Ridge National Laboratory)	"FEMFormer: Merging Finite Elements with Transformer Architectures for Structural Mechanics – Architecture" by F. Schäfer (ISD - University of Stuttgart / Raytheon)
16:00	"Applicability of the Master Curve Concept for Ductile Cast Iron" by M. Holzwarth (MPA Stuttgart)	"FEMFormer: Merging Finite Elements with Transformer Architectures for Structural Mechanics – Applications" by L. Kälber (ISD - University of Stuttgart)
16:20	CONNECT-NM partnership information and JPNM Sub-program coordinators in V27.01	

Ending of MPA Conference 2025 at 17:20. See you next year ☺