

## TC ANNUAL REPORTING FORM

### IMS Technical Committee

#### TC3-Condition Monitoring & Fault Diagnosis Instrument

#### Reporting period

Starting date (dd/mm/yy)	Ending date (dd/mm/yy)	Date of submission (dd/mm/yy)
01/01/2025	31/12/2025	28/01/2025

#### NA

Website	Last update (mm/yy)
<a href="https://iee-ims.org/technical-committee/tc-03">https://iee-ims.org/technical-committee/tc-03</a>	06/2020

#### TC Chair or co-Chairs

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	Date of election
Xuefeng		Chen	Xi'an Jiaotong University, China	92136442	+86 13689253672	chenxf@xjtu.edu.cn	12/10/2019
Weihua		Li	South China University of Technology, China	92239334	+86 13751849150	whlee@scut.edu.cn	12/10/2019

#### Secretary (check the right box)

 Present 

 Not Present 

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	Date of election
Shujing		Lin	Xi'an Jiaotong University, China	100057929	+86 13629266129	linshujing@xjtu.edu.cn	13/05/2025
Jiaxian		Chen	South China University of Technology, China	98753676	+86 15670506997	957386378@qq.com	13/05/2025

#### TC Membership list<sup>(\*)</sup>

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	TC assignments (joining year)
Xuefeng		Chen	Xi'an Jiaotong University, China	92136442	+86 13689253672	<a href="mailto:chenxf@xjtu.edu.cn">chenxf@xjtu.edu.cn</a>	2019

\* Please add as many rows as needed

Weihua	Li	South China University of Technology, China	92239334	+86 13751849150	<a href="mailto:whlee@scut.edu.cn">whlee@scut.edu.cn</a>	2019
Zhaoyan	Fan	Oregon State University, USA	80022756		<a href="mailto:Zhaoyan.fan@oregonstate.edu">Zhaoyan.fan@oregonstate.edu</a>	2019
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Datong	Liu	Harbin Institute of Technology, China	91290762		<a href="mailto:liudatong@hit.edu.cn">liudatong@hit.edu.cn</a>	2019
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Ruqiang	Yan	Xi'an Jiaotong University, China	41600650	+86 13584054760	<a href="mailto:yanruqiang@xjtu.edu.cn">yanruqiang@xjtu.edu.cn</a>	2019
Chuang	Sun	Xi'an Jiaotong University, China	95701526	+ 86 15029972684	<a href="mailto:ch.sun@xjtu.edu.cn">ch.sun@xjtu.edu.cn</a>	2021
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Ke	Yue	South China University of Technology, China	98064041	+86 17802007055	yonina26@163.com	2021
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Lijiao	Yang	Xi'an Jiaotong University, China	N/A		yang_lijiao@mail.xjtu.edu.cn	2023
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Feng	Tian	Xi'an Jiaotong University, China	100188256	+86 18092382418	tianfeng@xjtu.edu.cn	2024
Kai	Zhou	Xi'an Jiaotong University, China	500893		15091198313@163.com	2024

## TC mission – field of expertise (max. 1000 char. Including spaces)

The aim of the technical committee is to serve as a platform for scientists and engineers involved in the field of condition monitoring & fault diagnosis to focus on the potential applications in industry:

- to encourage research on subtopics and challenging topics related to condition monitoring & fault diagnosis,
- to promote and facilitate the exchange of knowledge between scientists,
- to organize events related to condition monitoring & fault diagnosis,
- to become an official consultative body for the industry in the field of condition monitoring & fault diagnosis instrument,
- to promote new standards and guidelines.

## TC meetings in the reporting period<sup>(\*)</sup>

Date (dd/mm/yy)	Online / Face2Face	Attendance (number)	TC Members	Information sent within 4 months to (Yes/No)		
				Chair of TSAC	IM Magazine	Other (specify)
13/05/2025	Online	19	Yes	/	/	Program manager
30/06/2025	Online	19	Yes	/	/	Program manager

Minutes of the yearly meeting (separate file)<sup>1</sup>: 180

## Participation in Society sponsored Events (Conferences, Symposia, Workshops)<sup>(\*)</sup>

Name of the Event	Starting date (event)	Ending date (event)	Date Participation	Type of participation (Yes/No)			
				Sponsorship	Session	Tutorial	Other (specify) <sup>2</sup>

<sup>1</sup> Yes/No, date of the yearly meeting;

\* Please add as many rows as needed

(dd/mm/yy) (dd/mm/yy) (dd/mm/yy)

International Conference on Sensing, Measurement & Data Analytics in the Era of Artificial Intelligence (ICSMD 2025)	21/11/2025	23/11/2025	full participant	Yes	Yes	Yes
2025 IEEE International Instrumentation and Measurement Technology Conference (I2MTC 2025)	19/05/2025	22/05/2025	full participant		Yes	
IEEE PHM-Xi'an 2025	10/10/2025	12/10/2025	full participant	Yes	Yes	Yes
2025 Academic Conference on Dynamic Signal Analysis of the Chinese Society for Vibration Engineering	09/05/2025	11/05/2025	full participant		Yes	
The 27th Annual Meeting of the China Association for Science and Technology -- Thematic Forum on Operational Safety Assurance and Intelligent Monitoring of High-end Equipment	25/07/2025	27/07/2025	full participant		Yes	
2025 Delegates' Congress and Annual Academic Conference of the Dynamic Testing Technical Committee, Chinese Society for Vibration Engineering	07/11/2025	09/11/2025	full participant		Yes	
The 16th National Conference on Vibration Theory and Applications, NVT2025	05/12/2025	08/12/2025	full participant		Yes	

## Involvement in standard development<sup>(\*)</sup>

Standard	Working Group	Revision	Activity in the reporting period, including dates	Notes, Attendance
Testing Method for Cable Insulation Fault Based on Broadband Impedance Spectrum(BIS)	IEEE P3738	/	Vote on the PAR on Jun 30, 2025  IEEE P3738 Working Group Kickoff Meeting	

<sup>2</sup> For example, Involvement in reviewing papers (and indicate approximate number of paper reviews for the listed event)

\* Please add as many rows as needed

Minutes on Nov 14, 2025

## Participation in the development of Society Educational Programs<sup>(\*)</sup>

Program name	Involvement of chapters and sections	Activity in the reporting period, including dates	Notes, attendance
N/A			

## Other Activities (tutorials, teaching, career, cooperation, publications, joint activity with chapters or sections) <sup>(\*)</sup>

Type of activity	Starting date (dd/mm/yy)	Ending date (dd/mm/yy)	Activity in the reporting period	Notes, attendance
Tutorials	06/03/2025	06/03/2025	Diagnosis and prognosis of structural life	Assoc. Prof. Andrzej Katunin
Teaching	24/04/2025	24/05/2025	Big Data Technology Intelligent sensing and measurement technology	Prof. Asoke Kumar Nandi
Tutorials	09/05/2025	09/05/2025	Time-series representations of polynomials leading to better understanding and accurate estimations	Prof. Asoke Kumar Nandi
Tutorials	16/05/2025	16/05/2025	Advanced Material Characterisation”和“Recent advance in time series sensor data analytics	Prof. Xiaoli Li
Tutorials	23/07/2025	23/07/2025	Overview of research areas at the Mechanics of Intelligent Structure Department	Assoc. Prof. Pawel Kudela
Teaching	23/07/2025	06/08/2025	Deep Neural Networks for Nondestructive Diagnostics Application of Fourier transform in selected problems of mechanics, signal processing and imaging Fundamentals of elastic wave propagation phenomenon General implementation of the time domain spectral element method (SEM) for guided wave propagation modelling Parallel implementation of the SEM Incorporating damage into SEM model	Assoc. Prof. Pawel Kudela
Tutorials	21/11/2025	21/11/2025	Chirplet Transform-based Method for Retrieving Modes from Overlapping Multi-component Signals	Prof. Qingtang Jiang
Tutorials	18/12/2025	18/12/2025	Connectivity of Asymmetric Acoustic Sensor Networks	Prof. Amir G. Aghdam
Award	21/03/2025		First Prize of China Industry-University-Research Collaboration Innovation Achievement Award	Prof. Chuang Sun et al
Publications			“SFUGDA: Source-free unsupervised multiscale graph domain adaptation network with privacy-preserving for cross-domain fault diagnosis of offshore wind turbines”	Prof. Xuefeng Chen, Prof. Chunsheng Yang et al
Publications			Micromechanics-Informed Neural Networks for Periodic Homogenization of Thermoconductive Behavior in Unidirectional Composites with Cylindrically Orthotropic Graphite Fibers	Prof. Xuefeng Chen, Prof. Fodi Meraghni et al
Publications			“Terahertz molecular vibrational sensing using 3D printed anapole meta-biosensor”	Prof. Liuyang Zhang et al.

\* Please add as many rows as needed

Publications	“Applications of domain generalization to machine fault diagnosis: A survey”	Prof. Ruqiang Yan, Prof. Min Xie et al
Publications	“Unified Flowing Normality Learning for Rotating Machinery Anomaly Detection in Continuous Time-Varying Conditions”	Prof. Ruqiang Yan, Prof. Asoke Kumar Nandi et al
Publications	“Noise-assisted Nonlinear Squeezing Transform for Rotating Machinery Fault Diagnosis”	Prof. Ruqiang Yan, Prof. Robert Gao et al
Publications	“Domain Perturbation With Uncertainty for Bearing Fault Diagnosis Under Unseen Conditions”	Prof. Ruqiang Yan, Prof. Min Xie et al
Publications	“Interface Topology Driven Loss Minimization in Integrated Photonics: THz Ultrahigh-Q Cavities and Waveguides”	Prof. Ruqiang Yan, Prof. Ranjan Singh et al

### Recommended candidates<sup>(\*)</sup>

Type (ADCOM, Fellow, Award –specify-)	First Name	Second Name	Family Name	Affiliation /Address	Motivation
N/A					

### TC operating Plan: near-term plans for the upcoming year, including scheduled meetings, activities, and so on (max. 1000 char. Including spaces)

In 2026, TC-3 will continue to advance the integration and practical application of condition monitoring and fault diagnosis technologies in key industries such as aero-engines, large complex equipment and industrial robotics, with focused efforts in the following three areas.

1. Regular Progress Meetings: Continue holding regular progress meetings hosted by different committee members to review project progress, discuss industry needs and adjust strategies. Optimize work methods and resource allocation based on discussions, and circulate meeting summaries for member feedback to improve effectiveness.

2. Special Focus Workshops: Co-organize industry-specific seminars with enterprises to integrate cutting-edge diagnostic technologies with industrial demands. Conduct in-depth case studies and expert interactions, and compile proceedings to summarize insights and recommendations.

3. Academic Collaboration: Organize a special session at IEEE I2MTC 2026 and still sponsor the international workshops and conference, inviting outstanding researchers and practitioners to strengthen academic exchanges and cooperation.

### TC operating plan: long term vision from 2-5 years out, based on IMS Strategic Plan, including areas of strength, areas for improvement, how is the subject area going to change, planned actions for lifting achievement succession plans, etc. (max. 1000 char. Including spaces)

Over the next five years, TC-3 aims to establish itself as a thought leader in condition monitoring and fault diagnosis, driving innovation and setting industry standards. Key strategies include expanding a global expert network by establishing a robust framework with regional representatives to ensure broad geographical coverage and hosting international seminars for strategic discussions, knowledge sharing, and professional networking. In addition, TC-3 will focus on cultivating young professionals by launching a mentorship program that pairs them with experienced mentors based on their career interests and organizing annual workshops to develop essential skills such as grant writing, project management, and communication. Furthermore, the committee will prioritize cutting-edge research in predictive maintenance, artificial intelligence, and machine learning, conducting surveys and discussions with industry stakeholders to identify critical research areas while forging partnerships with leading technology companies to facilitate research and ensure the practical application of findings.

<sup>\*</sup> Please add as many rows as needed



**TC convergence, synergy, cooperation with other TC, from I&M or other societies (max. 1000 char. Including spaces)**

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To expand impact and integrate cross-disciplinary technologies, TC-3 will collaborate with other committees and societies. It will launch joint research with TC-7 on integrating advanced sensing and big data into condition monitoring, supported by regular workshops and task groups for knowledge exchange.

TC-3 will also host interdisciplinary events with global experts, covering cyber security and data privacy alongside core technologies to drive innovation and integrated solutions. It will also partner with international standardization bodies to advance necessary protocols for evolving monitoring technologies.

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**Comments/Suggestions (max. 1000 char. Including spaces)**

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N/A

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\* Please add as many rows as needed