



QR VIEWS

A BIMONTHLY PUBLICATION OF NIQR TRIVANDRUM BRANCH

FOR PRIVATE CIRCULATION AMONG MEMBERS ONLY

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**Quality is free.
It's not a gift, but it's free.
The unquality things are
what cost money.**

- Philip Crosby

1.0 Chairman's Message

Quality is everybody's business. It pervades all areas of human activity, whether it be the industrial scenario, or in the food we consume or in inter personal relations. We usually talk about quality of life, work life balance etc which is an aggregate of all events happening around us and beyond. The importance of mental wellbeing along with physical wellbeing has never been given higher priority than today. The indices of industrial and agricultural growth are looking upbeat and our country has been able to display very good achievements and contributions in multiple fields. All these add immensely to the responsibility of all concerned, including dedicated QA and QC personnel. They have been acting as the drivers of quality and reliability and their continuous vigil and contributions have immensely helped in sustaining a healthy long term growth in all fields.



To build and establish a Quality system is not easy. To sustain the system in the long term and to adapt to changes in the environment is a challenging task. This requires the idea of sustained quality to percolate in to all levels and all areas of our activities. The Quality culture has to get engrained in to the fabric of every endeavour. Quality is everybody's business.

P.K.Abraham

2.0 IISU Quality Meet 2023

Quality Meet of IISU was organized on May 25, 2023 at Sagara Hall, IISU jointly with IISU and NIQR Trivandrum Branch. The half-day programme was attended by the employees from different entities of IISU and was inaugurated by Dr. D Sam Dayala Dev, Director, IISU. In the inaugural ceremony, Shri. P.Muthuganapathy, Secretary NIQR Trivandrum Branch, welcomed the gathering. In his inaugural address, Director, IISU appealed to put greater effort in following the quality norms, especially for the systems for Gaganyaan. Shri K S Mani, Associate Director, IISU in his special address shared the lessons learnt from the past in the arena of Inertial systems and highlighted the future perspectives in Quality and Reliability. Smt. Sherine, IISU proposed the vote of thanks. The inaugural session was followed by an invited talk by Dr. Sini V Pillai, Professor, Digital University Kerala (DUK) on 'Design for Quality and Reliability: The Design Thinking Approach'. Talks were also delivered by Shri V Krishnanandan, Dy. Director, SR, LPSC on 'Sharing of Lessons Learnt and Future Perspectives in Quality and Reliability' and by Shri S Paul Pandian on 'Towards Prognostics and Health Management (PHM) of Reaction Wheels'. All the talks were highly informative and were highly beneficial for the audience.



3.0 National Seminar on “Recent Advances and Future Trends in Additive Manufacturing”

Two days National Seminar on “Recent Advances and Future Trends in Additive Manufacturing” was held in Hotel Residency Tower Statue on 21&22 July 2023. The seminar was inaugurated by Shri ES Padmakumar, Director, ISRO Inertial Systems Unit.

The seminar was organized under the guidance of Dr.P.Ramesh Narayanan, Dr V Anil Kumar, Dr.SVS Narayana Murty and team.

- Keynote Address Dr. U.Chandrasekhar, CEO, GMSIR
- Introduction to AM processes Dr. Govind, VSSC
- Design for Additive Manufacturing (DfAM) Shri. Santhosh Nagarajau, M/s Hexagon software Modelling and simulation in AM Prof. Amitave De, IIT Bombay
- Metallic Materials for AM Dr. Priyanshu Bajaj, M/s m4p Solutions.
- Certification of AM products Shri. Yathiraj Kasal, M/s WIPRO 3D
- Quality & Reliability challenges in Product/ Technology Development Dr.Sam Dayala Dev, Former Director, ISRO Inertial Systems Unit
- Post processing in AM Shri. Shreyans Khot, M/s AMACE Solution Pvt. Ltd.
- Industry Presentation M/s Imaginarium India Pvt. Ltd.,
- 3D printing of Ceramics Shri. Niranjankumar S A M/s Wendt India Ltd Quality Control in AM Dr. M. Arumugam, LPSC
- Metal AM for Space Applications Dr. V. Anilkumar, VSSC
- Pannel Discussion and Concluding session Moderator: Dr.SVS Narayana Murty GM LPSC



4.0 AGM and the new Executive committee

The thirty fifth Annual General Body Meeting of the National Institution for Quality & Reliability, Trivandrum Branch was held on 29 November 2023 Wednesday @18:00 Hrs., in Hotel Residency Tower, Press Road, Statue, Trivandrum

The Senior Vice President and Secretary from NIQR Head Quarters, Chennai participated in the AGM. The book titled “Quality Revolution” written by Shri P. Sasikumar was released by Dr.V.Swaminathan.

The following office bearers were unanimously elected to serve for next two years:

| | |
|------------------------------------|---|
| Chairman | : Shri.P K Abraham, Group Director, VSSC |
| Senior Vice Chairman | : Dr.Aniyan, AGM, BATL |
| Vice Chairmen | : Shri.V.Ramachandran, Group Director, VSSC |
| | : Shri.P.Muthuganapathy, Head, IISU |
| Secretary | : Shri.Dhanesh, Scientist/Engr. SF, IISU |
| Treasurer | : Dr.Sasikumar, Scientist/Engr. SG, VSSC |
| Executive Committee Members | : S/Shri/Smt./Dr. C.Athi Pagavan, Former Chairman |
| | L Mohankumar, Group Director, VSSC |
| | H Sai Ganesan, Former Division Head, VSSC |
| | S Vijin Jenius, Group Director, VSSC |
| | Paul Murugan, Scientist/Engr. SG, VSSC |
| | K Vijayan, DGM, IISU |
| | Jose K Mathew, Scientist/Engr.SF, VSSC |
| | Shaji Simon, Head, IISU |
| | Jayanthi, Group Director, VSSC |
| | S S Maruthi, Scientist/Engr. SF, VSSC |
| | Saravanan, Senior Tech. Assistant A, LPSC |
| | Celin Maria Simon, Scientist/Engr. SF, IISU |
| | Representation from Industry - HLL Life care Ltd., |
| | Representation from Student Chapters (3) |
| Permanent Invitees | : Shri. Mohan Ananthanarayanan K. R., Consultant Agnikul Cosmos |
| | Dr. Thampy Thomas, Former Director, HLL Life Care Ltd |

5.0 Technical Talk and Felicitation of NIQR Members

5.1 A technical talk was arranged as part of felicitation to superannuating NIQR members on 26 March 2024 in Hotel Residency Tower. Shri V Ramachandran, Former Group Director HESG, VSSC gave a technical talk on Quality and lessons learned in Launch Vehicle integration. Shri.A.R.Murali Sankar, Former AGM, LSFG, VSSC also shared his experience. After the talk, former NIQR Trivandrum branch chairmen and senior NIQR members Shri RC Mathew and Shri CA Ignatious were felicitated for their excellent contribution in the field of Quality and Reliability.



Memento presented to Shri.A.R.Muralisankar, Former AGM, LSFG, VSSC by Shri PK Abraham, Chairman NIQR Trivandrum Branch



Ponnada presented to senior NIQR member Shri RC Mathew by Shri C.AthiPagavan, Former Chairman NIQR Trivandrum Branch.



Memento presented to Shri V Ramachandran, Former Group Director HESG, VSSC by Shri PK Abraham, Chairman NIQR Trivandrum Branch

5.2 A technical talk on ***"Quality Through the Years"*** was delivered by Shri Gopalakrishnan T, Former Deputy Director, VSSC on 25 June 2024, at SFS Home Bridge, Vellayambalam, Trivandrum. Shri Sai Ganesan, Former Head VSSC and former treasurer of NIQR Trivandrum branch also shared his experience in VSSC for the benefit of NIQR members. Shri SS Maruthi, VSSC delivered a talk on ***"Reliability Analysis of Launch Vehicle Systems"***



Ponnada presented to Former Chairman Shri CA Ignatious NIQR Trivandrum Branch by Former Associate Director, IISU, Shri K.S.Mani.



Ponnada presented to Shri Gopalakrishnan T by Shri PK Abraham, Chairman NIQR Trivandrum Branch



Shri.C.Athi Pagavan, Former Chairman, NIQR Trivandrum branch presenting a memento to Shri Sai Ganesan



Shri.P.Muthuganapathy, Vice Chairman, NIQR Trivandrum branch presenting a Book on Kaizen to Shri SS Maruti



A view from the session



"If you can't describe what you are doing as a process, you don't know what you're doing."

- W. Edwards Deming



A Digital Twin is a digital representation of a physical asset or process based on powerful physics-based simulation. This can range from small products to large machines or even entire plants. The Digital Twin helps define and optimize products and production systems, thus significantly reducing the need for physical prototypes before investing in physical assets and contributing to saving valuable resources. Moreover, the Digital Twin continuously updates to reflect any change to its physical counterpart throughout the product lifecycle, creating a closed loop of feedback in a virtual environment. This enables companies to continuously optimize their products, production and supply chain processes at minimal cost. There are as many Digital Twin models for a technical system as there are different use cases. In general, the models grow with their requirements.

Users can start small by creating additional facets of the Digital Twin when needed and expand their capabilities with more data over time as their experience and ambitions grow. The comprehensive Physics based Digital Twin approach incorporates mechanical, electronics, electrical, software and manufacturing to fully capture today's smart products and processes. It comprises a set of consistent digital models representing different aspects that can be used throughout the entire product and production lifecycle and the supply chain.

Here are some benefits that a Digital Twin brings to manufacturing:

Improved training: The Digital Twin allows operators and staff to familiarize themselves with equipment operations in a virtual setting before working with physical machinery, fostering skill development, reducing training time and improving workforce proficiency.

Optimized throughput and quality: The Digital Twin enables manufacturers to optimize production processes by simulating scenarios. By analyzing real-time data from the physical product, adjustments can be made to improve throughput. For example, a machining operation that takes 5 hours for titanium could be shortened by analyzing the feed rates or the spindle, saving both time and resources.

Sustainability support: By monitoring energy consumption, resource utilization and the environmental impact, the Digital Twin can help manufacturers reach their sustainability targets. Additionally, the Digital Twin for Disassembly can help sustainably disassemble a product or machine at its end of life.

Efficient troubleshooting: When discrepancies or malfunctions occur in the physical system, the Digital Twin can assist in diagnosing problems by analyzing data or software in ways that cannot be easily done on a physical machine. This accelerates the resolution process, minimizes downtime and reduces the need for manual intervention.

Predictive maintenance: In manufacturing, downtime equals financial loss. Having a Digital Twin of a machine or a production line can help manufacturers predict maintenance needs proactively, preventing unnecessary planned maintenance.