

# PROGRAM

3<sup>RD</sup> TORSIONAL VIBRATION SYMPOSIUM  
MAY 11-13, 2022

SALZBURG CONGRESS | AUSTRIA

Organized by the

**VIBRA  
ASSOCIA**TION  
Schwingungstechnischer Verein

In cooperation with



# KEYNOTE SPEAKER

## PROF. KANGKI LEE

Senior Vice President  
HPS, AVL List GmbH, Graz, Austria

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Engine Market/Editorial Consultant | DE

## DR. RICK ZADOKS

Caterpillar Inc., Consultant | US

# AIM

The aim of the symposium is to organize a unique event for the international torsional vibration community. We welcome participants from all fields of torsional vibration research, especially from:

- MARINE
- POWER GENERATION
- RAIL TRACTION
- INDUSTRIAL APPLICATIONS
- ON & OFF HIGHWAY
- OIL & GAS
- COMPRESSION SYSTEMS

## Wednesday: May 11, 2022

\*Program may be subject to change

|       |                                   |
|-------|-----------------------------------|
| 18:00 | Welcome reception, Restaurant M32 |
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## Thursday: May 12, 2022

|       |   |
|-------|---|
| 07:30 | Registration desk opens   |
| 09:00 | Official opening  |
| 09:15 | Keynote: Prof. KangKi Lee<br>Senior Vice President of HPS, AVL List GmbH, Graz, Austria<br><b>To move forward the green way by which the Internal Combustion Engine can meet the zero carbon ambition</b> |
| 10:00 | Coffee break, exhibition opens  |

|       | Session 1A:<br>Engine Development   | Session 1B:<br>System Reliability   |
|-------|---|---|
| 10:30 | <b>Beyond cranktrain dynamics</b><br>B. Mokdad, S. Clot, H. Bruns, K. Buczek,<br>M. Bartosik<br><br>Liebherr Components Colmar SAS,<br>FEV Europe GmbH, FEV Polska Sp. z o.o.   | <b>Observation of torsional vibration with RENK VIB-monitor system</b><br><br>C. Wengert, A. Kania, W. Sigmund<br><br>Renk GmbH   |
| 10:55 | <b>Anti-vibration design of multi-cylinder engines considering torsional vibration characteristics</b><br><br>K.H. Jung, Y.J. Jo, J.W. Kim, J.W. Choi, M.K. Shin,<br>H. Choi, J.D. Yu<br><br>Hyundai Heavy Industries | <b>Solving gear problem with flexible coupling under thruster excitation</b><br><br>M. Hasan, P. Sundström, R. V. Laarhoven, S. V. Heesbeen<br><br>CENTA a brand of Regal Rexnord Corp., Wärtsilä Finland Oy, Wärtsilä NL |

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|-------|---|---|
| 11:20 | <b>Study of torsional vibration characteristics of a six cylinder diesel engine under cylinder deactivated conditions</b><br>B. Mahanta, I. Piraner<br>Cummins Inc. | <b>Engine crankshaft failures due to torsional natural frequency excited by dual fuel operation</b><br>T. Feese, G. Beshouri<br>Engineering Dynamics Incorporated, Advanced Engine Technologies Corporation |
| 11:45 | Lunch   |   |

|       | Session 2A: Powertrain Components – Elastic Couplings and Dampers I   | Session 2B: System Reliability – Case Studies   |
|-------|---|---|
| 13:00 | <b>Highly elastic elastomer couplings – Indescribably complex?</b><br>M. Dylla<br>VULKAN Deutschland  | <b>Motor cooling fan failures solved with modal and finite element analyses</b><br>T. Feese, J.Y. Park, D.J. Lee, Y.J. Jang<br>Engineering Dynamics Incorporated, Samsung Engineering Co. Ltd.      |
| 13:25 | <b>Nonlinear frequency dependent stiffness of rubber coupling under shear in real world applications</b><br>M. Hasan, R. Zadoks (retired)<br>CENTA a brand of Regal Rexnord Corp., Caterpillar Inc. | <b>Torsional vibration on rotating machines in oil &amp; gas industry and power gen industry: A review of real cases</b><br>N. Péton, J. Yu, S. Ganesh, R. Seshadri, S. Ramanathan<br>Bently Nevada |
| 13:50 | <b>On recent developments for simulations and measurements of torsional elastic steel spring couplings</b><br>K. Windhofer, A. Thalhammer<br>Geislinger GmbH  | <b>Grid interaction phenomena in the energy production sector</b><br>F. Petit, S. Grégoire, F. Gonzalez, F. Verbinnen<br>ENGIE Laborelec  |

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| 14:15 | <b>Impact of application-specific thermal conditions on viscous damper lifetime</b><br>M. Steidl, R. Zadoks (retired), P. Kamasz, J. Xu<br>Hasse & Wrede, Caterpillar Inc. |  |
| 14:40 | Coffee break   |  |

|       | Session 3A:<br>Power System Simulation I  | Session 3B:<br>Measurement and Monitoring  |
|-------|---|--|
| 15:05 | <b>System approach to lower dynamic loads during resonance pass of a torsional vibration reduction system</b><br>F. Liebst, M. Geilen, P. Prystupa, S. Bindig<br>ZF Friedrichshafen AG, GAT – Gesellschaft für Antriebstechnik GmbH | <b>Is what is measured the real value? Mechanical systems measurement philosophy and principles</b><br>M. Zeid<br>BERG Propulsion  |
| 15:30 | <b>Analysis and data management of torsional vibration calculation for variant and sensitivity studies</b><br>J. Wolter, P. Böhm, A. Rieß, M. Heinrich<br>MAN Energy Solutions SE   | <b>Investigation of gearbox condition monitoring using low-fidelity sensors</b><br>M. Rothmund, M. Fromberger, M. Otto, K. Stahl<br>FZG, TU München  |
| 15:55 | <b>Creating innovative drivetrain concepts by use of agile model-based development methods</b><br>B. Juretzki<br>IME Aachen GmbH Institut für Maschinenelemente und Maschinengestaltung   | <b>Using non-contacting magnetostrictive sensors to measure torsional vibration responses in electric machinery</b><br>B. Howard, D. O'Connor, L. Turnbeaugh, C. McMillen<br>Bently Nevada |
| 16:20 | Coffee break  |  |

|       | Session 4A:<br>Compressors  | Session 4B:<br>Drilling and Fracturing   |
|-------|---|--|
| 16:45 | <p><b>Torsional failures in hydrogen reciprocating compressor system with stepless capacity control</b></p> <p>T. Feese, D.J. Lee, J.Y. Park</p> <p>Engineering Dynamics Incorporated, Samsung Engineering Co. Ltd.</p> | <p><b>New insights in torsional vibrations in downhole drilling systems</b></p> <p>V. Kulke, D. Heinisch, A. Kück, H. Reckmann, G.-P. Ostermeyer, A. Hohl</p> <p>TU Braunschweig, Baker Hughes</p> |
| 17:10 | <p><b>Torsional damping benefits for reciprocating compressors</b></p> <p>T. Stephens, C. Yeiser, K. Prenninger</p> <p>Ariel Corporation, RBTS, Salzburg University</p>   | <p><b>New approach of modeling drill bit dynamics</b></p> <p>F. Schiefer, G.-P. Ostermeyer, M. Ichiaoui</p> <p>TU Braunschweig</p>   |
| 17:35 | End of Thursday's sessions  |  |
| 18:30 | Aperitif, Salzburg Residence Palace   |  |
| 19:30 | Gala Dinner, Salzburg Residence Palace  |  |

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## Friday: May 13, 2022

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| 08:00 | Registration desk opens |
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|       | Session 5A:<br>Hybrid and Electric Drives  | Session 5B: Powertrain Components –<br>Elastic Couplings and Dampers II  |
|-------|--|--|
| 09:00 | <p><b>Optimizing electric drives for future demands and applications</b></p> <p>C. Priestner, I. Garcia de Madinabeitia Merino, J. Pohn, J. Garmendia, M. Mehrgou<br/>AVL List GmbH</p>  | <p><b>Novel approach on thermo-mechanical coupled simulation and validation in rubber couplings</b></p> <p>M. Hasan, R. Zadoks (retired)<br/>CENTA a brand of Regal Rexnord Corp., Caterpillar Inc.</p>  |
| 09:25 | <p><b>Torsional vibration calculations for hybrid drives</b></p> <p>M. Schuchardt, P. Hinkelmanns-Stürzl<br/>Rolls-Royce Solutions GmbH</p>  | <p><b>Calculation of stationary temperature of rubber damper based on torsional vibration analysis of internal combustion engine</b></p> <p>T. PARIKYAN, T. KOVACIC, L. JORDAN, M. MULMANN, S. BONÙ<br/>AVL List GmbH, AUDI AG, AGLA Power Transmission S.p.a.</p>     |
| 09:50 | <p><b>PHEV driveline reverse engineering and torsional vibration study during engine restart and booming maneuver</b></p> <p>T. Enault, J. Deleener<br/>Siemens Industry Software NV</p> | <p>Session 5B:<br/>Rules and Regulations</p> <p><b>Marine propulsion – Revised class rules for passing barred speed range</b></p> <p>E. Brodin, J. O. Nøkleby, H. Amini, S. Avanesov, O. Deinboll<br/>DNV GL – Maritime</p>  |
| 10:15 | <p><b>VFDs – How to prevent them from destroying your torsional system</b></p> <p>M. A. Corbo<br/>No Bull Engineering, PLLC</p>  | <p><b>CIMAC Working Group 4, Crankshaft rules – Who we are, what we do</b></p> <p>P. Böhm, A. Rieß, T. Frondelius, J. Könnö, J. Dowell, D. Bell, Y. Hanawa<br/>MAN Energy Solutions SE, Wärtsilä Corporation, Wabtec Corporation, Ricardo UK Ltd., Kobe Steel Ltd.</p> |
| 10:40 | Coffee break   |  |



|       | Session 6A:<br>Measurement and Validation  | Session 6B:<br>Noise, Vibration, Harshness (NVH)  |
|-------|--|---|
| 11:05 | <p><b>System requirements for torsional vibrations signal processing</b></p> <p>G. Sikora, M. Dereszewski<br/>Gdynia Maritime University</p>   | <p><b>An experimental set-up to investigate engine gear rattle problems</b></p> <p>A. Kahraman, A. Donmez<br/>Department of Mechanical and Aerospace Engineering, The Ohio State University</p> |
| 11:30 | <p><b>Monitoring of transient torsional vibrations on a generator shaft in a high-power laboratory</b></p> <p>D. Rouwenhorst, J. Hermann<br/>IfTA Ingenieurbüro für Thermoakustik GmbH</p> | <p><b>Overall powertrain analysis: NVH and RDE in combination</b></p> <p>D. Höfler, S. Maxl, F. Senn, F. Burgstaller<br/>Tectos GmbH</p>  |
| 11:55 | <p><b>Rotational energy harvester for supplying self-sufficient sensor systems</b></p> <p>M. Matthias, M. Gerhardt, M. Weber, M. Koch, T. Bartel<br/>Fraunhofer LBF</p>                    | <p><b>Innovative solutions to reduce the transfer of structure borne noise in the powertrain of mega yachts</b></p> <p>L. Kurtze<br/>Vibration Association</p>                                  |
| 12:20 | Lunch  |   |

|       | Session 7A:<br>Marine Propulsion   | Session 7B:<br>Power System Simulation II  |
|-------|--|--|
| 13:20 | <p><b>Torsional vibration monitoring of large container vessel propulsion train</b></p> <p>H. Ohorn, A. Thalhammer, H. Mohr<br/>CPO Containerschiffreederei, Geislinger GmbH, GasKraft Engineering</p> | <p><b>Comprehensive torsional simulation of generator sets – Part I: Calculation of torsional maps</b></p> <p>B. Mokdad, C. Henninger, J. Keske<br/>Liebherr Components Colmar SAS, Liebherr Machines Bulle SA, Kohler Co.</p> |

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|-------|---|---|
| 13:45 | <p><b>How do the merits of iCER for engine performance affect torsional vibrations?</b></p> <p>P. Rebholz, D. Schäpper</p> <p>Winterthur Gas &amp; Diesel Ltd., Chord X Pte. Ltd.</p> | <p><b>Comprehensive torsional simulation of generator sets – Part II: Capturing armature core twist of alternator rotor assemblies in torsional models</b></p> <p>J. Keske, B. Mokdad, C. Henninger</p> <p>Kohler Co., Liebherr Components Colmar SAS, Liebherr Machines Bulle SA</p> |
| 14:10 | <p><b>Marine propulsion shafting excessive torsional vibrations: Case studies</b></p> <p>B. Cowper, Z. Schramm</p> <p>LamaLo USA, LLP</p>   | <p><b>Torsional elasticity of flange contact using finite element method</b></p> <p>S. Virta</p> <p>Winterthur Gas &amp; Diesel Ltd.</p>  |
| 14:35 | <p><b>Effect of heavy flywheel for torsional vibration on shaft alignment</b></p> <p>T. Mitsukiyo</p> <p>Mitsui E&amp;S Machinery Co. Ltd.</p>  | <p><b>Illustrating the benefits of a torsional vibration damper for eliminating the barred speed range by using hybrid finite element modeling methods</b></p> <p>C. Leontopoulos, O. Vlachos, K. Prenninger, A. Thalhammer</p> <p>ABS, Salzburg University, Geislinger GmbH</p>      |
| 15:00 | Coffee break  |   |

Session 8:  
Digital Twin

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|-------|---|
| 15:25 | <p><b>Digital twin of induction motors for response analysis of electric drive trains</b></p> <p>T. P. Holopainen, T. Ryyppö</p> <p>ABB Motors and Generators</p> |
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| 15:50 | <b>Application of digital twin technology on torsional vibration systems</b><br>C. Pestelli, F. Degano, P. Sundström, M. Almerigogna<br>Wärtsilä Corporation |
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Session 9:  
Closing session

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| 16:15 | <b>New opportunities of big data analytics for torsional vibration analysis</b><br>A. Thalhammer<br>Geislinger GmbH |
| 16:40 | Closing   |
| 16:50 | End   |

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## Saturday: May 14, 2022

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| 08:45 | Social program: "Kehlsteinhaus" – Eagle's Nest Tour / Bavarian Alps*<br>(not included in the Symposium fee / Participation fee: EUR 50,- (excl. 20% VAT))<br>*Should it be rainy or foggy, we offer an alternative museum program with visits to Domquartier and "Haus der Natur"<br>(House of Nature) Salzburg. |
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## PARTICIPATION

We would be delighted to welcome you to the Torsional Vibration Symposium 2022 in Salzburg.

Early bird rate: EUR 930,-\* (excl. 20% VAT, until February 11, 2022)

Standard rate: EUR 1.030,-\* (excl. 20% VAT)

*\*The participation fee includes Welcome Reception, Gala Dinner, program booklet, digital proceedings, coffee breaks and lunch.*

## EXHIBITION & SPONSORING

We can also offer a limited number of exhibition stands and sponsoring opportunities.

Exhibition floor space fees: EUR 415,- / m<sup>2</sup> (excl. 20% VAT, min. 6 m<sup>2</sup>)

## SYMPOSIUM LOCATION

Salzburg Congress | Auerspergstrasse 6 | 5020 Salzburg | Austria

## EVENT MODERATION

Ulrich Walter

## CONTACT

The organizer of the event is the

**VIBRA**  
**ASSOCIA**TION

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