

WCCM SINCE 2019 SINGAPORE

2 to 5 December 2019

*The main Congress Theme is
"Digitalisation in Condition Monitoring and Non-Destructive Evaluation – Value our "People, Plants and Assets"*

2nd World Congress on Condition Monitoring 3rd Singapore International NDT Conference & Exhibition

Marina Bay Sands Expo and Convention Centre | Singapore

2-5 December 2019

CALL FOR PAPERS & ANNOUNCEMENT

Hosted by



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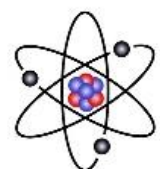




- 1 | WELCOME MESSAGES
- 3 | CONFERENCE INFORMATION
- 5 | ABSTRACT SUBMISSION GUIDELINES
- 7 | CONFERENCE TOPICS
- 9 | IMPORTANT DATES
- 10 | SCIENTIFIC COMMITTEE
- 12 | REGISTRATION FEE STRUCTURES
- 14 | WCCM2019 KEYNOTE SPEAKERS
- 16 | CONFERENCE AND ACCOMMODATION VENUE
- 20 | SPONSORSHIP /EXHIBITION
- 22 | CONTACT US



WCCM 2019



SINCE 2019

WELCOME TO 2ND WCCM 2019 AND SINCE 2019, SINGAPORE

On behalf of the Non- Destructive Testing Society (Singapore), NDTSS, I delighted to have the honour of inviting the world Condition Monitoring & NDT Experts to gather in Singapore for the 2nd World Congress for Condition Monitoring in December 2019. The Event will be held in conjunction with the 3rd Singapore International NDT Conference.

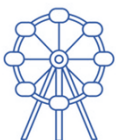
The last World Congress for condition Monitoring was held in London in 2017, The event will provide you a great platform in exchanging new ideas, innovation in Plant condition monitoring, Civil Assets condition monitoring, Aviation, Power and petrochemical industry.

The conference would have an exhibition showcasing latest technology with 4.0 generation, wireless systems and sensors for total predictive maintenance, latest NDT equipment and systems. The exhibition will run parallel along the conference for 4 days. The conference is expected to attract 900 delegates and over 60 exhibitors' worldwide to show case the best out of latest innovations and technologies. It's never too early plan your schedule, organize your travel plans and leisure plans to enjoy the conference in our little red dot. The conference & exhibition will be held in Marina Bay Sands, a venue which would be a great memory to carry over from Singapore.

You may want to sponsor one of the events, you are welcome to exhibit your products in the limited booths which are sold at first come first served basis. We invite delegates around the world to present your paper, organise a workshop, participate in the conference from all around the globe. We are looking forward to welcome you here to participate in the events and celebrations with a warm Singaporean hospitality.

See you in Singapore

Dr Sajeesh K Babu
President, NDTSS
Chairman, ICNDT



WELCOME MESSAGE FROM THE INTERNATIONAL SOCIETY FOR CONDITION MONITORING 2019.

This is one of the On behalf of the International Society for Condition Monitoring (ISCM), I am delighted to invite the worldwide condition monitoring, structural health monitoring, NDT and asset management communities to the premier event, the Second World Congress on Condition Monitoring. The International Society for Condition Monitoring, World Organization for Condition Monitoring, is the founder and owner of the World Congresses on Condition Monitoring, and the Non- Destructive Testing Society, Singapore (NDTSS) kindly offered to be the official host of the event.

On behalf of the ISCM, I would like to thank NDTSS for its great efforts in Congress preparation.

I am also delighted to inform that Congress Proceedings will be published by Springer and will be indexed by Scopus, WEB of Science and Ei Compendex.

The Congress will embrace all aspects of condition monitoring, structural health monitoring, NDT, asset management and related areas, including Industry 4.0 revolution's topics, and papers are cordially invited from individual contributors. The ISCM and the NDTSS are expecting that the majority of papers will be submitted from members of the national condition monitoring and NDT societies, many of which are Liaison Members of the ISCM.

I would like to thank national condition monitoring and NDT societies for their support of the Congress.

I am sure that the Congress will be a true international scientific-technical competition for academics and practitioners and a worldwide demonstration of highest achievements. This is only achievable through the global scale of the Congress with all continents involved.

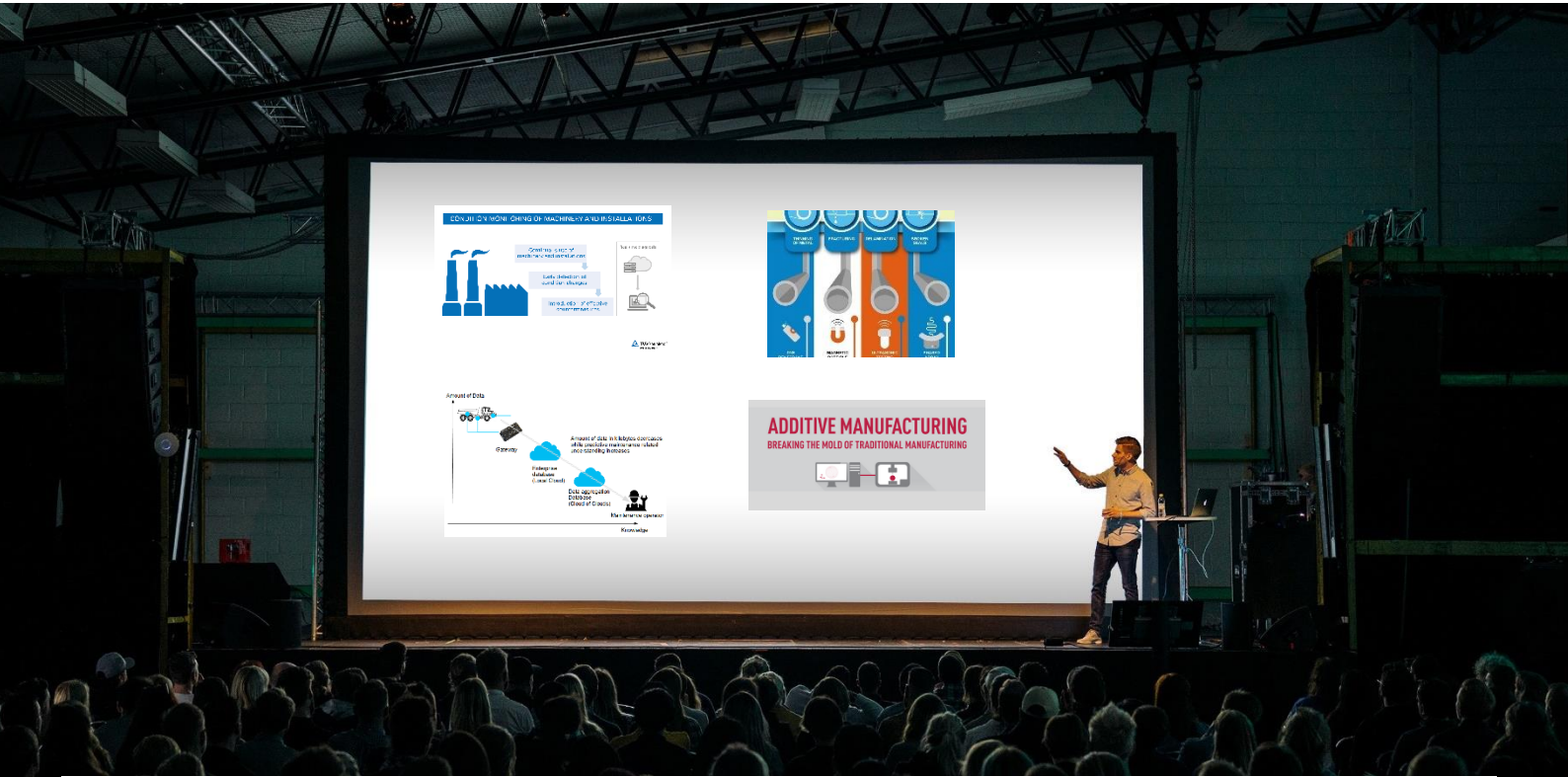
Finally, I would like to cordially welcome all of you to the Congress.

See you in Singapore, the famous and smart city of the future!

Prof. Len Gelman, the Executive Director of the International Society for Condition Monitoring, the Chair of the International Scientific Advisory Committee of the Second World Congress on CM.

Prof Len Gelman





International Society for Condition Monitoring, **ISCM**, and the Non-Destructive Testing Society Singapore, **NDTSS**, are proud and delighted to invite you to the premier global combined event, the 2nd World Congress on Condition Monitoring (WCCM) and 3rd Singapore International NDT Conference & Exhibition (SINCE) at the Sands Expo and Convention Centre, Singapore from 2nd to 5th December 2019.

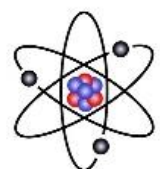
This is one of the largest combined events in the world and this un-paralleled event will see communities and societies from both condition monitoring and NDT converge at a single venue to exchange ideas and to network at international level.

The Congress will embrace all aspects of condition monitoring and related areas and papers are cordially invited from individual contributors.

It is expected that the majority of papers will be submitted from members of the national condition monitoring and NDT societies, many of which are Liaison members of the ISCM. The national societies are asked to encourage their members to actively participate in the event.



WCCM 2019

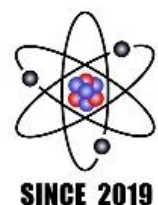


SINCE 2019

The Congress scientific-technical programme will include:

- *Plenary keynote presentations*
- *Invited overview presentations on hot topics in condition monitoring and structural health monitoring*
- *Invited and contributed presentations, including case study presentations*
- *Industrial sessions for major industrial sectors*
- *Workshops on advanced topics in condition monitoring, led by recognised scientists and engineers*
- *Expert panel session on hot topics in condition monitoring and structural health monitoring*
- *Exhibition, vendor presentations and plenary presentations of exhibitors and sponsors.*

The event will focus on digitalisation with the advent of the fourth industrial revolution (Industry 4.0), the Internet-Of-Things (IOT), Plant Asset Integrity, Condition Monitoring, Smart Sensors, NDT/NDE 4.0 and Additive Manufacturing. SINCE2019 and WCCM2019 are combined to provide a unique opportunity to establish worldwide contacts to exchange experience globally, and to share new developments and ideas with local, regional and international delegates from a wide range of expertise.



Important instructions for WCCM Authors

- a) Abstract submission will be opened until 31st May 2019. Early submission is welcomed and strongly encouraged.
- b) Abstract submission shall be via the Congress website at <https://wccm2019.org>
- c) All submissions must be in English.
- d) All submissions must be in MS-Word format following the template available for download from the Congress website.
- e) All submissions will be reviewed by the International Scientific Advisory Committee for relevance and industrial/scientific impact.
- f) Notice of Acceptance (Abstract) will be issued within 14 days of abstract submission.
- g) All accepted submissions will be required to prepare manuscripts for full paper of maximum 8 pages in length in MS-Word according to a template that will be provided together with the Notice of Acceptance (Abstract).
- h) Manuscripts for full papers must be received by 30th June 2019.
- i) All manuscripts will be assessed for relevance and industrial/scientific impact and will be peer-reviewed by a panel identified by the International Scientific Advisory.
- j) Notice of Manuscript Acceptance will be issued by 31st July 2019.
- k) At least one of the Authors whose manuscripts are accepted must register for the conference by 20th September 2019. Otherwise manuscript will not be included in the Congress proceedings.
- l) Registered authors may publish/present a maximum of two papers unless otherwise approved by the Conference Secretariat.
- m) Each scientific/technical presentation will be allocated 15 minutes for presentation plus 5 minutes for questions and discussions. Presentations must be submitted during the break immediately prior to your session. Conference Secretariat will upload your presentation to the audio-visual equipment in your session. The latest version Microsoft Powerpoint 2016 and earlier versions are supported. Your presentation may include videos and animation. All major codecs and players are supported. The projector resolution will be 1024 by 768 or better. The use of personal laptops is typically not allowed.
- n) E-proceedings will be made available to all Congress attendees.
- o) Congress proceedings will be published by Springer and will be indexed worldwide by Scopus, WEB of Science and Ei compendex.



Important instructions for SINCE Authors

- a) Abstract submission will be open from 17th December 2018 to 30th June 2019. Early submission is welcomed and strongly encouraged.
 - b) Abstract submission shall be via the conference website at <https://SINCE2019.org>.
 - c) All submissions must be in English.
 - d) All submissions must be in MS-Word format following the template available for download from the conference website.
 - e) All submissions will be reviewed by the Scientific Committee for originality, relevance and industrial impact.
 - f) Notice of Acceptance will be issued within 14 days of abstract submission.
 - g) Authors whose submissions are accepted must register for the conference by 30th September 2019.
 - h) All accepted submissions will be required to prepare a full paper manuscript of 6-8 pages in length in MS-Word according to a format that will be provided together with the Notice of Acceptance.
 - i) Manuscripts for full papers must be received 30th September 2019.
- j) Registered authors may present a maximum of two (2) papers unless otherwise approved by the Conference Secretariat.
 - k) Each technical presentation will be allocated 15 minutes for presentation plus 5 minutes for questions and discussions. Presentations must be submitted during the break immediately prior to your session. Conference Secretariat will upload your presentation to the AV equipment. The use of personal laptops is not allowed. The current version of Microsoft Powerpoint is installed. Your presentation may include videos and animations. All major codecs and players are supported. The projector resolution will be 1024 by 768 or better. All presentations must be delivered in English.
 - l) All full papers will be published open access in NDT.net and in e-proceedings under Creative Commons licenses. You may choose either [Attribution](#) or [Attribution-NoDerivs](#) as the license type.



WCCM2019 invites papers from academics, industrial scientists and practitioners who have views, engagements and breakthroughs to share in all aspects of condition monitoring, structural health monitoring, non-destructive testing and related areas. A list of topics is provided below:

CM Methods and Technologies

- Equipment trouble shooting
- Methods for fault severity estimation
- Future directions for CM
- CM methods and technologies
- Condition monitoring via machinery performance parameters
- Stress/Strain analysis
- CM: Case Studies

Instrumentation and ITC for CM

- Wireless techniques and systems for CM
- Architecture of CM systems
- ITC for CM
- CM systems
- Hardware and software platforms for CM systems
- High performance computing for CM systems
- Robotics for CM
- Off board and off board CM systems
- OSA-CBM for CM
- Integrated condition monitoring technologies and systems
- Communication for CM
- Internet of things and services for CM
- Data storage and backup for CM

Certification, Education and Training for CM

- Engineering standards for CM
- CM education including CPD
- CM training
- CM certification

Asset Management

- Asset management systems
- Asset management via CM
- Optimal asset replacement
- Asset databases
- Improvement of asset safety via CM

NDT Methods and Technologies

- NDT methods and technologies
- Fusion of CM/NDT methods and technologies
- NDT: Case Studies

Signal and Image Processing, Pattern Recognition, Finite Element Modelling and Simulation for CM

- Decision support for CM
- Data mining and fusion
- Optimisation in CM
- Linear, non-linear, time, frequency and time-frequency signal processing techniques for CM
- Signal processing techniques for non-stationary conditions
- On-line and off-line adaptations of CM technologies
- Feature extraction and pattern recognition for CM
- Linear and non-linear finite element modelling for CM
- Computational Fluid Dynamics
- Linear and non-linear multi-freedom dynamical analysis of complex systems for CM
- Modal analysis for CM
- Simulation of linear and non-linear complex systems for CM
- Computational methods for CM
- Probabilistic and statistical methods for CM
- Classical and novel image processing techniques for CM

Sensors and Actuators

- Standard sensors and actuators
- New and advanced intelligent sensors and actuators
- Embedded sensors and embedded calculations in sensors and actuators
- Sensor fusion
- Energy harvesting

Root Cause Analysis of Faults/Failures

- Fault free analysis
- Root cause analysis: Ishikawa Diagram, 5 Whys, Eight Discipline Problem Solving, Scatter Diagrams, Is-Is not, etc.
- HAZOP
- Human and latent root causes of faults/failures
- Root Cause Analysis: Case Studies

Structural Health Monitoring

Maintenance

- Maintenance planning, scheduling and control
- Repair, replacement and overhaul
- Management of enterprise shutdown and overhauls
- Life-cycle cost benefit analysis for maintenance and CM
- Failure effects and consequences
- Through-life support
- Risk assessment and management
- Risk-based maintenance
- Reliability centred maintenance and reliability improvement
- Classical and advanced software for maintenance: CMMS, RCM++, ERP, etc.
- Human errors in maintenance
- Logistics and spare part management
- Maintenance: Case Studies

Prognostics for CM

- Model driven prognostics
- Data driven prognostics
- Fatigue and fracture prognostics
- Models for fault propagation
- Condition indicators for prognostics
- Prognostics: Case Studies

Materials

- Materials manufacturing
- Materials characterisation

Damage, Fault and Failure

- Failure assessment methods
- Physics of failure, fault/failure modes
- Fatigue and fracture

Design and Manufacturing for CM and Maintenance

- Design and life-cycle integrity
- Design for optimal maintainability
- Design improvement via CM
- Simulation models and software for optimal asset design and manufacturing

Nano-Technologies for CM



WCCM 2019



SINCE 2019

SINCE2019 welcomes original contributions from practicing NDT professionals, engineers, scientists and developers in academia, research and industry (manufacturers, suppliers, service providers and end-users) on any aspect of non-destructive testing and evaluation including, but not limited to, the following areas:

- Digitalisation and NDE 4.0
- Novel and Non-traditional NDT Techniques and Applications
- Infrared Testing, Thermography, Thermal NDT
- Ultrasonic Testing (UT)
- Long Range Guided Wave Inspection (LRUT)
- Laser-based NDT including holography and shearography
- Radiographic Testing including Computed Tomography
- Visual and Optical Testing
- Penetrant and Leak Testing
- Acoustic Emission Testing
- Magnetic Testing
- Eddy Current, Flux leakage and Electromagnetic Testing
- NDT for Additive Manufacturing
- Signal and Image Processing in NDT/NDE
- Modelling and Simulation
- Materials Characterisation
- Automation of NDT/NDE
- Application-specific NDT/NDE
- Education, Training and Certification



Paper Submission



Click icon to submit



Click icon to submit



WCCM2019

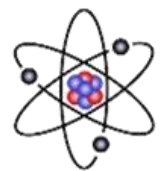
<i>Abstract submission deadline</i>	<i>31 May 2019</i>
<i>Full Manuscript submission deadline</i>	<i>30 June 2019</i>
<i>Notice of Acceptance for Abstract</i>	<i>Within 14 days of submission</i>
<i>Notice of Acceptance for Full Manuscript</i>	<i>31 July 2019</i>
<i>Author Registration</i>	<i>20 September 2019</i>

SINCE2019

<i>Abstract submission deadline</i>	<i>30 June 2019</i>
<i>Notice of Acceptance to authors</i>	<i>Within 14 days of submission</i>
<i>Author Registration</i>	<i>30 September 2019</i>



WCCM 2019



SINCE 2019

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SCIENTIFIC CHAIRS

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 Dr C.K. Liew / Dr A.A. Malcolm
 Dr N. Martin

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WCCM 2019



SINCE 2019

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Dr C.K. Liew / Dr A.A. Malcolm

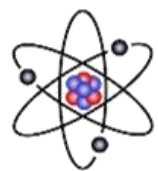
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F. Maridass
S.K. Mohiuddin
B. Muthuramalingam

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Dickson Tan
A. Venkat
M.S. Vetri
Collin Yeh
R. Yong



WCCM 2019



SINCE 2019

WCCM2019

All fees are charged in USD

CONFERENCE
USD 800
 EARLY BIRD
 (ENDS 16 AUGUST 2019)

USD 1,100
 Regular Price
 (17 August 2019 onwards)

Fee includes:



- 4-days conference pass
- Daily refreshment & Lunch
- Conference Dinner on 4 December

NDTSS/ISCM MEMBERS
USD 725
 EARLY BIRD
 (ENDS 16 AUGUST 2019)

USD 950
 Regular Price
 (17 August 2019 onwards)


Fee includes:



- 4-days conference pass
- Daily refreshment & Lunch
- Conference Dinner on 4 December

ACCOMPANYING PERSON
USD 450

Fee includes:



- Daily refreshment & Lunch
- Conference Dinner on 4 December

ADDITIONAL CONFERENCE DINNER TICKET

USD 150

STUDENT TICKET WITHOUT CONFERENCE DINNER
(with proof of status)

**50% Discount of
 Conference Fee**



SINCE2019

All fees are charged in SGD

CONFERENCE
SGD 500
 EARLY BIRD
 (ENDS 16 AUGUST 2019)

SGD 600
 Regular Price
 (17 August 2019 onwards)

Fee includes:



- 2-days conference pass
- Daily refreshment & Lunch
- Conference Dinner on 4 December

NDTSS MEMBERS
SGD 400
 EARLY BIRD
 (ENDS 16 AUGUST 2019)

SGD 550
 Regular Price
 (17 August 2019 onwards)


Fee includes:



- 2-days conference pass
- Daily refreshment & Lunch
- Conference Dinner on 4 December

ACCOMPANYING PERSON
SGD 400

Fee includes:



- Daily refreshment & Lunch
- Conference Dinner on 4 December

ADDITIONAL CONFERENCE DINNER TICKET

SGD 200



The scientific programme for WCCM2019 will feature keynote presentations from an invited panel of internationally-renowned experts and thought leaders representing condition monitoring, structural health monitoring, NDT and asset management world geographically and technologically.



Professor Andrew Ball
University of Huddersfield
United Kingdom



Professor Younho Cho
Pusan National University
South Korea



Professor Fulei Chu
Tsinghua University
China



Professor Tat-Hean Gan
Brunel University London
United Kingdom



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Professor Stephan Heyns
University Pretoria
South Africa

Professor Robert Randall
University of New South Wales
Australia



Professor Zhongqing Su
Hong Kong Polytechnic University
Hong Kong SAR



ACCOMMODATION

The organising committee of WCCM2019 and SINCE2019 is pleased to offer a Congress hotel with special consideration on security, accessibility and price. Detailed room prices, information and booking link will soon be posted on the Congress websites.



View of the Infinity Pool



Room



Hotel Lobby



Shopping Mall



WCCM 2019



SINCE 2019

COOL AND UNUSAL ATTRACTIONS IN SINGAPORE

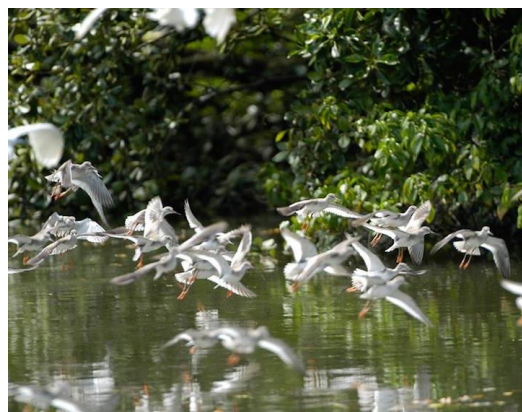
Gardens by the Bay

Along Singapore's Marina Bay, a landscaping project is home to 18 incredible 'Supertrees' which house roughly 200 species of orchids, ferns and other tropical climbers on the trees' trunks. The garden complex is also home to two enormous greenhouses, the Flower Dome which supports thousands of varieties of cool-dry climate plants and flowers and the Cloud Forest that fosters plants that prefer wet conditions found on mountains and tropical highlands. Both greenhouses use sustainable technologies to minimise their environmental impact.



Sungei Buloh Wetland Reserve

This reserve is a fresh spark of natural greenery and rich biodiversity, something which is largely uncommon in Singapore. It is Singapore's first ASEAN Heritage Park and its trails pass through coastal areas and forest and include mid-canopy walks and migratory bird trails. The entire route covers the distance of 3,700 metres and the reserve is an important stopover point for over 150 species of exotic migratory birds from as far away as Alaska, Siberia, Northern China and Australia, making this an important ecological site within the East Asian Australasian Shorebird Site Network.



St. Joseph's Church

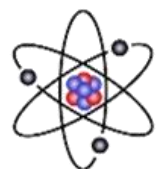
Surrounded by crowded shopping centres and glassy corporate buildings, the first Catholic church in Singapore was built between 1906 and 1912 in the shape of the Latin cross. It can accommodate 1,500 worshippers. The Neo-Gothic architectural style is evident in the decorative architectural elements of the windows and roof. This church was declared a national monument in 2005.

Unique Eats in Singapore

One of the most unique things to do in Singapore if you are a food connoisseur is to eat at the cheapest Michelin-starred restaurant in the world. The street food stall, Hong Kong Soya Sauce Chicken Rice and Noodle, received one Michelin star in 2016 and their signature dish of chicken and rice will set you back only around US\$2. The stall is located in Chinatown just off New Bridge Road at Smith Street.



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As Singapore is an industrial hub, the event will also include participation from many major sectors including aerospace, civil, oil and gas, marine, railway, and manufacturing industries. The exhibition will provide unique opportunities to connect with plant owners, manufacturers, contractors, inspection agencies who applies both condition monitoring and non-destructive technologies.

WHY SPONSOR

ATTENDEES' PROFILE

The past conferences have been successful in attracting about 500 attendees from over 50 countries.

Country

Europe and Americas:	30%
Asian Countries (besides Singapore):	40%
Others:	30%

WHY BECOME A SPONSOR?

The conference branding provides an excellent platform for academics, professionals and researchers to network with corporate/industry players in the field of non-destructive testing. Through the conference, sponsors would be able to reach to their target audience and create brand awareness.

✓ Extensive Promotion

Announcements on WCCM and SINCE will be made to its proprietary database comprising industries, academics, professionals and researchers (worldwide) in the field of non-destructive testing. All potential attendees are directed to the conference website to get information on the conference, submit their research paper, register for the conference, check programme updates as the conference progresses.

Sponsors will be featured on the website and hyperlinks to sponsors' corporate websites which will certainly help to increase brand awareness amongst the target audience.

✓ Onsite Promotion:

Should you be taking up an exhibition booth space at the conference, you can display and showcase your product and make direct sales pitch to the attendees. Nothing beats hands-on-trial of the product and the face-to-face interaction with the sales personnel representing the company.

✓ Self-Branding:

Sponsors are issued complimentary conference passes for admission to the conference sessions, social events and activities. This further provides opportunities to network, socialize and foster business relationship with the experts and decision-makers.

✓ Commitment:

The growth of the Singapore Condition Monitoring & NDT industry is also dependent on the financial support of our industrial partners. As a sponsor or an exhibitor at the conference you can demonstrate your on-going commitment to the Condition Monitoring & NDT Community here in Singapore



We cordially invite you to review the various sponsorship opportunities available.

Sponsorship Packages

PLATINUM

SGD 40,000

DIAMOND

SGD 25,000

GOLD

SGD 15,000

SILVER

SGD 10,000

BRONZE

SGD 7,500

STANDARD

SGD 5,000

For detailed sponsorship levels, benefits and floor plans, download the prospectus

**CLICK HERE TO DOWNLOAD
SPONSORSHIP/EXHIBITION
PROSPECTUS**





CONTACT INFORMATION

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#02-21 Trade Association Hub
Singapore 609431
<http://ndtss.org.sg/>

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Ms Wendy Soh
Tel: +65 6338 7984 (Mon-Fri, 9am to 6pm, GMT+8)
Email: secretariat@wccm2019.org | secretariat@since2019.org

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<https://wccmsince.org>