



DEAR FRIENDS, DEAR COLLEAGUES,

With this special edition, we are closing 2025. It has truly been a fantastic IMEKO year! Thank you for being with us!

In addition to our conferences, we have received numerous generous invitations and opportunities to present IMEKO worldwide. Our Technical Committees enthusiastically coordinated and organized eleven conferences, with impressive worldwide attendance. In addition to the excellent scientific programmes, extraordinary social events, and company excursions, these conferences made for unforgettable experiences and strengthened our community bonds.

We are organizing two World Congresses, following the triennial pattern. A busy team is on to our next one in Rimini, Italy, 2027, while the subsequent location in the series of World Congresses has also been chosen: Krakow, Poland, in 2030. In this edition, part of the busy Team and some specifics of Rimini 2027 are presented.

IMEKO welcomes the first Junior Member to TC2. The last of this year's conference reports are followed by the appropriate seasonal part. As the holiday season approaches, IMEKO, as a worldwide organisation, looks around and reports on visits to India, Italy, Finland, Ukraine, Hungary, and Singapore, sharing with the IMEKO Community how this festive part of the year is celebrated.



Wishing all the IMEKO Community Members a Merry Christmas!

May this festive season bring warmth, joy, and plenty of well-calibrated moments with family and friends.

Looking forward to another year of collaboration, inspiration, and shared achievements.

Warmest holiday greetings to everyone!

Professor Paolo Carbone, IMEKO President

FROM THE SECRETARIAT

As you can see from the two fresh faces, the Secretariat has grown a little, and we are happy to have Erzsébet and Henrietta on our team as part-time helpers. It is about IMEKO's future, and Erzsébet is increasingly involved in the Secretariat's and Acta IMEKO's work.

2025 brought significant movement to IMEKO. Some activities in numbers:

- 30+ Secretariat meetings;
- 9 Presidential Board meetings;
- 8 Supervisory Committee meetings;
- 7 Development Committee meetings;
- 5 TC support meetings;
- 4 Information System meetings.

We met with international organisations for initial discussions, including IUPAC, CECIP, and IFAC, to initiate and foster collaboration.

The Secretariat, due to numerous development ideas and projects, engaged several invaluable experts to realise the new look of the IMEKO website and address related issues.

Above all, we consider ourselves very fortunate to have had your help and contributions at every task and at every step along the way. We thank you for your time, invaluable input, enthusiasm, and trust in us. Without you, we could not have achieved so much.

We lived unforgettable moments, in good camaraderie and some in friendship. We shall treasure these moments in our hearts. Thank you very much for 2025! We will be there to serve you even better in 2026.

As we approach the end of the year, we wish you a joyful holiday season, good health, and success and prosperity in the new year!



I'm Henrietta Speier, living close to Budapest, Hungary, with my husband and our three kids. I am a system programmer by profession. Before IMEKO, I spent a significant amount of time in the logistics and administration department at an

international company in Hungary. I'm thrilled to be part of this team. At the moment, I work with older proceedings that were digitised a while ago and are not yet available on the IMEKO website. I find it intriguing, especially since I can trace the scientific work from its beginnings. This also means almost back to the beginning of IMEKO.



My name is Erzsébet Heltai. I grew up and completed my studies in Budapest, obtaining a degree in English and Hungarian language and literature, and a qualification in translation. I live near Budapest with my family: my husband

and our two sons. I previously worked as a Head of Secretariat in the cultural sector, and later as a translator and proofreader. I was delighted to join IMEKO in the summer of 2025. I perform secretarial duties and participate in the editorial work of Acta IMEKO. I am truly honoured to be part of this long-established international scientific community and contribute to its goals.

NEWS ON THE IMEKO WORLD CONGRESS RIMINI, ITALY, 2027

The organisation of the IMEKO World Congress 2027 is actively underway, with several essential steps already completed and many others in progress. The event will take place in Rimini, Italy, from the 30th of August to the 3rd of September 2027, bringing the global metrology community together in one of Italy's most vibrant and accessible conference destinations.



The IMEKO 2027 Congress venue, Palacongressi di Rimini.

The Congress will be hosted at the Palacongressi di Rimini, one of the largest and most modern conference venues in Europe.

The last IMEKO World Congress, held in Hamburg in 2024, achieved record participation and scientific output. Building on the valuable experience gained there, the Organizing Committee is fully committed to delivering an edition that aspires to meet the same high standards and create an equally memorable experience for all attendees.

To ensure smooth coordination across all aspects of the event, the various committees are holding regular meetings and working collaboratively to define the scientific programme, logistics, and all essential details of the Congress. Plans for plenary lectures, special sessions, and thematic workshops are taking shape, ensuring broad coverage of both established and emerging measurement topics.

In the coming weeks, the Organizing Committee will launch the call for papers, special sessions, workshops, and other scientific events that will shape the technical programme. We count on the active contribution of the entire IMEKO community to enrich the Congress with high-quality proposals and innovative ideas.



A view of Rimini's beaches with the impressive 55-metre Ferris wheel.

Several technical visits are planned, offering participants the opportunity to explore leading industrial and technological facilities in the Emilia-Romagna region, one of Italy's most dynamic manufacturing and innovation hubs.

The local organizing team is also working on logistics, including accommodation options, social events, and additional activities that highlight the region's scientific, cultural, and historical richness. Rimini offers not only excellent conference facilities, but also an ideal setting to enjoy the late-summer season. Participants will have the opportunity to extend their stay and spend quality time with family, taking advantage of the city's renowned beaches, hospitality, and leisure activities along the Adriatic coast.

For further information, visit our website www.imeko2027.org and follow our social channels using #IMEKO2027 for the latest updates. We look forward to welcoming the international IMEKO community to the IMEKO World Congress 2027!

THERE ARE NO PROBLEMS, ONLY OPPORTUNITIES - INTRODUCING ATHENA



In the picture from left, Gianluca Mazzilli, Chief Technical Officer of Athena, and Liliana Viglione, CEO of Athena.

If someone asked us to describe our company, we would begin with a simple motto that one of our mentors loves to repeat: "There are no problems, only opportunities". Over time, this phrase has become part of who we are at Athena. We have learned to welcome every challenge, no matter the field, not as an extra weight on our shoulders but as an opening, a chance to go beyond our limits, to discover something new, and to build meaningful connections and collaborations along the way.

Athena was founded in 2012, in Benevento, a small city in southern Italy, as a consulting company working at the intersection of technology and business. After a few years and several changes to its administrative structure, the company grew into something more: a place where ideas, curiosity, and the desire to build meaningful projects could take shape.

From there, we began collaborating with several national and international scientific associations, particularly those active in measurement science.

At the time, the support they needed focused mainly on organizing their scientific conferences, which lacked a clear, consistent structure. We have always embraced both the technical and administrative aspects of these projects. On the technical side, we develop the website, manage the platform for paper submission and review, and produce the conference proceedings. On the administrative side, we handle budgeting, participant fees, and payments to suppliers, always striving for clarity and transparency with our clients.

A defining moment in our journey came in February 2020, when we faced a challenge we could never have imagined. A global pandemic was bringing the world to a standstill, and no one could leave their homes to attend meetings or conferences. Once again, guided by our motto, we sought a new way to approach conferences. We developed a platform called WeConf, which allowed not only "remote live sessions" but also a true repository of papers, with presentations uploaded online and the possibility for participants to interact with presenters remotely.

Our collaboration with IMEKO began in 2014, when we organized the 20th IMEKO TC4 (Measurement of Electrical Quantities) Symposium (15-17 September 2014) right here in our city. The General Chairs were Prof. Pasquale Arpaia and Prof. Sergio Rapuano. It was a record-breaking edition, with around 200 participants joining from every corner of the world. We remember the first moments of satisfaction, seeing smiling faces greet us and say, "See you next time."

On those days, the IMEKO General Council was also held in Benevento, providing us with our first real opportunity to meet and understand the IMEKO world.

THERE ARE NO PROBLEMS, ONLY OPPORTUNITIES - INTRODUCING ATHENA

We vividly remember our first interactions with Dirk Röske to understand better the workings of the proceedings, and the invaluable discussions with Mrs Judit Farago, who at the time was IMEKO's Secretary, explaining the organisational and financial aspects of IMEKO to us.

Since that first experience, our collaboration with IMEKO has steadily grown. Over the years, we have supported multiple events, gaining deeper insights into the needs of the international metrology community and refining the way we manage conferences, publications, and digital platforms. Today, we are proud to be part of the Team preparing the IMEKO World Congress 2027 in Rimini. This event will bring together scientists, engineers, and industry professionals from around the globe. It is both an honour and a challenge, and, once again, guided by our motto, we see it as an opportunity to contribute to a memorable, smoothly organized Congress, showcasing the best of IMEKO and the spirit of collaboration that has inspired us since our very first symposium.

We would like to conclude this brief story by sincerely thanking Ms Kristine Zelenka for inviting us to share our journey in this newsletter issue.

We hope our story captures readers' interest, and we wish everyone a Merry Christmas and a prosperous 2026.



2025 IMEKO conferences organized with the help of Athena:

- TC2 Photonics, International Symposium on Modern Photonic Metrology, PHOTOMET 2025 - September 2025, Modena, Italy.



- TC6 Digitalisation, Second International Conference on Metrology and Digital Transformation, M4Dconf 2025, 3-5 September, Benevento, Italy.



- TC8, TC11, TC24 joint conference (TC8 Traceability, TC11 Measurement in Testing, Inspection and Certification, and TC24 Chemical Measurements) from the 4th to the 17th of September in Torino, Italy.



TC2 - PHOTONICS INTRODUCING JUNIOR MEMBERSHIP

Under the enthusiastic and committed guidance of Prof. Luigi Rovati, TC2 has launched a new membership category: Junior Membership.

A while back, the IMEKO newsletter introduced a new section titled "IMEKO Goes to Young Scientists," which seeks to connect IMEKO with emerging professionals by highlighting their aspirations and challenges as they progress in their careers. The future of IMEKO depends on its ability to continue its mission and to maintain the involvement of young scientists to sustain its legacy.

TC2 has elevated this initiative to a whole new level by establishing a distinct membership category—Junior Membership—to welcome young professionals.

A Junior Member represents a specific level of TC2 membership, aimed at engaging early-career researchers or professionals with promising potential in photonics and measurement science. At the same time, they continue to develop the professional skills typically expected of full TC members. This role is crafted to foster their involvement and advancement toward full membership.

Throughout their three years, Junior Members are encouraged to participate in the TC's initiatives, demonstrate their commitment, attend activities, and actively contribute to the TC's community.

They are nominated by TC members, who serve as mentors and provide support until the candidate qualifies for full membership, which may take up to 3 years.

During this time, the individuals will be assessed for their transition to full membership based on their contributions, engagement, and demonstrated expertise.

So what inspired Prof. Rovati and TC2 to create this new category of membership?

"The idea of introducing a Junior Membership category came from the desire to create a more structured and welcoming path for young researchers entering the field of photonics and measurement science. IMEKO thrives on continuity, mentorship, and intergenerational exchange. By offering early-career scientists a defined place within the TC, with guidance and recognition, we help them grow and strengthen the long-term future of our community. It is a way to value emerging talent and ensure that IMEKO remains vibrant, inclusive, and forward-looking."

Well, the thought was followed by action, and TC2 and IMEKO welcome Dr. Valentina Bello as the first Junior Member!



Dr. Valentina Bello

Dr. Valentina Bello received the B.Sc. degree in Bioengineering and the M.Sc. degree (summa cum laude) in Electronic Engineering from the University of Pavia (Pavia, Italy) in 2016 and 2018, respectively.

TC2 - PHOTONICS INTRODUCING JUNIOR MEMBERSHIP

In 2022, she received a PhD degree in Electronics, Computer Science, and Electrical Engineering from the University of Pavia, discussing a dissertation on innovative micro-opto-fluidic sensing platforms for biochemical and medical applications.

She was the recipient of the 2022 Best Doctoral Thesis in Applied Photonics Award, presented by the IEEE Photonics Society Italy Chapter for the best PhD dissertation conducted at an Italian University. She also received the 2021 IEEE Photonics Society Graduate Student Scholarship, an award established by the IEEE Photonics Society to support graduate students who make outstanding contributions to photonics research.

Since August 2023, Dr. Bello has been an Assistant Professor in Electrical and Electronic Measurements at the Laboratory of ElectroOptics of the Department of Electrical, Computer, and Biomedical Engineering at the University of Pavia.

Dr. Bello, how did you find out about IMEKO?

I first learned about IMEKO when I began working on measurement-related topics during my PhD. IMEKO is well-known in my field for its importance and long-standing role in the measurement science community. My interest grew even further after participating in IMEKO PhotoMet 2025 in Modena, an experience made possible thanks to Prof. Luigi Rovati, who also introduced me more directly to the TC2's activities and the Organisation's broader mission.

What made you interested in particular?

I was particularly interested in IMEKO for its international, multidisciplinary approach to measurement science. The possibility of connecting with experts from different fields and engaging in high-quality scientific exchanges was very appealing to me.

Could IMEKO, in any sense, support your career?

Being part of IMEKO could support my career by offering networking opportunities, exposure to advanced research topics, and the chance to actively participate in a community that promotes innovation in measurement and instrumentation. Getting to know people working in different areas of measurement science could also be extremely valuable for developing future collaborations and joint projects. I believe this membership will help me grow both scientifically and professionally.

What would you expect of this membership?

I expect this membership to allow me to engage with the community, contribute to technical activities, and gain insight into the current trends and challenges in the field. I also hope it will give me opportunities to collaborate and to participate in conferences and events.

Do you have other thoughts you would like to share with the IMEKO community?

I am grateful for the opportunity and enthusiastic about being involved in the initiative dedicated to Junior Members. I am also proud to be the first Junior Member of TC2, and I believe this new category is an excellent step to encourage the participation of young researchers in the IMEKO community. Moreover, I hope it can also inspire and support the involvement of women researchers in the field of measurement science.

Dr. Bello, thank you very much for your time. We wish you the very best for your future with TC2 - IMEKO, and we look forward to having you on board for a long time!

Written by Prof. Luigi Rovati, TC2 Chairperson, and Dr. Valentina Bello, the first Junior Member of IMEKO.

ISMCR2025 - INTERNATIONAL SYMPOSIUM ON MEASUREMENT AND CONTROL IN ROBOTICS

Hosted by the International CBRNE Institute, the 26th International Symposium on Measurement and Control in Robotics (ISMCR) was held in Sambreville, Belgium, on 7-8 October 2025.

The symposium, organized by IMEKO's TC17 (Measurement in Robotics), covered a broad range of topics related to robotics and human robot systems, such as robot design innovations, sensors/smart sensors, their integration/fusion, advanced controls and actuators, methods of AI in robotics, humanoid, climbing/walking, and autonomous robots, anthropomorphic robots, augmented/mixed/virtual reality (VR), intelligent CAD and IMS, visual/auditory/tactile/force displays, tools and techniques for modelling VR systems, software architectures for VR, VR interaction and navigation techniques, distributed VR Systems, motion tracking, VR input and output devices, human factors in VR. The proceedings extend this platform to all researchers, scientists, industry experts, and students interested in these fields.

Of the 24 submissions received, 21 were accepted and presented, including 7 online presentations. Participants came from 12 countries: Belgium, Australia, Greece, Italy, Hungary, Brazil, Romania, the USA, Jordan, the UK, Slovakia, and Spain.

The first keynote speaker, Prof. Dr. ir. Tom Verstraten from the Free University of Brussels underlined the increasing importance of robotic systems in assisting older people, while the second keynote speaker, Med. Dr. Ioan Galatas from EMEA Greece described the improved robotic systems in CBRNE contexts, such as rescue, medicine, assistance to first responders in crises, and so on. Obviously, our symposium also focused on Artificial Intelligence and Virtual Reality.

These themes were introduced by Prof. Dr. Simone Keller Fuchter from Brazil and explored by 5 authors from the UK, the USA, Hungary, Slovakia, Australia, and Romania.

More specific topics included the application of robotic systems in high-risk environments, such as spatial innovations (future moon exploration), humanitarian demining, and military needs in an evolving geostrategy, etc.

Some selected papers can be found in the SPRINGER issue prepared by our colleague Prof. Ioan Doroftei. For more information, please consult www.ismcr.org.

We hope that ISMCR2026 could be held in Rio De Janeiro and bring together experts from our TC17 community.



In the picture from the left Geraldo Gurgel (Brazil), Yvan Baudoin (Chair ISMCR 25), Ioan Doroftei (Romania), André Preumont (Belgium), John Galatas (Greece), Eduardo Navas (Spain), Simone K.Fuchter (Brazil), Foucauld Perodon (France, only his face), Sam Webster (Australia), Yves Dubucq (Belgium, director ICI), Balint Kiss (Hungary, Vice-Chairperson TC17), Tom Verstraeten (Belgium), Jim Blackburn (Australia), I.Unwala (USA), Jean Marsia (Belgium)

Written by Prof. Yvan Baudoin, TC17 Vice Chairperson.

ISMQC 2025 - INTERNATIONAL SYMPOSIUM ON MEASUREMENT AND QUALITY CONTROL

The 13th International Symposium on Measurement and Quality Control - Quality and Accuracy in the Age of Data Driven Manufacturing (ISMQC 2025) took place in Cluj-Napoca, Romania, between 2 and 5 September 2025. The event was hosted by the Faculty of Industrial Engineering, Robotics, and Production Management of the Technical University of Cluj-Napoca (FIIRMP).



The symposium's main goal was to bring together researchers, industry experts, and academics in an interdisciplinary forum to explore the latest advancements in measurement science and quality control. This event, organized in collaboration with IMEKO TC14 - Measurement of Geometrical Quantities, aimed to promote research and foster international cooperation in the field of geometrical measurement and quality assurance in manufacturing. Held in the historic city of Cluj-Napoca, Romania, ISMQC 2025 offered a unique opportunity to exchange ideas, share research findings, and build collaborations that drive innovation in metrology, measurement technology, and quality control.



The symposium attracted around 50 participants from 9 countries, including Austria, Serbia, Slovakia, Poland, Japan, Taiwan, Hungary, the Czech Republic, and Romania. The organizers received 45 papers, of which 33 were accepted and presented at the event: 31 oral presentations and 2 poster presentations.



Faculty tour at the Faculty Laboratories for Research

The event attracted strong industry support, as evidenced by Emerson Automation Technology as the main sponsor.

ISMQC 2025 - INTERNATIONAL SYMPOSIUM ON MEASUREMENT AND QUALITY CONTROL

The 4 keynote speeches were delivered by distinguished international speakers, namely Prof. Yasuhiro Takaya from Osaka University, Prof. Satoru Takahashi from the University of Tokyo, Prof. Ryoshu Furutani from Tokyo Denki University, and Prof. Stelian Brad from the Technical University of Cluj-Napoca.



Faculty tour at the Faculty Laboratories for Research

Industry exhibitions and product presentations were part of the event: Hahn + Kolb presented its product portfolio and solutions for quality control and measurement; Namicon showcased its technologies for measurement and manufacturing; and Guhring, the tooling company, its selection of tools. These industrial exhibitions provided participants with direct exposure to the latest commercial solutions in measurement technology and quality control, fostering dialogue between researchers and industry suppliers.

Artist Darius Hulea, another exhibitor who showed welded artworks during the conference, added a unique cultural dimension to the technical symposium.

In addition to a welcome dinner and a cocktail dinner as social programmes, participants had the chance to visit the Emerson Campus in Cluj-Napoca. This visit provided valuable insights into cutting-edge industrial automation and measurement technologies, fostering exchange between academia and industry.

The symposium was an example of excellent balance between theoretical research and industrial applications, particularly highlighted by the Emerson campus visit. It was a successful integration of keynote speeches, parallel sessions, technical visits, and networking opportunities, featuring well-organized social programmes that fostered international collaboration and knowledge exchange. Besides, the Emerson visit facilitated meaningful dialogue between researchers and industry practitioners.



Emerson Campus visit (the 4th of September 2025). Emerson hosted professors from leading universities worldwide at their Cluj campus.

The report was written by Prof. Grigore Pop, TC14 member and conference organizer.

CHRISTMAS IN UKRAINE

Christmas in Ukraine is one of the warmest and most spiritual holidays, passed down from generation to generation. For a long time, Ukrainians celebrated it in early January, but in recent years, as most of the world does, we have begun celebrating on the 25th of December.



This change symbolizes Ukraine's unity with the European community and our shared values of peace, light, and faith.



The celebration begins on Christmas Eve, known as *Sviat Vechir*.

Every home is filled with quiet anticipation and the scent of festive dishes. Traditionally, families prepare twelve meatless dishes—one for each of the apostles. The most important of them is *kutia*, a sweet grain pudding made with wheat, honey, poppy seeds, and nuts. It symbolizes prosperity and remembrance of our ancestors. Other dishes include *uzvar* (a dried-fruit drink), *varenyky* (dumplings), cabbage rolls, mushroom soup, fish, and homemade pastries. The meal starts only when the first star appears in the evening sky—symbolizing the Star of Bethlehem that guided the Magi to Christ.



An essential part of Ukrainian Christmas is the *vertep*, a traditional nativity play performed by children and adults. People dress up as shepherds, angels, the Three Kings, and sometimes as folk characters like a Cossack or even the Devil—adding humour and local colour to the story. After dinner, groups of people go carolling, singing joyful songs, called *kolyadky*, from house to house, wishing everyone happiness and peace. These melodies fill towns and villages with warmth and hope.

CHRISTMAS IN UKRAINE



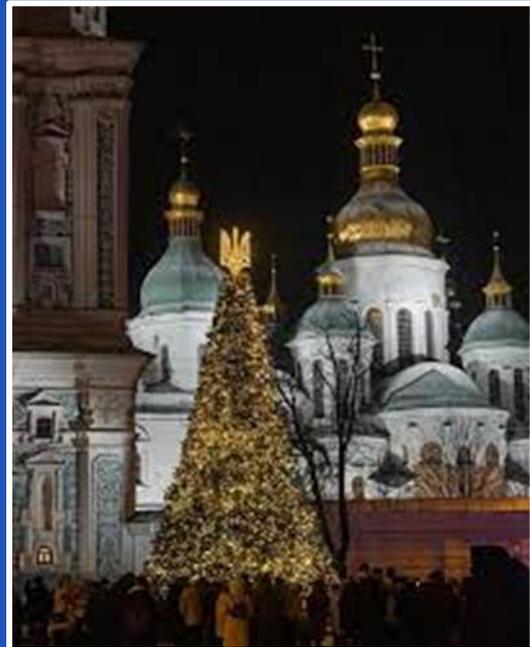
But today, during the ongoing war in Ukraine, Christmas has taken on a deeper meaning. Many families cannot gather together—some loved ones are on the front lines, others have lost their homes or had to flee. There are no official state holidays, and many people have to work even on Christmas Day.



Yet, despite all difficulties, Ukrainians continue to celebrate, decorate their homes, and keep traditions alive.

All across the country, people send homemade sweets, cookies, and Christmas dishes to soldiers at the front lines, along with handwritten letters and small gifts. In each bite of *kutia* or in every carol sung, there is gratitude and prayer—for our defenders and for peace to return to our land.

Despite the pain and hardship, Ukrainians remain a nation that celebrates with its heart. We keep singing carols, sharing warmth, and believing in light. Because Christmas, for us, is more than just a date on the calendar—it is a feeling of unity and faith.



Even in the darkness of war, we light a small candle of hope.

And may that candle keep burning until the peaceful star rises again over Ukraine.

Written by Vladyslav Katamai, SE "Ivano-Frankivskstandartmetrology", Ukraine.

CHRISTMAS CELEBRATION IN INDIA

Christianity was introduced to India by Thomas the Apostle in Kerala around 52 CE. There are about 30 million Christians in India, representing about 2.3% of the country's total population. Christians are the second largest minority in the country after Muslims. However, there are a few areas in India where Christians are in the local majority, such as the northeast states of Meghalaya, Nagaland, and Mizoram. The southern states, such as Kerala, Tamil Nadu, and Goa, also have considerable Christian inhabitants. There are various Christian sects, such as Roman Catholics, Protestants, Methodists, Syrian Christians, Pentecostals, Syro-Malabar, Syro-Malankara, and Anglicans etc.



Christmas in India is celebrated with global traditions mixed with Indian culture. For example, in North India, families traditionally prepare festive Indian sweet snacks such as *gujiya* and *laddus*. A common tradition is to have the Christmas cakes baked at local bakeries with ingredients of one's choice. This practice is invariably followed to prepare Christmas cakes in substantial quantities, enabling them to be distributed generously to friends, family, and co-workers.

Preparations for celebrations start weeks in advance, including extensive cleaning of homes, shopping for new clothing, and creating innovative decorations and gifts for near and dear ones.

The traditional Christmas tree is put up days in advance, adorned with lights, decorative balls, glitter, hangings, stockings, and stars.

In economically weaker households, potted evergreen trees, such as fir or pine, are also used as Christmas trees. Gifts are packed and placed near the tree. In South India, Christians also place clay lamps with oil on the terraces of their homes to symbolize that Jesus is the light of the world. In Goa, Christians hang giant paper lanterns in the shape of stars between houses so they float above as people walk down the road.



The churches in India also start the celebrations about a fortnight before Christmas. These include enacting skits and plays by Sunday school children, special choir singing, home-to-home carol singing, organisation of community dinners, etc. Special monetary collections are made for donations to poor Christians, as well as retired pastors, and old-age homes.

CHRISTMAS CELEBRATION IN INDIA

Christmas Eve is marked by midnight mass and candlelight services. The church bells ring to announce the arrival of Christmas. This midnight service is followed by a massive feast of different delicacies (mostly curries) and the giving and receiving of presents. Churches in India are decorated with Poinsettia flowers, wreaths, and candles for the Christmas Eve Midnight Mass service. However, the Christmas morning church service is most heavily attended across India, including not only Christians but also people from other religions. The morning service is followed by fellowship time, where all greet each other, exchange Christmas pleasantries, and bring Christmas goodies for coffee time. Most churches have a church member dressed up as Santa Claus to distribute gifts to children.



Christmas is also a family get-together time, with special lunches and dinners featuring home-cooked dishes such as *biryanis*, *pulao*, *curries*, *kababs*, *paneer*, special breads, and sweets. Many families reconnect with their deceased loved ones by visiting their resting places on this day.

In recent years, Christmas has shifted from being a Christian festival to an Indian festival. During Christmas week, major shopping malls, retail outlets, and shopping areas are also elegantly decorated, with special stalls that attract a significant number of people, especially children. Even non-Christian families celebrate this day with a 'family' day out at major shopping malls, special Christmas parties, and gatherings with friends. As a secular country, India enjoys the celebration of each festival.

Written by Dr. Nita Dilawar Sharma, Fellow Member of Metrology Society of India (MSI) and Head of Pressure, Vacuum and Ultrasonic Metrology Section. She has been the Division Head of the Physico-Mechanical Metrology Division, and

Dr. Shiv Kumar Jaiswal, Vice President of Metrology Society of India and Head of Fluid Flow Metrology Section, CSIR-National Physical Laboratory, New Delhi, India.

HOW DO HISTORY AND TRADITION DEFINE THE FINNISH CHRISTMAS?



Central Park (Keskuspuisto) in Helsinki, after heavy snowfall.

Finnish Christmas, or *Joulu*, is a traditional celebration of the darkest days of the year, in part consisting of historical remnants of pagan winter solstice rites, as well as long-standing Christian customs, and later influences from Russia, Sweden, and Germany. The heart of the Finnish celebration remains the wait and preparation for Christmas Eve, the 24th of December. To understand Finnish Christmas more closely, one must look back in history.

The Finnish written language appeared only in the 16th century, and even centuries later, most Finns were farmers, their lives based on subsistence farming. Well into the 20th century, Christmas was less about consumerism and more about the year's critical cycle. For a nation dependent on farming and, in the 20th century, forestry, Christmas was the culmination of the harvest year (celebrated with the autumn festival of *kekri*, which, in the modern calendar, coincides with Halloween) and the start of a period of rest. Christmas preparations began well in advance, focusing on cleanliness, self-sufficiency, and spiritual considerations.

A Finnish tradition that links the present to the Middle Ages is the Declaration of the Peace of Christmas (*Joulurauha*).

Since the 14th century, this declaration has been read at Old Great Square (*Vanha Suurtori*) in Turku, the oldest city in Finland.

Its purpose was to ensure social order: it mandated a period of quiet and peace, where fighting and excessive noise were harshly punished. Today, the televised reading of the *Joulurauha* remains a traditional way to start the national holiday, a collective gathering at the TV screens, and a show of respect for the ancient civic law.

Another enduring ritual is the Christmas sauna (*Joulusauna*). Throughout Finnish spoken and later written history, the sauna has been the spiritual and physical heart of the home. On Christmas Eve afternoon, the entire family goes to the sauna, in separate, smaller groups or together, depending on the household composition.



Töölönlahti, a cove in central Helsinki, freezes over in some winters.

As a Finn, it is hard to describe how exactly *Joulusauna* affects the heart and mind. It is a sort of purification ritual, but, then again, it is also an earned rest in the darkest hours of the year. There is also an aspect of a celebration. One can read in the first Finnish novel ever published,

HOW DO HISTORY AND TRADITION DEFINE THE FINNISH CHRISTMAS?

In *Seven Brothers* (*Seitsemän veljestä*, 1873) by Aleksis Kivi, these seven brothers end up burning their house while partying in a Christmas sauna. Traditionally, the sauna was believed to be visited by elves (*saunatonnttu*) after the family had finished their bath. The tradition of *Joulusauna* remains to this day, though the belief in accompanying spirits has faded into folklore.



Frozen brook in northern Helsinki.

The traditional Christmas table (*joulupöytä*) was long affected by the necessities of food preservation. The dishes were heavy, reflecting the need for caloric density during the harsh winter. Lye fish (*lipeäkala*) was a necessary staple. Grain, stored from the harvest, formed the basis of porridges. A tradition still in use today is to hide a single almond in the pot of porridge. The one who finds it in their spoon is believed to have good fortune in the coming year.

Pork, once a luxury, was increasingly common by the late 18th century.

The modern *joulupöytä* is richer, featuring ham and vegetarian alternatives, root vegetable casseroles (especially carrot, rutabaga, and potato), and spices. Considering desserts, gingerbread (*piparkakku*) and star tart (*joulutorttu*), as well as various chocolates and cheeses, are modern prerequisites for the Christmas celebration.



The Christmas tree, another enduring tradition in Finland.

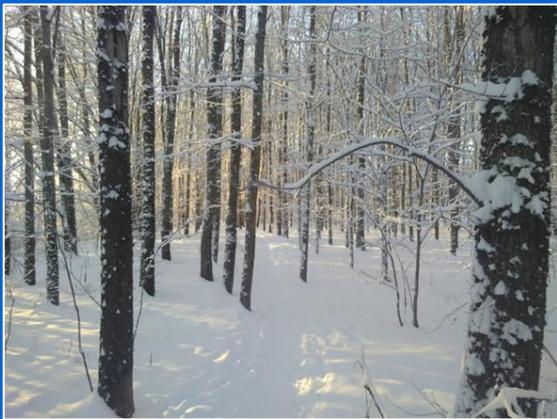
Perhaps the most dramatic evolution over the last centuries relates to the gift-giver. The ancient Finnish winter spirit was the Christmas Goat (*Joulupukki*). Before the 19th century, this figure was not benevolent; he was often an ugly, frightening figure, historically associated with pagan men who dressed in goat skins and demanded leftovers or presents after *kekri*.

By the mid-19th century, under Swedish influence, the *Joulupukki* transformed.

HOW DO HISTORY AND TRADITION DEFINE THE FINNISH CHRISTMAS?

The name remained, but the goat's function shifted: he became the gift-giver, and his costume changed from a goat skin to the familiar red suit. The survival of the name *Joulupukki* (Christmas Buck) in place of Saint Nicholas or Father Christmas is a direct linguistic inheritance from that earlier, pre-Christian era.

In the pagan tradition, still in use until the 20th century, Christmas was characterised by highly superstitious practices. These involved, for example, setting out extra food for the different types of elves (*tonttu*) or allowing them a symbolic presence in the house. Another vital element carried through the centuries is the quiet respect for the deceased. Today, this can be seen on Christmas Eve, when some families visit cemeteries to light candles on the graves of their loved ones. This practice, against the backdrop of the long, dark winter night, is a distinct and non-commercial part of the holiday.



Winter forest on a sunny day in Helsinki.

In the 21st century, the commercialisation of Christmas has accelerated.

Quite poignantly, the climate crisis is already altering Finnish winters, especially in Southern Finland, creating an ever-darker period without snow.

The December rush, when all the household chores, work projects, gifts, and distant and close family and friends are taken into consideration before the holidays, is very stressful and has little resemblance to the traditional Finnish Christmas. However, when the humdrum has ceased, the gifts are wrapped, and it is time to cross out the last item on the to-do list, tradition quickly takes hold of most Finnish people. Then again, some Finns fly abroad for Christmas, creating a greater diversity in modern Christmas traditions.

To conclude, there is an unbroken line of Christmas traditions in Finland that can be tracked through the centuries. Peaceful Christmas, sauna, and *Joulupukki* are a time-enduring part of Finnish Christmas even today. The dishes have changed, but some basic principles of plenty and sweets remain the same throughout Finland.

Finnish Christmas has diversified over the last few decades, as people have the possibility to travel and create their own Christmas traditions. The more diverse population also adds to the flavour, and at present, "Season's greetings" is a more considerate greeting for enjoyable holidays.

These days, the tradition and diversity live side by side, respecting each other, as has always been the custom during the winter solstice in Finland.

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CHRISTMAS IN ITALY

In Italy, Christmas is a season woven from countless local traditions, each shaped by history, geography, and family heritage. Although the whole country shares a sense of warmth and togetherness, Christmas can look and taste very different depending on where you are.

As December begins, Italian towns and cities come alive with lights, music, and the scent of sweet pastries.



Nativity Scene from Italy

In many families, the season officially starts on the 8th of December, the Feast of the Immaculate Conception, when homes decorate their Christmas trees and set up the beloved *presepe*, or nativity scene. In Naples, the *presepe* is the true centre of Christmas: detailed, expressive, passed down through generations, and uniquely populated with figurines that often include contemporary or famous characters.

In other places, the tree takes centre stage, adorned with lights, ribbons, and memories of past holidays.

Food is, of course, at the centre of the celebration. In the south, families often gather on Christmas Eve for the *cenone*, a dinner traditionally based on fish dishes, followed by midnight Mass.



Panettone

In central and northern Italy, the main celebration might instead be the Christmas Day lunch, featuring regional specialities, such as *tortellini* in broth in Emilia-Romagna. The iconic *panettone* and *pandoro* are enjoyed throughout the country.

Each household has its own rituals, its own flavours, its own way of coming together around the table.

CHRISTMAS IN ITALY



Babbo Natale

One cherished tradition shared across Italy is the figure of *Babbo Natale*, our version of Santa Claus, who brings gifts to children on the night of the 24th. But Italy being Italy, other gift-bringers coexist with him depending on the region: Saint Lucy in parts of the north, the *Befana*, a kind old woman on a broomstick, in early January, or the Three Kings for Epiphany celebrations. Christmas here is not just one story, but many.



Befana, the kind old woman on a broomstick

Even the atmosphere changes from place to place. In the Alps, Christmas often means snow-covered mountains, wooden chalets, and mulled wine.

In the south, it may be celebrated under mild winter sun, with street festivals, music, and fireworks. Yet everywhere, homes fill with laughter and with the sense of community that marks the season.



Italian winter village

Ultimately, Christmas in Italy is a celebration of family, food, faith, and regional identity. It is a time when old and new traditions come together, when families reunite, and even the smallest rituals, like lighting a candle, sharing a slice of *panettone*, or visiting a local nativity scene, carry a warmth that defines the Italian way of celebrating.

Written by Prof. Luigi Rovati, TC2 (Photonics) Chairperson.

A GLIMPSE INTO THE CHRISTMAS SEASON IN HUNGARY

The time of waiting and preparation for Christmas (*karácsony* in Hungarian) begins at the end of November: although the shops have been sparkling with Christmas decorations for weeks, the traditional start of the season is the first Sunday of Advent, which is on the 30th of November this year. On this day and the following three Sundays, we light one more candle, symbolising faith, hope, joy, and love, to let more and more light fill our homes and hearts as we approach Christmas Eve.



Homemade Advent wreath.

In my family, this is finally the time to open the Christmas box, cautiously packed last year and stored on the top shelf of the closet, take out the fairy lights, candles, ribbons, and other decorations we have carefully collected over the years, and make an Advent wreath.

To have a wreath is a tradition in most Hungarian families. Of course, you can buy various kinds of it in stores, but making your own piece—wiring pine branches to a base, inserting and glueing the candles and other small elements, and lighting the first candle in the end—can be a great way to get into the holiday spirit.

Advent wreaths are not only found on family tables: most towns also put up nativity scenes and giant outdoor wreaths, and organize ceremonial candle-lighting events with city officials, as well as Christmas markets, on Advent weekends.



Advent wreath and nativity scene in the Christmas market of Óbuda (Budapest).



On one of the Advent Sundays, we usually bake fragrant, soft gingerbread (*mézeskalács*), which is a traditional Christmas treat in Hungary.

Of course, this is just one of many traditional Christmas cakes: we will also be making *beigli* (rolls filled with walnuts or poppy seeds), *zserbó* (a layered cake filled with apricot jam and walnuts, named after the Swiss-born confectioner Emil Gerbeaud, who arrived in Hungary at the end of the 19th century), small chestnut croissants, and *mákos guba* (hot milk-soaked cake sprinkled with sugar and poppy seeds).

A GLIMPSE INTO THE CHRISTMAS SEASON IN HUNGARY

According to folk traditions, walnuts should be eaten to ward off evil, while poppy seeds bring good luck and lots of money in the new year.

Gingerbread is at least as good to eat as it is to make:

500 grams of all-purpose flour;
 100 grams of powdered sugar;
 250 grams of honey;
 2 eggs;
 100 grams of butter;
 1 teaspoon of baking soda;
 3-4 teaspoons of gingerbread spice (ground cinnamon, ginger, nutmeg, and cloves)

Mix the dry ingredients: flour, spices, baking soda, and powdered sugar. Then crumble in the butter, add the two whole eggs, and finally the honey, and knead it into a soft dough. Then place it in the refrigerator and let it rest for 1-2 hours or even overnight.



Roll out the dough on a floured board to about half a centimetre thick (it will rise during baking) and cut out shapes as desired. If you want to use them as Christmas tree decorations, you can roll the dough out even thinner. If you want to decorate your cookies with walnuts, hazelnuts, or raisins, do so before baking.

Then place the cookies on a baking sheet lined with baking paper, leaving plenty of space between them, as the dough will rise and expand during baking. Preheat the oven to 160°C and bake the cookies until golden brown (10-15 minutes).

After baking, you can decorate the cookies with icing. They stay soft for up to two weeks if stored in a metal box.



Rolls of beigli from Grandma's kitchen.

An important date of the season, especially for children, is the 6th of December. In Hungary, Santa Claus (*Mikulás*) comes on this day, or, more precisely, the night before. Children carefully clean their boots on the evening of the 5th and put them outside the door or in the window. They all know that during the night, in his red cape and with a giant sack on his shoulder, *Mikulás* goes from house to house, leaving gifts for children. In the morning, they eagerly run to see what he has put in their boots. Of course, it is mostly chocolate, cookies, apples, and walnuts. During the day, the luckier ones may even meet him, as he sometimes visits kindergartens and nurseries to listen to the children's festive songs and poems.



In the picture, szaloncukor.

A GLIMPSE INTO THE CHRISTMAS SEASON IN HUNGARY



The highlight of Christmas is the 24th of December, Christmas Eve, which we call *szenteste* (Holy Eve). By then, every home has a Christmas tree, which most families put up and decorate on the morning of that day. Traditionally, the tree was decorated with something quite unique: *szaloncukor*, which is chocolate-coated candy wrapped in tissue paper and shiny foil. Although we don't necessarily put them on the tree anymore, *szaloncukor*, which comes in countless flavours and shiny foils of various colours, is still an essential part of our Christmas, either as decoration or as a delicacy. (If it hangs on the tree, the more skilled ones pick it out, eat it, and neatly repackage the paper—much to the disappointment of the next little thief).

On the afternoon of the 24th, the outside world quietens down and close family members gather to spend a cosy, intimate evening together. The traditional Christmas Eve menu features fish, *halászlé* or *rántott ponty* (paprika fish soup or fried carp), whose scales symbolise abundance and wealth.

This is followed the next day by *töltött káposzta* (pickled cabbage leaves stuffed with minced meat and topped with sour cream), a typical Hungarian winter dish. After Christmas Eve dinner, we gather around the tree, light all the candles and sparklers, sing Christmas carols, and exchange gifts to express our joy and love. Perhaps the best-known and one of the oldest Hungarian Christmas carols is *Mennyből az angyal* (Angel from Heaven), probably originating in the 18th century:



(The angel came down to you from heaven, shepherds, shepherds, so that you might hurry to Bethlehem to see, to see.)

The Son of God, who was born in a manger, in a manger, He will be your saviour, truly, truly.)

Then, on the 25th and 26th, most people make time for larger family gatherings; many travel to see relatives who live further away in the country. These two days are all about spending time together, having a joyful celebration, relaxing, and, of course, sharing delicious food and playing a lot with the new toys that the children found under the tree. If we are lucky, we might even get a little snow this year.

Boldog karácsonyt!
(Merry Christmas!)

Written by Erzsébet Heltai, IMEKO Secretariat

SINGAPORE DAZZLING AT CHRISTMAS TIME

Christmas commemorates the birth of Jesus Christ, the Son of God, whose sacrifice on the cross Christians believe brings redemption and washes away the sins of the world. Beyond its religious significance, the season is also a time of generosity and giving, inspiring acts of kindness that reach across communities.

In Singapore, this sacred meaning forms the heart of the season, even as its celebrations are warmly acknowledged across people of diverse cultures and beliefs. While not every community celebrates Christmas in their own traditions, Singaporeans embrace the season with openness, reflecting the nation's culture of mutual tolerance for one another's holidays.

Each December, Singapore transforms into a dazzling wonderland of lights, music, and colour. The iconic Orchard Road Christmas Light-Up draws thousands with its ever-changing themed displays, turning the shopping district into a glittering avenue that captures Singapore's festive spirit—cosmopolitan, creative, and community-minded.



*Christmas in Orchard Road;
[image source](#)*

The magic extends beyond Orchard Road. Neighbourhood malls, hotels, and even the airport join in, creating an atmosphere of warmth and cheer.



*Christmas Wonderland at Gardens by the Bay;
[image source](#)*

Iconic landmarks such as Gardens by the Bay host special Christmas-themed events, complete with light sculptures, festive markets, and carolling performances. Even in Singapore's tropical climate, the spirit of the season feels unmistakably magical, where snow may not fall, but joy certainly does.

Singapore's carolling scene adds a uniquely local touch to the festive season. While traditional Christmas carols are sung in churches and community events, Singapore infuses its own multicultural flavour: performances are often multilingual, blending English with Mandarin, Malay, Tamil, and other languages.

SINGAPORE DAZZLING AT CHRISTMAS TIME

Carrollers can be found in malls, hotels, and public spaces, sometimes accompanied by local instruments or contemporary arrangements, bridging tradition with modernity. This lively, community-focused approach embodies the city's creativity, openness, and warmth, making the festive music resonate far beyond its usual settings.



Record-making: Largest Street Carolling by Nee Soon GRC, on the 14th of December 2019, with 890 participants; [image source](#)

For Christians, Christmas remains a deeply meaningful time of worship and thanksgiving. Yet what makes Christmas in Singapore unique is how its joy extends far beyond the Christian community. Many non-Christians join in the celebrations, attending gatherings, exchanging gifts, or simply enjoying the festive atmosphere. This openness reflects Singapore's distinctive social harmony, where different faiths participate in one another's festivities out of respect and friendship.

True to Singapore's multicultural nature, the celebrations feature a delightful mix of local and international flavours. Roast turkey and log cakes often sit alongside satay, curry, and laksa, while cafés and restaurants create inventive East-meets-West treats like pandan log cakes or durian-flavoured desserts.



Fusion dining at Christmas - A unique Asian take on this ubiquitous Christmas dish: the assam pedas turkey; [image source](#)

This blend of tastes adds a uniquely Singaporean touch to the season. Christmas also sits harmoniously among the many cultural and religious festivals celebrated throughout the year. Just as Singaporeans share in Hari Raya, Deepavali, and Vesak Day, Christmas is embraced with the same inclusive spirit. Supported by national policies that encourage multicultural participation, these shared celebrations reinforce the values of respect, unity, and kindness—the heart of Singapore's social fabric.

SINGAPORE DAZZLING AT CHRISTMAS TIME



*The Boys' Brigade at Kallang Wave Mall collection point for donations drop-off.
[image source](#)*

Adding to the spirit of giving is the Boys' Brigade Share-a-Gift (BBSG) initiative, a long-running national initiative since 1988 that has become a symbol of caring, sharing, and community spirit. Each year, it brings together volunteers and members of the public to support the less fortunate, fostering empathy, volunteerism, and a more compassionate, inclusive society. Guided by the theme "Have a Heart, Share a Gift", it encourages Singaporeans to go beyond financial donations and personally purchase items for beneficiaries, strengthening empathy and community connection.

As a Singaporean, I feel it is a privilege to celebrate Christmas in a country where tolerance, respect, and understanding for all cultures and festivities are part of everyday life. The season is a vivid reminder of the harmony we share; it is a time when communities come together in joy, generosity, and friendship, making Singapore a truly unique and welcoming home.

And we, at NMC, wish all of you a Merry Christmas filled with peace, hope, and festive cheer.



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