11th

fatigue design

PROGRAM

International Conference

19 & 20 November 2025 - France

CETIM EXPERIENCE

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Happy 20th anniversary

fatigue design

Organised by Cetim and its partners, the 11th Fatigue Design 2025 International Conference presents the latest breakthroughs in design methodologies, state-of-the-art testing techniques, and advanced tools for evaluating and extending the fatigue life of industrial equipment, with a clear focus on industrial applications and sustainability.

This year's congress will also highlight the vital role of fatigue design in supporting the green economy.

The 10th edition held in 2023 featured more than 100 oral presentations, with a significant proportion delivered by industry experts.

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Themes

The selected topics concern the various aspects of fatigue design:

– additive manufacturing,

– big data and artificial intelligence,

– complex loading,

– composites, elastomers and adhesive bonding,

– contact fatigue and fatigue in transmission system,

– experimental and numerical design and validation methods,

– fatigue and manufacturing process (effect of microstructure, welding, residual stresses…),

– fatigue of assemblies (mechanical, welded, adhesive-bonding, multimaterials…),

– fatigue under severe environmental conditions (hydrogen, corrosion, low temperature…),

– non-linear behavior and cumulative damage,

– reliability–based approaches and probabilistic methods,

– vibration fatigue.

Wednesday, November 19th

8.30 am - 9.00 am Opening Statement

9.00 am - 9.45 am Plenary Session

150 Hydrogen-Resistant High-Strength Steels Beyond 1 GPa and Data-Driven Prediction of Fatigue Crack Growth in Hydrogen Gas
Hisao Matsunaga
Department of Mechanical Engineering, Kyushu University, Fukuoka, Japan

9.45 am - 10.30 am Plenary Session

151 Fatigue life assessment in nuclear power plants: How could feature tests help improve design codes?
Clémentine Jacquemoud
CEA Saclay, Gif-sur-Yvette, France

10.30 pm - 11.15 pm Coffee/Technological Showcase/Poster Exhibition

Wednesday, November 19th

11.15 am - 12.45 pm

Room 6

S01-1 Additive Manufacturing

111 Numerical investigation of the effect of defect population on the fatigue strength anisotropy of Ti64 fabricated by Laser Powder Bed Fusion

Sreenivas Penkulinti[1], Matthieu Bonneric[1], Nicolas Saintier[1], Thierry Palin-Luc[1], Benoit Verquin[2], Fabien Lefebvre[2], Pascal Ghys[3]
[1]Arts et Métiers Institute of Technology, Bordeaux, France. [2]Cetim, Saint-Etienne, France. 3Alstom, Saint Ouen, France

27 Fatigue assessment and simulations of steel produced using wire arc directed energy deposition

Elyas Ghafoori[1], Niels Pichler[2], Cheng Huang[3], Lingzhen Li[4], Leroy Gardner[3]
[1]Leibniz University Hannover, Hannover, Germany. [2]Empa, Dübendorf, Switzerland. [3]Imperial College London, London, United Kingdom. [4]ETH Zürich, Zurich, Switzerland

135 Influence of defect position on crack propagation in LBPF IN718

Benoît Mansoz[1], Hugo Sistach[2], Lionel Marcin[3], Emmanuel Fessler[3], Henry Proudhon[1], Vincent Maurel[1]
[1]Centre des Matériaux - Mines de Paris, Évry, France. [2]Safran Aircraft Engines - Evry-Corbeil, Corbeil-Essonnes, France. [3]Safran Aircraft Engines - Villaroche, Moissy-Cramayel, France

Room 7

S02-1 Big Data and Artificial Intelligence

84 Processing of point clouds from 3D scans of welded joints for the weld detection and weld quality analysis as input for a reliable fatigue assessment

Jörg Baumgartner[1], Jan Schubnell[2], Maria Grace Augustine[2]
[1]Fraunhofer LBF, Darmstadt, Germany. [2]Fraunhofer IWM, Freiburg, Germany

7 Machine Learning Metamodeling for Fatigue Life Estimation of Welded T-Joints

Philippe Amuzuga, Mohamed Bennebach, Jean-Louis Iwaniack
Cetim, Saint-Etienne, France

51 Predicting Fatigue Crack-Growth in Low-Alloy Steels Using Data and Image Analysis in Hydrogen Environments

Timothée Redarce[1], Hisao Matsunaga[1,2], Guillaume Lambard[3]
[1]Kyushu University, Fukuoka, Japan. [2]Research Center for Hydrogen Industrial Use and Storage (HYDROGENIUS), Fukuoka, Japan. [3]National Institute for Materials Science (NIMS), Tsukuba, Japan

Wednesday, November 19th

11.15 am - 12.45 pm

Room 8

S08-1 Fatigue and Manufacturing Process

43 Assessment of tensile and fatigue properties of lattice structure manufactured by laser powder bed fusion

Charles Bianchetti[1], Hugo Le Mestreallan[1], Alexian Juin[2], Alexandre Boulzaguet[3]
[1]ONERA, Châtillon, France. [2]AddUp, Cébazat, France. [3]Sogeclair Aerospace, Toulouse, France

110 Modelling of the Test Frequency Discrepancy in USF Testing of Structural Steels

Lewis Milne, Yevgen Gorash, Tugrul Comlekci, Donald MacKenzie
University of Strathclyde, Glasgow, United Kingdom

122 Fatigue Strength Increase with In-situ Nanolaminate Treatment of Weld Seams in Bridge Construction

Maren Seidelmann, Niclas Spalek, Mohsen Falah, Nikolay Lalkovski, Marcus Rutner
Hamburg University of Technology, Hamburg, Germany

Room 9

S09-1 Fatigue of Assemblies

3 Automated implementation of structural stress evaluation for weld fatigue assessment in industrial applications

Zuheir Barsoum[1], Gustav Hultgren[1], Thomas Stenberg[2], Eric Lindgren[3]
[1]KTH Royal Institute of Technology, Stockholm, Sweden. [2]Swerim, Kista, Sweden. [3]Winteria, Hudiksvall, Sweden

37 HFMI-treated welded structures: fatigue strength assessment based on the Peak Stress Method

Alberto Campagnolo, Giovanni Meneghetti
University of Padova, Padova, Italy

16 Stochastic Finite Element Analysis for Fatigue Life Assessment of Welded Assemblies

Kamal Harb[1,2,3,4], Julien Baroth[3], Rafael Estevez[4], Arnaud Isaac[2], Vincent Michaud[2]
*[1]Fondation Grenoble INP, Grenoble, France. [2]SPRETEC Groupe Artelia, Échirolles, France.
[3]Laboratoire 3SR, Saint-Martin d'Hères, France.
[4]Laboratoire SIMaP, Saint-Martin d'Hères, France*

Room 10

S07-1 Experimental and numerical design and validation methods

66 A Non-conventional Fracture Mechanics-based Multiaxial Fatigue Assessment of Defective and Sharply Notched Metallic Materials

Francesco Collini[1], Daniele Rigon[1], Giacomo Severin[1], Riccardo Montagner[1], Giorgio Valsecchi[2], Davide Zacchetti[3], Giuseppe De Marco[4], Simone Turani[5], Giovanni Meneghetti[1]
[1]Department of industrial Engineering, University of Padova, Padova, Italy. [2]TAV Vacuum Furnaces S.p.A., Bergamo, Italy. [3]TAV Vacuum Furnaces S.p.A, Bergamo, Italy. [4]Kilometro Rosso S.p.A., Bergamo, Italy. [5]Brembo S.p.A., Bergamo, Italy

109 Fatigue life of wheels regarding design and test constraints

Said Allouch, Christoph Bleicher, Ivo Krause, Jayesh Tank
Fraunhofer Institute for Structural Durability and System Reliability, Darmstadt, Hessen, Germany

44 On the determination of fracture properties of specimens subjected to periodic fatigue loadings using DIC

Joao Filho, Lukas Wittevrongel, Fabrice Pierron, Pascal Lava
MatchID NV, Gent, Belgium

12.45 pm - 2.00 pm **Lunch** **Conference group photo (1.45 pm)**

Wednesday, November 19th

2.00 pm - 4.00 pm

Room 6

S03-1 Complex Loadings

49 Optimized specifications from mission profile campaigns and data management tool

Denis Chojnacki[1], Amaury Chabod[2], Sébastien Boudevin[3]
[1]Cetim, Senlis, France. [2]HBK, Sucy-en-Brie, France.
[3]Cetim, Mulhouse, France

34 Determination of adequate reference mission for reliable fatigue design using Machine Learning algorithms

Benoit Delattre[1,2], Denis Chojnacki[3]
[1]EPF, Cachan, France. [2]LMPS, Gif-sur-Yvette, France.
[3]Cetim, Senlis, France

108 Load modeling for chassis system fatigue design

Cédric Doudard[1], Sylvain Moyne[1], Matteo Luca Facchinetti[2], Romain Hayat[3], Sebastien Jaffre[3]
[1]ENSTA BRETAGNE, Brest, France. [2]STELLANTIS, Belchamp, France.
[3]STELLANTIS, Poissy, France

138 Cruciform specimen design and manufacture for multidirectional carbon fiber reinforced composites subjected to biaxial tension-tension fatigue test

Aijia Li, Christian Garnier, Marie-Laetitia Pastor, Xiaojing Gong, Clément Keller
University of Technology Tarbes Occitanie Pyrénées, Tarbes, France

Room 7

S02-2 Big Data and Artificial Intelligence

9 Fatigue Assessment of Welded Joints using Extreme Value Statistics and Laser-Based Weld Toe Geometry Analysis

Moritz Braun[1], Finn Renken[2]
[1]German Aerospace Center Institute of Maritime Energy Systems, Geesthacht, Germany. [2]Hamburg University of Technology Institute for Ship Structural Analysis and Design, Hamburg, Germany

65 Machine learning model for estimating the stress concentration factor based on 3D scans of notched round bar specimens

Kris Hectors, Seppe Vanheulenberghe, Jelle Plets, Wim De Waele
Universiteit Gent, Gent, Belgium

157 Stress Concentration Factor Modelling from Weld Geometry Data for Fatigue Design

Xavier Hermite[1], Romain Cuinat[2], Robin Hauteville[1], Lauriane Guilmois[1], Fabien Lefebvre[1]
[1]Cetim, Senlis, France. [2]Cetim, Nantes, France

71 Enhanced Understanding of Overhead Crane Fatigue Loading Using a Digital Twin Approach

Jeroen Van Wittenberghe
OCAS NV - ArcelorMittal Global R&D Gent, Zelzate, Belgium

Room 8

S06-1 Damage Tolerance, Fatigue Life Extension & Residual Life Assessment

81 Residual Life Assessment (RLA) of Long Bien Bridge (Hanoi)

Bruno Depale[1], Dinh Duc Pham[2], Danh Le Ba[2] - *[1]Cetim, Senlis, France. [2]HUCE, Hanoi, Vietnam*

26 Fatigue strengthening and lifetime extension of steel structures with bonded CFRP and SMA materials

Elyas Ghafoori - *Leibniz University Hannover, Hannover, Germany*

143 A Novel Solid-State Recycling Approach for Submarine Hulls: Mechanical and Fatigue Characterization

Farrel Belkhiter[1], Bruno Levieil[1], Sylvain Moyne[1], Florent Bridier[2], Gaelle Rousseau[2], Anthony Ezanno[3], Cédric Doudard[1]
[1]ENSTA, IRDL – UMR CNRS 6027, Brest, France. [2]Naval Group, Bouguenais, France. [3]DGA Techniques Navales, Toulon, France

61 A comprehensive review of Fatigue Crack Growth laws and models

Andrew Halfpenny[1], Cristian Bagni[1], Amaury Chabod[2], Stephan Vervoort[3] - *[1]HBK - Hottinger Bruel & Kjaer, Rotherham, United Kingdom. [2]HBK - Hottinger Bruel & Kjaer, Sucy-en-brie, France. [3]HBK - Hottinger Bruel & Kjaer, Darmstadt, Germany*

Wednesday, November 19th

2.00 pm - 4.00 pm

Room 9

S07-2 Experimental and Numerical Design and Validation Methods

101 Load effect, notch effect, size effect, and other related factors in the stress-based fatigue estimation – is there a way to unite them?

Leonardo Serri[1], Martin Nesládek[2], František Fojtík[3], Jan Papuga[2], Giovanni Meneghetti[1]
[1]University of Padova, Padova, Italy. [2]Czech Technical University in Prague, Prague, Czech Republic.
[3]VSB - Technical University Ostrava, Ostrava, Czech Republic

154 An innovative simulation strategy for low-cycle fatigue design of a S355 welded assembly

Eric Feulvarch[1], Jean-Christophe Roux[1], Françoise Fauvin[1], Fabien Lefebvre[2], Landry Giraud[3], Pierre Monnet[4]
[1]Univ. Lyon, École Centrale de Lyon, LTDS, UMR 5513 CNRS, Saint-Étienne, France. [2]Cetim, Senlis, France. [3]TRA-C industrie, Vindry-sur-Turdine, France. [4]Haulotte Group, Lorette, France

95 Towards a better assessment of Clip-connector fatigue thanks to an improved design methodology and the use of acoustic emission

Emmanuel Persent[1], Fabrice Deleau[2], Guillaume Perrin[3]
[1]IFP Energies Nouvelles, Rueil Malmaison, France. [2]IFP Energies Nouvelles, Solaize, France. [3]Cybernetix – Groupe Technip Energies, Venette, France

28 Total Fatigue Life Testing of High Strength Steels and Conventional Structural Steels

Monisha Manjunatha, Yevgen Gorash, Tugrul Comlekci, Donald Mackenzie, Lewis Milne
University of Strathclyde, Glasgow, United Kingdom

Room 10

S05-1 Contact Fatigue & Fatigue in Transmission System

47 The influence of shot peening on gear teeth micropitting – Complementary analyses

Dalia Jbily[1], Chen Yanming[1], André Simonneau[2]
[1]Cetim, Senlis, France. [2]Texelis, Limoges, France

29 Non-Destructive Thermographic approach for a rapid fatigue limit estimation of gears

Luca Corsaro, Francesca Maria Curà, Raffaella Sesana
Politecnico di Torino, Torino, Italy

30 Application of self-heating method for characterization of 42CrMo4+QT steel under fretting fatigue conditions

Tomáš Karas, Martin Matušů, Vladimír Mára, Martin Nesládek, Jan Papuga
CTU in Prague, Prague, Czech Republic

129 Calculation of the bending fatigue strength of shot peened gears in the VHCF range

Sascha Rommel[1], Daniel Fuchs[2], Thomas Tobie[1], Karsten Stahl[1]
[1]Gear Research Center (FZG) at TUM), Munich, Germany.
[2]ZF Friedrichshafen AG, Friedrichshafen, Germany

Wednesday, November 19th

4.00 pm - 5.00 pm   Coffee/Technological Showcase/Poster Exhibition

5.00 pm - 6.30 pm

Room 6

S09-2 Fatigue of Assemblies

105 Advanced Machine Learning-Based Durability Assessment of Spot Welds Addressing Mode II and III Loading
Philipp Römelt[1], Jörg Baumgartner[2]
[1]Priivate, Köln, Germany. [2]Fraunhofer LBF, Darmstadt, Germany

67 Evaluating the fatigue strength of aluminium fillet-welded joints under multiaxial variable amplitude loading using the Peak Stress Method
Luca Vecchiato, Alberto Campagnolo, Giovanni Meneghetti
Department of Industrial Engineering, University of Padua, Padua, Italy

31 Prediction of fatigue life for butt-welded joints using multi-fidelity surrogate modelling
Mahamudul Hasan Tanvir, Marten Beiler, Phyo Myat Kyaw, Moritz Braun
German Aerospace Center (DLR), Institute of Maritime Energy Systems, Department of Ship Reliability, Geesthacht, Germany

Room 7

S04-1 Composite & Elastomers

121 Mechanical behavior and damage analysis of discontinuous-reinforced composites under dynamic post-fatigue loading
Mohammadali Shirinbayan, Joseph Fitoussi
Arts et Metiers Institute of Technology, CNAM, CNRS, PIMM, Paris, France

158 Towards new approaches for estimating the fatigue limit of Polymer-Matrix Composites (PMCs) under the self-heating tests
Walid Harizi, Zoheir Aboura, Jamal Najd, Loan Dolbachian
Université de technologie de Compiègne (UTC), Compiègne, France

141 Deep learning simulations of self-heating using physics-informed neural networks: determination of fatigue limits for laminated composites
Laurent Gornet
Ecole Centrale Nantes, GeM, Nantes, France

Wednesday, November 19th

5.00 pm - 6.30 pm

Room 8

S08-2 Fatigue and Manufacturing process

38 Numerical integration of machining conditions to calculate the fatigue life of a mechanical part

Joel Rech[1,2], Frédéric Valiorgue[3], Loic Polly[1], Mathieu Girinon[4], Philippe Amuzuga[4], Amaury Chabod[5].
[1]Centrale Lyon ENISE, Saint-Etienne, France. [2]MISUTECH, Saint-Etienne, France. [3]Centrale Lyon ENISE, Saint-Etiene, France. [4]Cetim, Saint-Etienne, France. [5]HBK, Sucy-en-Brie, France

99 High Cycle Fatigue probabilistic modeling of High Pressure Die Casting (HPDC) AlSi9Cu3(Fe)

Batina Tchamou[1,2,3], Franck Morel[1], Nicolas Saintier[2], Camille Burton[1], Viet-Duc Le[1], Daniel Bellett[1], Loïc Vaissiere[3]
[1]LAMPA, Angers, France. [2]I2M, Bordeaux, France. [3]Renault, Guyancourt, France

69 Ultrasonic fatigue testing of austenitic stainless steels up to a very high number of laod cycles

Marek Smaga[1], Elen Regitz[1], Tilmann Beck[1], Georg Veiler[2], Stefan Weihe[2], Jürgen Rudolph[3].
[1]Institute of Materials Science and Engineering (WKK), RPTU Kaiserslautern-Landau, Kaiserslautern, Germany. [2]Materials Testing Institute (MPA), University of Stuttgart, Stuttgart, Germany. [3]Framatome, Erlangen, Germany

Room 9

S10-1 Fatigue under Severe Environmental Conditions

83 Effect of loading waveforms on fatigue crack growth in pipeline steel in high pressure hydrogen gas

Shogo Tanaka[1], Antonio Alvaro[2], Bård Nyhus[2], Park Sungcheol[3], Vigdis Olden[2], Hisao Matsunaga[4,3]
[1]Kyushu university, Fuhuoka, Japan. [2]SINTEF Industry, Trondheim, Norway. [3]HYDROGENIUS, Kyushu University, Fuhuoka, Japan. [4]Department of Mechanical Engineering, Kyushu University, Fuhuoka, Japan

97 Hydrogen-affected fatigue crack growth of Nickel alloy 625: effect of pressure

Marie Lemaitre, Pierre Osmond, Thomas Landron, Daniella Guedes Sales, Ayoub El Moutaouakkil
Cetim, Nantes, France

6 Component Dimensioning in Hydrogen Environment

Sascha Fliegener[1], Hannes Schwarz[2], Roland Rennert[2]
[1]Fraunhofer Institute for Mechanics of Materials IWM, Freiburg, Germany. [2]SWM Struktur-und Werkstoffmechanikforschung Dresden gGmbH, Dresden, Germany

Room 10

S13-1 Vibration Fatigue

64 Fatigue Simulations in Automotive Components: the importance of representative validation tests

Marco Bonato[1], Arumugapandian Duraipandi[2], Renan Leon[1]
[1]Valeo Power France, La Verrière, France. [2]Valeo India, Chennai, India

1 Fatigue dimensioning of a bearing cap of an electric motor for a commuter aircraft

Robert Goraj
Rolls Royce, Munich, Germany

40 Fast and accurate frequency-domain formulation of the Fatemi–Socie critical plane method for multiaxial random loading

Michele Sgamma[1], Adam Niesłony[2], Michał Böhm[2], Andrea Chiocca[1], Francesco Bucchi[1], Francesco Frendo[1]
[1]University of Pisa - Dep. Of Civil and Industrial Engineering, Pisa, Italy. [2]Opole University of Technology - Dep. of Mechanics and Machine Design, Opole, Poland

7.00 pm - 11.00 pm Gala evening in Pontpoint, at Moncel Royal Abbey

Thursday, November 20th

8.30 am - 10.00 am

Room 6

S01-2 Additive Manufacturing

53 Fatigue Performance Study of 316L Stainless Steel Specimens Fabricated by Selective Laser Melting

Yi Zhou, Ninian Sing Kok Ho, John Hock Lye Pang
School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore, Singapore

96 Characterization of Defects in Components Produced by Wire-Laser Additive Manufacturing Applied to Low-Alloy Steel

Rémi Thuillet, Imade Koutiri, Pierre Margerit, Fréderic Coste, Nicolas Ranc
PIMM, Paris, France

15 Fatigue performance of a titanium component produced by laser powder bed fusion

Kalle Lipiäinen[1], Mika Vaskelainen[2], Tero Pesonen[1], Masoud Moshtaghi[1]
[1]LUT University, Lappeenranta, Finland. [2]Patria, Tampere, Finland

Room 7

S07-3 Experimental and Numerical Design and Validation Methods

124 Material mechanisms of the nanostructured metallic multilayer post-weld treatment for fatigue strength increase

Niclas Spalek, Mohsen Falah, Maren Seidelmann, Nikolay Lalkovski, Marcus Rutner
Hamburg University of Technology, Hamburg, Germany

33 Methodological Tools for Engineers: How to Assess the Relevance of Using a Uniaxial Fatigue Life Assessment With Eurocode 3 or Multiaxial Fatigue Life Assessment With a Dang Van-Type Criterion? Application to Mechanical Parts of Cableway Installations

Benjamin Causse[1], Rémy Bernot[1], Thomas Schmidt[1,2], Françoise Fauvin[2], Eric Feulvarch[2], Claudio Tonetta[3], Mathieu Weiss[1], Thomas Bortolamedi[4]
[1]STRMTG, Grenoble, France. [2]LTDS Lab. ENISE Centrale Lyon, Saint-Etienne, France. [3]LEITNER, Sterzing - Vipiteno, Italy. [4]LATIF, Ravina, France

2 Experimental and numerical investigations on the fatigue behaviour of intermittent rail welds of crane runway beams

Elena Sidorov, Mathias Euler
Brandenburg University of Technology Cottbus - Senftenberg, Cottbus, Germany

Thursday, November 20th

8.30 am - 10.00 am

Room 8

S08-3 Fatigue and Manufacturing process

46 Determination of fatigue effective notch stresses based on the real weld geometry considering effects of welding imperfections

Marlon Hilscher[1], Christian Dänekas[1], Klaas Maximilian Heide[2], Elyas Ghafoori[1]
[1]Institute for Steel Construction, Leibniz University Hannover, Hannover, Germany. [2]Institute of Production Engineering and Machine Tools, Leibniz University Hannover, Hannover, Germany

24 Fatigue Strength Improvement by Machining Process in Stainless Steel Welds

Carolina Payares-Asprino[1], Christian Felix Martinez[2], Ulises Sanchez Santana[2]
[1]Norwich University, Northfield, USA. [2]Center for Industrial Engineering and Development (CIDESI), Queretaro, Mexico

41 Fatigue life modeling of steel cords under complex loads

Maëlle Gaudillat[1,2], Camille Gandiolle[1], Laure Larippe[2], Nicolas Mary[3], Olivier Téraube[2], Gaëtan Cousinet[2], Édouard Poncelin de Raucourt[2], Véronique Aubin[1]
[1]Université Paris-Saclay, CentraleSupélec, ENS Paris-Saclay, CNRS, LMPS - Laboratoire de Mécanique Paris-Saclay, Gif-sur-Yvette, France. [2]Michelin, Clermont-Ferrand, France. [3]Laboratoire Mateis, Insa Lyon, Villeurbanne, France

Room 9

S09-3 Fatigue of Assemblies

4 Updated Guidelines on HFMI Treatment for Enhancing Fatigue Strength in Welded Joints: IIW 2nd Edition

Gary B. Marquis[1], Zuheir Barsoum[2], Martin Leitner[3]
[1]Aalto University, Helsinki, Finland. [2]KTH Royal Institute of Technology, Stockholm, Sweden. [3]Graz University of Technology, Graz, Austria

13 Life extension using HFMI of notched and prefatigued welded bridge details

Martin Edgren[1,2], Zhelei Jin[3], Zuheir Barsoum[1]
[1]KTH Royal Institute of Technology, Department of Engineering Mechanics, Division of Material and Structural Mechanics, Stockholm, Sweden. [2]DEKRA Industrial AB, Solna, Sweden. [3]Cargotec Sweden AB Bromma Conquip, Stockholm, Sweden

14 Experimental study on the influence of thinness effect and weld quality of non-load carrying welded joints

Mehdi Ghanadi[1], Miloslav Kepka Jr.[2], Mattias Clarin[3], Torbjörn Narström[1,3], Gustav Hultgren[1], Zuheir Barsoum[1]
[1]KTH Royal Institute of Technology, Department of Engineering Mechanics, Stockholm, Sweden. [2]Regional Technological Institute, R&D center of Faculty of Mechanical Engineering, University of West Bohemia, Pilsen, Czech Republic. [3]SSAB Special Steels AB, Sweden

Room 10

S10-2 Fatigue under Severe Environmental Conditions

119 On the Use of Hollow Specimen to Characterize the Fatigue Crack Growth in High Pressure Hydrogen Gas

Julien Croquet[1], Vincent Maurel[1], Pierre Osmond[2], Yazid Madi[1]
[1]MINES Paris, PSL University, Centre des matériaux, UMR CNRS 7633, Evry, France. [2] Cetim, Nantes, France

70 Experimental investigation of the environmentally assisted fatigue crack initiation mechanisms in austenitic stainless steel 304L

Lucie Borowiack[1,2], Frédéric Delabrouille[1], Loic Signor[2], Patrick Villechaise[2], Gaëlle Leopold Jean-Marie[1], François Curtit[1], Gilbert Hénaff[2], Florence Hamon[2], Luc Doremus[3], Laurent De Baglion[4]
[1]EDF R&D, Moret-sur-Loing, France. [2]Institut Pprime - ENSMA, Chasseneuil du Poitou, France. [3]Framatome - Centre technique du Creusot, Le Creusot, France. [4]Framatome, Courbevoie Hauts-de-Seine, France

102 Hydrogen effect on the self-heating response under cyclic loading of R5 and R6 HSS used for offshore mooring chains

Mounir Kadiri[1], Younes Demmouche[1], Matthieu Dhondt[1], Célia Caer[1], Flavien Vucko[2], Sylvain Calloch[1]
[1]IRDL – UMR CNRS 6027 – ENSTA Bretagne, Brest, France. [2]French Corrosion Institute, Brest, France

10.00 am - 10.45 am Coffee/Technological Showcase/Poster Exhibition

Thursday, November 20th

10.45 am - 12.15 pm

Room 6

S02-3 Big Data and Artificial Intelligence

57 Evaluation of the Influence of Weld Surface Seam Geometry on Fatigue Strength Prediction using a Data-driven Fatigue Assessment Method

Marten Beiler, Moritz Braun, Mahamudul Hasan Tanvir
German Aerospace Center (DLR), Institute of Maritime Energy Systems, Geesthacht, Germany

128 Defect generation based on micro-computed X-ray tomography and generative neural network: application to cast aluminium and additively stainless steel

Laurent Dolle[1], Pierre Merot[2], Franck Morel[2], Pierre Derian[1], Thomas Landron[3]
[1]CEA, Bouguenais, France. [2]Arts et Métiers, Angers, France. [3]Cetim, Nantes, France

60 Principle strategies for the fatigue assessment of steels based on machine learning approaches

Jan Schubnell, Anastasiia Danchenko, Johannes Rosenberger, Sascha Fliegener, Michael Luke
Fraunhofer IWM, Freiburg, Germany

Room 7

S12-1 Thermal and Thermo-mechanical Fatigue

12 Fatigue tests of austenitic stainless steel AISI 321 and the weld metal ER 308L in air and high temperature water environment

Nina Grözinger, Georg Veile, Stefan Weihe
MPA University of Stuttgart, Stuttgart, Germany

18 High temperature fatigue behavior of a new PBF-LB/M VDM® 780 alloy

Louis Hébrard[1], Mauro Madia[1], Itziar Serrano-Munoz[1], Birgit Rehmer[1], Julius Kruse[1], Galina Kasperovich[2], Joachim Gussone[2], Juri Munk[2], Jan Haubrich[2]
[1]Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, Germany. [2]German Aerospace Center (DLR), Cologne, Germany

120 Thermo-mechanical fatigue crack growth of a coated superalloy

Louise Marioton[1,2], Jean-Michel Scherer[1], Djamel Missoum-Benziane[2,1], Matthieu Rambaudon[1], Brice Le Pannerer[2], Vincent Maurel[1]
[1]Mines Paris - PSL, Evry, France. [2]Safran Aircraft Engines, Moissy Cramayel, France

Thursday, November 20th

10.45 am - 12.15 pm

Room 8

S08-4 Fatigue and Manufacturing process

130 Fatigue life assessment of cold-formed ultra-high strength steel sections
Okan Yilmaz, Dennis Van Hoecke
ArcelorMittal Global R&D Gent - OCAS, Zelzate, Belgium

136 Effect of prior plastic deformation on the fatigue behavior of a high strength martensitic steel
Dussario Tousse Tchamassi[1], Hedi Nouri[2], Olivier Cazier[2], Michel Piette[2], Yazid Madi[1], Anne-Françoise Gourgues-Lorenzon[1]
[1]Mines Paris - PSL, Centre des Matériaux, UMR CNRS 7633, Evry, France. [2]Vallourec ONE R&D, Aulnoye-Aymeries, France

55 Identification of Plastic Properties in Multi-Material Thin Aluminum Welded Tubes through Experimental Methods, Modeling, and AI
Arthur Thibault[1], Jean-François Witz[1], Gilles Lagante[2], Antoine Millecamps[2], Ahmed El Bartali[1], Vincent Magnier[1]
[1]LaMcube, Lille, France. [2]Decathlon, Lille, France

Room 9

S09-4 Fatigue of Assemblies

39 Optimizing Welded Structures: A Study on the Integration of Recent Technological Development
Per-Olof Danielsson[1,2], Magnus Andersson[1], Erik Åstrand[1], Lars Håkansson[2]
[1]Volvo CE, Braås, Sweden. [2]Linnaeus University, Växjö, Sweden

35 Introducing Superelements for Weld Fatigue Analysis
Christos Tegos
BETA CAE Systems, Thessaloniki, Greece

42 Fatigue strength verification of bearing type joints with mechanical fasteners – A comparison of Eurocode 3 and effective notch stress concept
Florian Kalkowsky[1], Ralf Glienke[2], Knuth-Michael Henkel[3]
[1]Fraunhofer IGP, Rostock, Germany. [2]Hochschule Wismar, Wismar, Germany. [3]University of Rostock, Rostock, Germany

Room 10

S11-1 Reliability-based Approaches and Probabilistic Methods

87 Probabilistic Fatigue Approach for Complex Vibration Signals. Case Study of Automotive components
Marco Bonato[1], Karthikeyan Sridhar[2], Manoj Kumar Lingareddy[2], Zane Yang[3]
[1]Valeo Power France, La Verrière, France. [2]Valeo Power India, Chennai, India. [3]Valeo Power USA, Auburn Hills, USA

10 Improving fatigue life assessment of scanned nuclear grade weld topologies using elastic-plastic FEA and advanced gradient based fatigue damage parameters
Georg Veile[1], Tim Schopf[1], Jürgen Rudolph[2], Elen Regitz[3], Marek Smaga[3], Stefan Weihe[1], Tillmann Beck[3]
[1]MPA - University of Stuttgart, Stuttgart, Germany. [2]Framatome GmbH, Erlangen, Germany. [3]WKK, RPTU Kaiserslautern-Landau, Kaiserslautern, Germany

104 An extension of Active Kriging for Sequential Models to fatigue-loaded Systems under multiple load configurations
Thomas Constant[1,2], Laëtitia Fouché[1], Cécile Mattrand[2], Nicolas Gayton[2]
[1]KNDS, Bourges, France. [2]Institut Pascal, Clermont-Ferrand, France

12.15 pm - 1.30 pm Lunch

Thursday, November 20th

1.30 pm - 3.30 pm

Room 6

S01-3 Additive Manufacturing

74 Dominant Microstructural Factors Contributing to Inferior Fatigue Resistance in Additively Manufactured Ni-Based Superalloy 718

Sungcheol Park[1], Yuya Tanaka[1,2], Saburo Okazaki[3], Yusuke Funakoshi[4], Hideto Kawashima[4], Hisao Matsunaga[1,5]
[1]Research Center for Hydrogen Industrial Use and Storage (HYDROGENIUS), Kyushu University, Fukuoka, Japan. [2]Department of Mechanical Engineering, Fukuoka University, Fukuoka, Japan. [3]Kobe Material Testing Laboratory Co., Ltd., Hyogo, Japan. [4]Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan. [5]Department of Mechanical Engineering, Kyushu University, Fukuoka, Japan

86 Fatigue behavior of Aluminum DED material joined to a plate in load carrying and non-load carrying configurations

Juho Havia, Kalle Lipiäinen, Shahriar Afkhami, Tuomas Skriko
LUT University, Lappeenranta, Finland

56 Evaluation of high-cycle fatigue properties of additively manufactured SS316L via self-heating method

Mahmoud Barati[1], Behnaz Amini[2], Shabnam Arbab Chirani[2], Mahmoud Kadkhodaei[3], Mohsen Badrossamay[4]
[1]EMITECH Group, Montigny-le-Bretonneux, France. [2]ENIB, Brest, France.
[3]German International University, Berlin, Germany. [4]Isfahan University of technology, Isfahan, Islamic Republic of Iran

139 Surface and Bulk Defects Influence in Fatigue of Additively Manufactured Ti-6Al-4V Alloys: a Unified Approach for Design Purposes

Enrico Salvati[1], Marco Pelegatti[1], Marco Petruzzi[2], Alessandro Tognan[1], Emanuele Avoledo[1], Federico Milan[1], Francesco De Bona[1], Niki Picco[1], Francesco Sordetti[1], Alex Lanzutti[1], Michele Pressacco[2], Riccardo Toninato[2]
[1]University of Udine, Udine, Italy. [2]ENOVIS, San Daniele del Friuli, Italy

Room 7

S10-3 Fatigue under severe environmental conditions

159 Effect of seawater on the fretting fatigue endurance of crossed steel wires : application to floating offshore wind turbines mooring line

Sébastien Montalvo[1,2], Siegfried Fouvry[1,3], Michaël Martinez[2], François Ropital[2]
[1]LTDS, Centrale Lyon, Écully, France. [2]IFP Energies nouvelles, Solaize, France. [3]CMAT, Mines Paris PSL, Versailles, France

107 Effect of temperature and hydrogen on fatigue properties of austenitic stainless steel

Pierre Osmond[2], Daniella Guedes Sales[2], Gouenou Girardin[2], Denis Bertheau[1], Guillaume Benoît[1], Gilbert Hénaff[1]
[1]Institut Pprime, Chasseneuil-du-Poitou, France. [2]Cetim, Nantes, France

126 Effect of hydrogen gas precharging on the mechanical properties and Fatigue life of Inconel 718 obtained by L-PBF homogenised and aged: From room to intermediate temperature

Donaldine Tade[1,2], Vincent Bonnand[1], Aldo Marano[1], Abdelali Oudriss[2], Xavier Feaugas[2], Jamaa Bouhattate[2]
[1]DMAS, ONERA The French Aerospace Lab, Châtillon, France. [2]La Rochelle University, La Rochelle, France

22 Balancing Recovery Stress and Structural Fatigue Behavior in Iron-based Shape Memory Alloys: New Insights for Construction Applications

Marlon Hilscher, Elyas Ghafoori
Leibniz University Hannover, Institute for Steel Construction, Hannover, Germany

Thursday, November 20th

1.30 pm - 3.30 pm

Room 8

S07-4 Experimental and Numerical Design and Validation Methods

91 A Study on Forward and Reverse Methods for the Evaluation of S-N curves

Felix-Christian Reissner, Jörg Baumgartner
Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, Germany

58 Fatigue strength assessment of large bolting assemblies using the notch-strain approach

Fritz Wegener[1], Ralf Glienke[1,2], Jonas Hinrichs[1], Mathias Schwarz[1], Knuth-Michael Henkel[1,3]
[1]Fraunhofer Institute for Large Structures in Production Engineering IGP, Rostock, Germany. [2]University of Applied Sciences Technology, Business and Design, Wismar, Germany. [3]University of Rostock, Faculty of Mechanical Engineering and Marine Technologies, Chair of Joining Technologies, Rostock, Germany

63 Characterization and modeling of the impact of micro-shrinkage porosity on the high cycle fatigue resistance of cast G20Mn5 steel

Liren Zheng[1], Viêt Duc Le[1], Daniel Bellett[1], Franck Morel[1], Jean-François Carton[2]
[1]LAMPA, Arts et Métiers Institute of technology, Angers, France. [2]Safe Métal, Feurs, France

115 Evolving internal length scales during fatigue crack growth : Insights from statistical fractography and implications for fatigue design

Ashwij Mayya[1], Patrick Ribeiro[1], Laurent Ponson[1,2]
[1]Tortoise, Paris, France. [2]Institut Jean Le Rond d'Alembert, Sorbonne Universite - CNRS, Paris, France

Room 9

S09-5 Fatigue of Assemblies

118 Results of the Jaco project: Effect of in-plane and out-of-plane loading on the cracking behaviour of tubular joints during large-scale tests

Philippe Thibaux, Jeroen Van Wittenberghe
OCAS, Gent, Belgium

106 Experimental and numerical study on the effect of interference on shrink-fitted assemblies under fretting-fatigue solicitations

Siegfried Fouvry[1], Pierre Arnaud[1], Florent Bridier[2]
[1]Ecole des Mines de Paris, Paris, France. [2]Naval Group, Bouguenais, France

45 The Peak Stress Method combined with shell finite element models for the fatigue design of complex welded structures

Giovanni Meneghetti[1], Alberto Campagnolo[1], Alberto Visentin[1], Vittorio Babini[2]
[1]Department of Industrial Engineering, University of Padova, Via Venezia, 1, 35131, Padova, Italy. [2]Antonio Zamperla S.p.a., Via Monte Grappa, 15/17, 36007, Altavilla Vicentina, Italy

88 Fatigue Tests on Butt-Welded Connections With Imperfections

Kevin Mouradian[1,2], André Beyer[1], Maël Couchaux[2], Lukić Mladen[1], Fabrice Gatuingt[3]
[1]CTICM, Saint-Aubin, France. [2]INSA de Rennes, Rennes, France. [3]ENS Paris-Saclay, Gif-sur-Yvette, France

Room 10

S06-2 Damage Tolerance, Fatigue Life Extension & Residual Life Assessment

72 Influence of defects detected by penetrant testing on fatigue properties in cast material for marine propellers

Laureline Loire[1,2], Yves Nadot[1], Julien Beaudet[2]
[1]Institut Pprime ENSMA, Futuroscope, France. [2]Naval Group, Technocampus Ocean, Bouguenais, France

73 Investigation of Laser Shock Peening and Conventional Shot Peening on the Fatigue Crack Growth Rate of Aluminium 2024 T4 Alloy

Hayder Ahmad[1], Mark Craig[2], Barry Luckett[2], John Yates[3]
[1]A-tec, London, United Kingdom. [2]Safran Electrical & Power, Pitstone, United Kingdom. [3]EIS, Sheffield, United Kingdom

92 Monitoring the Mechanical Environment Harshness and Assessing the Remaining Life of Sensitive Equipment

Jean-Yves Disson, Mohamed El Yazrhi
Metravib, Limonest, France

8 Non-local continuum damage mechanics-based crack growth modelling for high-performing steel structures

Yuki Ono, Heikki Remes - *Aalto University, Espoo, Finland*

Thursday, November 20th

3.30 pm - 4.00 pm Coffee/Technological Showcase/Poster Exhibition

4.00 pm - 5.45 pm Plenary Session

BEST POSTER AWARD

160 Advances in understanding cyclic crack initiation mechanisms in f.c.c. alloys: influence of plastic strain localization and hydrogen

Achraf Radi[1,2,3,4], Marion Risbet[2], Abdelali Oudriss[3], Gilbert Hénaff[4], Xavier Feaugas[3]
[1]Cetim, Senlis, France. [2]UTC, Laboratoire Roberval, Compiègne, France. [3]Laboratoire des Sciences de l'Ingénieur pour l'Environnement LaSIE, La Rochelle Université UMR-CNRS 7356, La Rochelle, France. [4]Institut Pprime ENSMA, Futuroscope, France

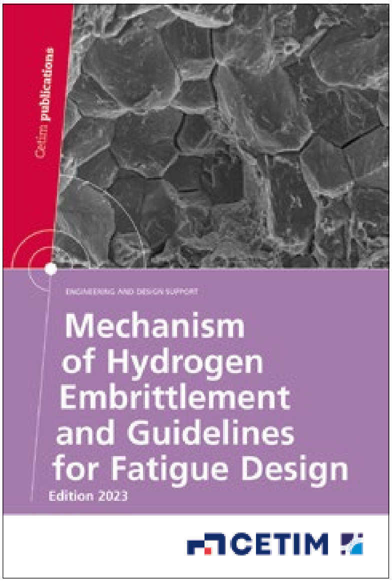
152 Tomorrow's World: Fatigue and Reliability Qualification in the Green Economy

Andrew Halfpenny
Hottinger Bruel & Kjaer UK Ltd, Rotherham, United Kingdom

5.45 pm - 6.00 pm Closing Ceremony

Cetim Publications

Mechanism of Hydrogen Embrittlement and Guidelines for Fatigue Design



In 2012, Japanese researchers published a reference book entitled Mechanism of Hydrogen Embrittlement and Guidelines for Fatigue Design.

This book provides a detailed explanation of hydrogen embrittlement with numerous application examples and fatigue design guidelines.

Professor Yukitaka Murakami, one of the main authors of the Japanese version of this book, emeritus professor of the Kyushu University and Honoris Causa of INSA Lyon, first director of the Research Center for Hydrogen Industrial Use and Storage (Hydrogenius) in Kyushu, did the honor of putting Cetim in touch with the publisher of the Japanese version of the book, Mr. Masashi Oikawa from YOKENDO LTD. This has enabled the production of two translated versions, one in French and this present publication in English. These two versions are a faithful translation of the Japanese version so as not to betray the original spirit.

After the publication of several guidelines on fatigue dedicated to the mechanical sector, Cetim at present, by means of this book, intends to actively participate in the diffusion of such knowledge on an international level. With particular concern for a global issue, that of reducing greenhouse gas emissions.

Hydrogen represents, for this purpose, a promising solution for industrial processes, transport or energy production given the current energy and ecological challenges.

Enjoy your read…

CONTACT

Order the Book

Séverine Duarté

severine.duarte@cetim.fr

14 Experimental study on the influence of thinness effect and weld quality of non-load carrying welded joints

Mehdi Ghanadi[1], Miloslav Kepka Jr.[2], Mattias Clarin[3], Torbjörn Narström[1,4], Gustav Hultgren[1], Zuheir Barsoum[1]
[1]KTH Royal Institute of Technology, Stockholm, Sweden. [2]Regional Technological Institute, R&D center of Faculty of Mechanical Engineering, University of West Bohemia, Pilsen, Czech Republic. [3]SSAB Special Steels AB, Borlänge, Sweden. [4]SSAB Special Steels AB, Oxelösund, Sweden

17 Experimental investigation of the preloading effect on S960 non-load carrying circular flat studs

Mattias Clarin[1], Gustav Hultgren[2], Rami Mansour[3,2], Torbjörn Narström[1,2], Zuheir Barsoum[2]
[1]SSAB Special Steels AB, Sweden. [2]KTH Royal Institute of Technology, Stockholm, Sweden. [3]Department of Mechanical and Production Engineering, Aarhus University, Aarhus, Denmark.

20 Effect of blast-cleaning on the fatigue strength of welded and non-welded constructional details

Ralf Glienke[1], Florian Kalkowsky[2], Markus Schröder[1], Marc Seidel[3], Inge Lotsberg[4], Alexander Holch[2], Carl Christian Nehls[2], Roy Kersten[5]
[1]Hochschule Wismar, Wismar, Germany. [2]Fraunhofer IGP, Rostock, Germany. [3]Siemens Gamesa Renewable Energy GmbH & Co. KG, Hamburg, Germany. [4]DNV AS, Høvik, Norway. [5]WRD Wobben Research and Development GmbH, Magdeburg, Germany

21 Fatigue analysis as standard application for every structural analysis with FEM

Michael Klein[1], Laurent Dastugue[2], Eric Heinemeyer[1]
[1]INTES, Stuttgart, Germany. [2]INTES France, Rambouillet, France

32 Assessment of Weld Quality and Stress Concentrations in Laser Hybrid Welded Butt Joints Using 3D Scanning and Reverse Engineering

Mahamudul Hasan Tanvir[1], Sulaiman Shojai[2], Richard Banaschik[3], Moritz Braun[1]
[1]German Aerospace Center (DLR), Institute of Maritime Energy Systems, Geesthacht, Germany. [2]Leibniz University Hannover, Institute for Steel Construction ForWind, Hannover, Germany. [3]MEYER WERFT GmbH & Co. KG, Research & Technology, Papenburg, Germany

54 S-N Performance of Horizontally Built LPBF Ti6Al4V Fatigue Samples: Effect of Support Structures and Direction Dependent Surface Textures

Ninian Sing Kok Ho, Yi Zhou, John Hock Lye Pang
Nanyang Technological University, Singapore, Singapore

59 Assessment of stress concentration factors of welded joints based on 2D- and 3D-reverse engineering

Xiru Wang, Anastasiia Danchenko, Johannes Krautheimer, Jan Schubnell
Fraunhofer IWM, Freiburg, Germany

62 'Total-Life' method: achieving accurate fatigue life predictions by combining strain-life and fracture mechanics

Andrew Halfpenny[1], Cristian Bagni[1], Amaury Chabod[2], Stephan Vervoort[3]
[1]HBK - Hottinger Bruel & Kjaer, Rotherham, United Kingdom. [2]HBK - Hottinger Bruel & Kjaer, Sucy-en-Brie, France. [3]HBK - Hottinger Bruel & Kjaer, Darmstadt, Germany

68 Fatigue life assessment of dissimilar and homogeneous LPBF AISI 316 L butt welded joints

Lucrezia Contiero[1], Luca Vecchiato[1], Vittorio Babini[2], Alberto Campagnolo[1], Giovanni Meneghetti[1]
[1]University of Padova, Padova, Italy. [2]Antonio Zamperla S.p.a, Altavilla Vicentina, Italy

75 Effect of Phosphorus Content on Fatigue Crack Acceleration in Martensitic Steel under High-Pressure Hydrogen Gas Environment

Toshitaka Hisui[1], Aman Arora[1], Akinobu Shibata[2], Yuuji Kimura[2], Hisao Matsunaga[1]
[1]Kyushu university, Fukuoka, Japan. [2]National Institute for Material Science, Ibaraki, Japan

76 Effect of Hydrogen on Torsional Fatigue Behavior of Ni-based Superalloy 718

Tetta Honda[1], Sungcheol Park[2], Hisao Matsunaga[1]
[1]Kyushu University, Fukuoka, Japan. [2]HYDROGENIUS, Fukuoka, Japan

77 Effect of waveform on fatigue crack growth behavior of pipeline steel X60 in high-pressure hydrogen gas

Akichika Kamada[1], Naoyuki Osada[1], Park Sungcheol[2], Toshiyuki Sunaba[3], Yukinori Yanase[3], Masanobu Kubota[4], Hisao Matsunaga[2, 5]
[1]Graduate School of Engineering, Kyushu University. [2]Research Center for Hydrogen Industrial Use and Storage (HYDROGENIUS), Kyushu University. [3]Material & Corrosion Group, Technical Research Center, INPEX. [4]International Institute for Carbon-Neutral Energy Research, Kyushu University (WPI-I2CNER). [5]Department of Mechanical Engineering, Kyushu University

83 Effect of loading waveforms on fatigue crack growth in pipeline steel in high pressure hydrogen gas

Shogo Tanaka[1], Antonio Alvaro[2], Bård Nyhus[2], Park Sungcheol[3], Vigdis Olden[2], Hisao Matsunaga[4,3]
[1]Kyushu university, Fuhuoka, Japan. [2]SINTEF Industry, Trondheim, Norway. [3]HYDROGENIUS, Kyushu University, Fuhuoka, Japan. [4]Department of Mechanical Engineering, Kyushu University, Fuhuoka, Japan

93 Contribution of thermometry for the study of metal structures with process induced defects in high cycle fatigue

Baptiste Lamothe[1,2], Cédric Doudard[1], Lorenzo Bercelli[1], Romain Jacquelin[2], Anthony Ezanno[3], Julien Louge[4], Sylvain Calloch[1]
[1]Institut de Recherche Dupuy de Lôme, Brest, France.
[2]Direction Générale de l'Armement, Balma, France.
[3]Direction Générale de l'Armement, Toulon, France.
[4]Naval Group, Bouguenais, France

98 Effect of Temperature and Hydrogen Coupling on the Fatigue Behaviour of an Austenitic Steel Used for Bolts at Low Temperatures

Thomas Landron, Marie Lemaitre, Pierre Osmond, Richard Tomasi, Daniella Guedes Sales, Ayoub El Moutaouakkil
Cetim, Nantes, France

100 Influence of the load ratio (R) on the fatigue limit of Inconel 718 DA in presence of artificial defect

Bonickel Tsobmene, Mandana Arzaghi, Yves Nadot
Institut P' UPR3346 CNRS-ENSMA-Université de Poitiers, Poitiers, France

117 Influence of low temperature on the high cycle fatigue of austenitic steels under ratcheting conditions

Romain Chochoy[1], Pierre Osmond[2], Denis Bertheau[1], Guillaume Benoit[1], Daniella Sales Guedes[2], Gouenou Girardin[2], Gilbert Hénaff[1]
[1]Institut P' UPR 3346 CNRS – ENSMA – Université de Poitiers, Chasseneuil, France. [2]Cetim, Nantes, France

123 Significant improvement of the fatigue performance of ER70S-6 WAAM un-milled structures: A Cu/Ni multilayer nanotechnology approach

Mohsen Falah, Niclas Spalek, Maren Seidelmann, Nikolay Lalkovski, Marcus Rutner
Hamburg University of Technology, Hamburg, Germany

125 Merging Nano and Macro Structure Design: Opportunities for the Structural Integrity of Steel Infrastructure

Marcus Rutner, Nikolay Lalkovski, Moshen Falah, Maren Seidelmann, Niclas Spalek
Hamburg University of Technology, Hamburg, Germany

132 Microstructure degradation in the Silchrome 1 steel by high temperature VHCF: a case study

Jeremie Bouquerel , Jean-Bernard Vogt
Univ. Lille, CNRS, INRAE, Centrale Lille, UMR 8207-UMET-Unité Matériaux et Transformation, Lille, France

137 Visually Readable Sensors for Fatigue Life Monitoring of Safety Critical Structures

Sixin Liu[1], Yevgen Gorash[2], Mohammad Fotouhi[3], Daniel Mulvihill[1]
[1]University of Glasgow, Glasgow, United Kingdom.
[2]University of Strathclyde, Glasgow, United Kingdom.
[3]University of Delft, Delft, Netherlands

155 On the Role of Hydrogen in Plasticity Mechanisms Associated with Cyclic Creep of a 304L austenitic stainless steel

Achraf Radi[1,2,3], Sungcheol Park[2], Abdelali Oudriss[3], Pierre Osmond[1], Gouenou Girardin[1], Fabien Lefebvre[1], Hisao Matsunaga[2], Xavier Feaugas[3]
[1]Cetim, Senlis, France. [2]Research Center for Hydrogen Industrial Use and Storage (HYDROGENIUS), Department of Mechanical Engineering, Kyushu University, Kyushu, Japan. [3]Laboratoire des Sciences de l'Ingénieur pour l'Environnement LaSIE, La Rochelle Université UMR-CNRS 7356, La Rochelle, France

156 The very high cycle fatigue behaviour of case-carburised steel for gear applications using vibration-based testing

Thomas Banide, Hugo Heyraud, Myriam Brochu, Annie Ross, Vincent Argoud, Charlie Poulat, Louis Augustins, Damien Herisson, Etienne Pessard, Franck Morel, Sophie Cazottes, Jean-Yves Buffière
[1]LAMPA, Arts et Métiers, Angers, France. [2]MatéIS, INSA Lyon, Lyon, France. [3]Safran Transmission Systems, Colombes, France

Practical Information

Poster Exhibition
Cetim Entrance Hall

Discover the 2025 poster selection and vote for your best poster **before 10.30 am, Thursday 20**

Award Ceremony – Room 6
Thursday 20 at 4.00 pm

Pictures of the congress

Conference group photo
Wednesday 19 at 1.45 pm outside of Cetim *(main entrance)*

The photos taken during the congress will be available on fatiguedesign.org

Schedules - Shuttles

Wednesday, 19 November

Morning shuttle from the Senlis hotels to Cetim

Details:

7.55 am	Departure from Escapade Best Western hotel
8.05 am	Departure from Campanile & Ibis hotels
8.15 am	Final stop at Cetim
11.15 pm	Shuttle from the gala venue to the hotels in Senlis

Thursday, 20 November

Morning shuttle from the Senlis hotels to Cetim

Details:

7.55 am	Departure from Escapade Best Western hotel
8.05 am	Departure from Campanile & Ibis hotels
8.15 am	Final stop at Cetim
6.00 pm	Shuttle from Cetim to Roissy Charles de Gaulle airport

Please show up 5 minutes before the announced time.
The bus may be a few minutes late depending on the traffic.

Gala evening at Pontpoint Royal Abbey

Wednesday, November 19

7.00 pm - 11.00 pm	Social Event Gala evening in Pontpoint
Around 11.15 pm	Departure to the hotels

Business Room
A business room is available in free access if you need a quiet space to work. You can find it in front of the conference room 6.

Speaker Desk
If you are a speaker and have a question or if you need to provide us with your updated presentation (on USB key), reach the Speaker Desk. It is located next to the conference room 6.

Book your Taxi!

Hostesses are available to book your taxis. Please submit your request before 1.30 pm (Thursday 20)

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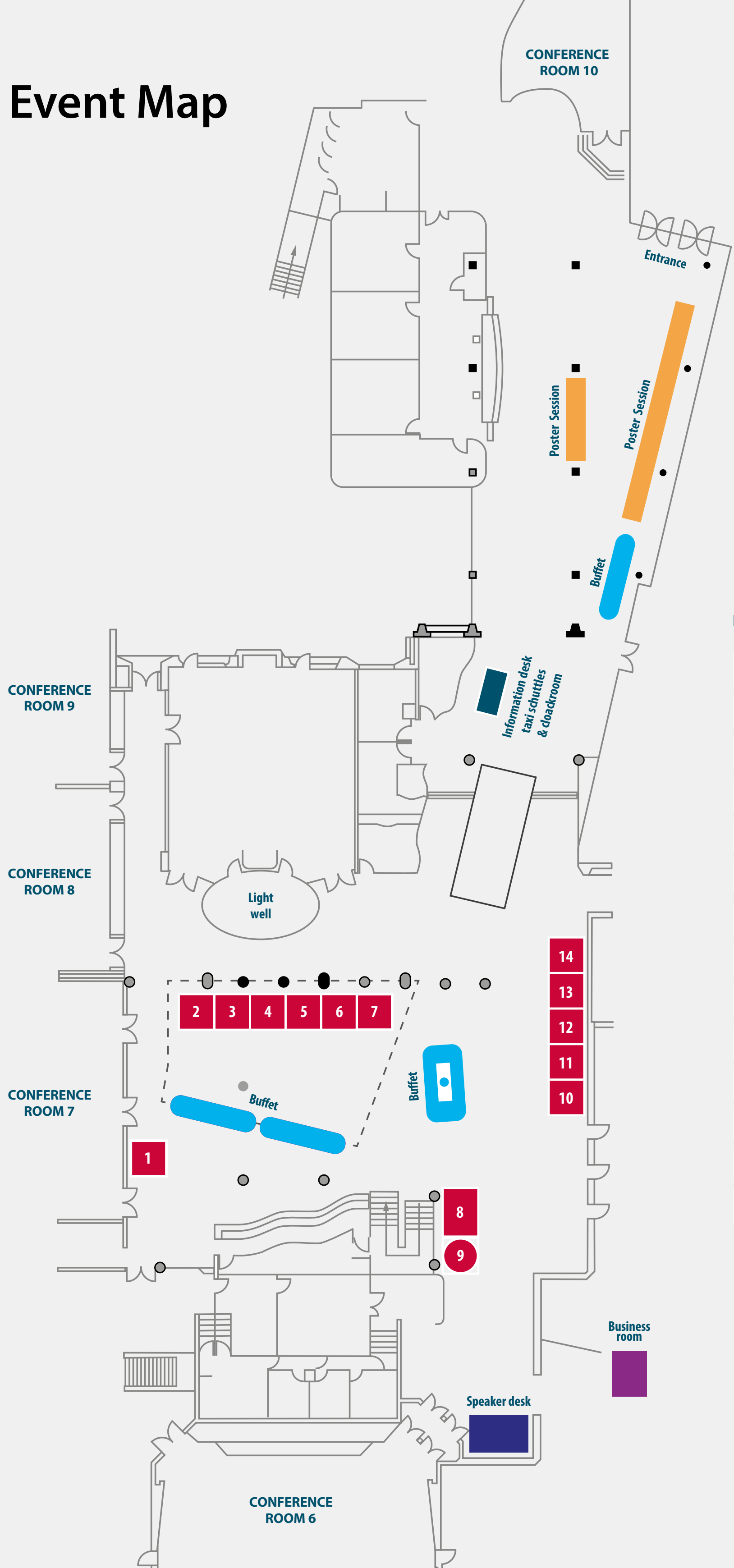
Connect to the **"CETIM-Public"** network

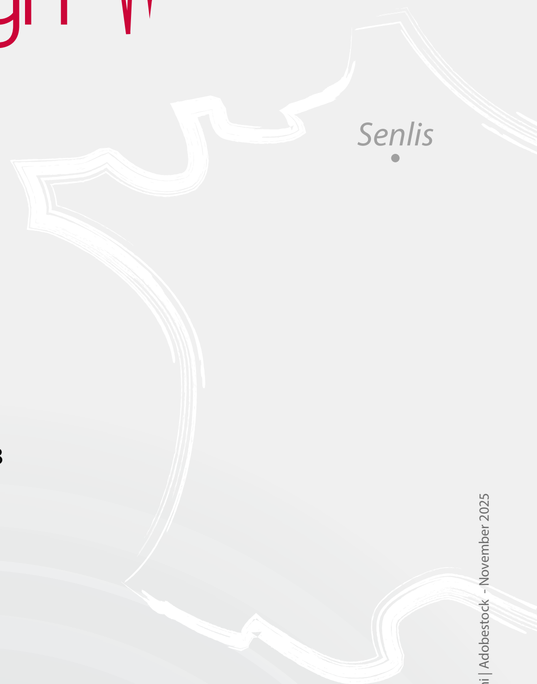
Event Map



EXHIBITORS:

1 STEP Lab
2 Rumul
3 INTES
4 MATandSIM
5 BETA CAE Systems
6 MECATEST
7 MTS Systems
8 Cetim
9 MISUTECH
10 HBK
11 EIKOSIM SOFTPOWER
12 MAXIMATOR
13 UTC Compiègne
14 3R TESTING MACHINES

11th fatigue design



Location
Cetim - 52 avenue Félix-Louat
60300 Senlis - France

Access
25 km drive from the Paris
Charles-de-Gaulle airport,
direct access through the A1 highway, exit 8

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Information
fatiguedesign.org

CETIM

Sponsor

HBK
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