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Dear Readers,

### Greetings from ISQ !

It gives me immense pleasure to bring this last edition of ISQ Newsletter 2021.

I would , first of all , wish you and your loved ones a very happy, healthy and prosperous 2022! We hope and pray God that Covid finally rests in peace this year.

Reflecting back , our Newsletter has evolved fairly and received very encouraging reviews constantly. Our editorial team has put in their full efforts to bring you up to date on the activities at ISQ at the same time bring some knowledge and wisdom essential for running successful businesses.

This is 25<sup>th</sup> anniversary for ISQ and there has been a lot of change in its Vision & Mission to align with the current needs of the organizations. The structure has been defined with more focus and clarity. President Mr. Janak Mehta`s message in this issue highlights the new approach and initiatives. The structure opens up huge opportunity for volunteers in several key areas for which different committees have been made. Contrary to the ISQ journey till 2020 , 2021 was buzzing with activity – from weekly knowledge sharing sessions, conventions to the iconic Annual Conference, which saw eminent speakers from world over to record participants. We look forward to even more activity in 2022 as the various committees implement their roadmaps to achieve ISQ Vision. The annual Conference was unique in many ways, you can read a brief report By Mr. Prabhakar Shettigar, ED ISQ , in this issue.

Start of 2022 has not been so great as Covid in its new form i.e. Omicron is raging world over and India is witnessing rapid increase in cases. Vaccinated population also is getting infected is a cause of great concern. Its effects seem to be milder than Delta variant, if that is some solace ! Restrictions are back in place and so are WFH, Virtual education , supply chain disruptions, discontinuity in operations and many more undesirable adjustments being made in coping with Covid and necessities of daily life. It could well be the nature`s response to its outrageous exploitation.

The awareness and concern for the preservation and sparing use of resources provided by Mother Earth are gaining momentum resulting in events like COP 26 held recently in Glasgow. As a result, role of Quality in business context is becoming more important as sustainability is getting added to its scope.

Fundamentally sustainability is inseparable from Quality , it`s difficult to see them as separate disciplines. This requires new skill sets to be developed not only in Quality professionals but executives across the functions in any business – right from service to hard core manufacturing. ISQ will be focusing to create awareness, impart knowledge, sharing of trends world over in dealing with the most crucial issue facing mankind at this point in time. ISQ is positioned very well to serve this purpose since Mr. Ramanathan , our TQM Guru is a key member of the “Think Tank” that evolves the way forward to tackle this challenge.

Most important for us is your patronage, which is a great source of inspiration to us – the Newsletter editorial team, and we will strive to make the read more informative and interesting.

Enjoy reading, stay safe !

**Best Regards**

**Ved Parkash, Editor-in-chief**



## President's message

### Reflection on the year gone by and greetings for the New Year-2022



As the year 2021 comes to an end it is a good time to reflect and learn. The year started with a big hope of recovery as the COVID 19 cases declined to about 10,000 a day by early January. However, the hope was short lived with Delta variant ravaging though India from April to June peaking around 400,000 per day by end April. Thereafter holding steady at about 40 to 30 thousand cases per day from July to September before reaching acceptable level of around 10,000 in December. This has been the most difficult period in the history of India in the post-independence period in terms of lives lost, people suffering, and quality of life, especially for the poorer section of the population.

This year the focus on environment and sustainability has become sharper as the global warming continues unabated with its disastrous impact on the planet and its inhabitants. Pandemic contributed to the acceleration of digitization to address business issues through remote operations and for becoming more efficient with the help of advancement in Information and Communication Technologies (ICT).

Consumer sentiment and business resilience, even in difficult period of operations during COVID, helped in revival through V shaped recovery. During these difficult times Indian Society for Quality (ISQ) represented by the professionals from quality and other line functions from various business organizations made useful contribution through variety of initiatives.

In the context of country's need to expand its share in foreign trade through exports as one of the key requirements for enhancing per capita GDP to raise the standard of living and for addressing the environment issues of sustainability for survival of Planet Earth, ISQ embarked on restructuring itself to meet the dual challenge. As a first step the ISQ mission and vision were revised to meet the future requirements in context of environmental and technological changes. To realise the new vision ISQ organization has been restructured, rule / regulations revised, and Bylaws modified.

There has been enthusiastic response from the ISQ members through active participation. A new chapter was established in Chennai that has been quite active. Number of programs through remote channels have increased including four outstanding presentations by eminent speakers during the Quality month. Participation from ISQ members in offering case studies for international competition for 'quality sustainability award' and 'quality innovation award.' At ANQ Congress 2021 held in South Korea, ISQ presented 2<sup>nd</sup> highest number of papers. The year ended with ISQ Conference 2021 held in hybrid mode in National Capital Region with about 100 participants in person and over 350 registrations on virtual mode. Keynote speeches from some of the world / India leading speakers were very well received. Four individual awards were presented for outstanding contribution. On the whole it was a great success.

Many younger members of ISQ took great initiative in planning and organizing these events. That augurs well for the future of ISQ and its role in building organizational capabilities as we enter the New Year with hope for a degree of normalcy despite new variant Omicron, and aspirations for rapid growth of economy for the well-being of the society.

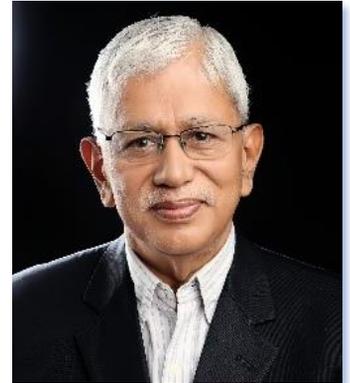
I take this opportunity to wish everyone healthy, harmonious and prosperous New Year 2022 where we contribute towards activities that help in realization of ISQ vision in consonance with its mission.

**Janak Mehta, President**



## Vignettes from Ram

### CRYING OUT FOR A QUALITY ECONOMICS



Deming's last book, *The New Economics* was published in 1993, the year he passed away. He would have known that his book would not be read by economists, but he succeeded in laying out a masterly exposition of his System of Profound knowledge. Deming knew that the sources of high costs in a corporation mostly remained hidden, lurking where the economists would not look.

Though a vast body of knowledge exists on the so-called cost of poor quality, it is mostly in the micro-economic domain. The concept of loss to society was central to Taguchi's work, but it does not surface in discussions on the damage that poor quality causes to the world. Take three mega-examples:

**Y2K hiccup, 2000:** Rectifying software to change all four digits rather than the last two for year 2000 cost the world an estimated \$800 billion.

**Financial collapse, 2008-09:** Stemming from subprime mortgages (euphemism for low quality), the crisis cost the world \$2 trillion.

**Planetary emergency:** The current environmental unravelling is a quality problem that may cost \$20 trillion by 2050 on climate alone, while Covid-19 costs may be \$4 trillion. Half a million people die of air pollution each year. (W.H.O.)

Books on either Quality or Economics do not link the two topics, despite the experience of such frightening events.

Capitalism has its origins around the time of the Black Death in 1347, which wiped out about a third of Europe's population. Its ambition was, according to Lewis Mumford, writing in 1944, "to raise the quantity of goods consumed and in particular, to turn luxuries into necessities." The odious concept of the 'Economic Man' arose, though this Utilitarian term itself was coined by John Stuart Mill only in the 19<sup>th</sup> century. Economists disregard the possibility that people take decisions predicated not on self-interest alone but also on their desire for fairness, justice, equality, society and even planet health. Poverty, the Kuznets curve predicted, would get worse before the 'trickle down' from economic growth would mitigate it. Though at a decreasing percentage of world population, 750 million people live today in dire or extreme poverty.

We know that economists cannot predict collapses and cycles though they are features central to their model and are a consequence of stipulating endless growth of consumption in a finite world. Their model assumes that natural resources are infinite and free. National incomes are defined by GDP which ignores depletion of resources. No national balance sheets are made. Wastefulness may actually show up as increased GDP. The cost of quality – from the deadly use of chemicals, for example – goes unmeasured. Fossil fuels have caused planetary heating, but governments continue to subsidize them. Economic logic has incentivized industrial farming practices with their overuse of fertilizers and pesticides, causing loss of topsoil and water contamination, and prime lands are left for grazing to meet meat industry demands. Economists have managed to explain all these phenomena away.



We need a new economics – one that will make it economical to deliver planetary health. As a wake-up call to everyone, the international community should declare a planetary emergency. Assets of nations should also be measured by the money value of their forests, wetlands, and biomass or diversity, not to mention precious topsoil. We need to scrap GDP as a measure and replace it with better indicators – possibly a form of environmentally adjusted Net National Income. (Read *Mismeasuring Our Lives* by Stiglitz, Sen, Fitoussi.)

We need international agreements not only on pricing of GHG emissions, but on pollution and use of natural resources. We need a sea-change in taxation philosophies, away from earned income and directed at environmental loss instead. We need tax and pricing policies that make us swing away from industrial farming to permaculture and multi-culture. We need an international tree fund that will pay countries for having more than a prescribed proportion of tree-cover area. We have to build international cooperation on new technologies like carbon sequestering or electric storage. And we have to make food available to the poorest – no delays and no conditions. The rich countries should be made to finance the poor ones, not just for mitigation of effects but for environmental action – reparations are justified.

It is time for corporations to understand that profit is not a goal but a requirement – to stay in business. In a changed world there would be every incentive for companies to make durable products (often to be sold as service and not as goods) that are upgradeable, up-cyclable, recyclable, and re-manufacturable. Companies should be prepared to pay for accidents, illnesses, pollution, disposal problems caused by their products. The ratio of the top salary to minimum wage should be reasonable – surely under one hundred? Management accounting should function as though there were mandates to include the costs of natural resources, emissions and pollution, in anticipation of governmental actions.

Kate Raworth is among the rebel economists in view. In *Doughnut Economics*, she uses the metaphor of the doughnut as the sweet spot within which economies should function. Inside – in the hole – is disruption of society from want; outside, the planetary ceilings stand breached. In between is the doughnut where people's wants can be met while keeping the planet healthy.

The systems thinker Donella Meadows had declared that “growth is one of the stupidest purposes ever invented.” Contrary to what economists have told us for centuries, endless growth is not a precondition for prosperity – it is in fact self-destructive. We can have well-being without the ever-increasing consumption that the economics of greed demands. We need the kind of economics that will let us thrive in a healthy planet.

What is to be done is known to a fair degree. If conventional economists would not learn it, they have to be displaced.

A Quality Economics would let us flourish without damaging the very planet that sustains us.

#### About the author:

Mr. N. Ramanathan is a senior counsellor and advisor of TQM. He is a Mechanical Engineer with Masters from IIM, Ahmedabad(1969) with 50 years of experience in industry, and in teaching and counselling. Mr. Ram has received awards internationally for his work, as well as receiving the Dronacharya Award in 2018 by ISQ for his contributions to teaching and counselling on quality. Mr. Ram has been associated with twelve successful Deming Prize challenges, and has taught and advised Ashok Leyland, CEAT, SRF, Indus Towers, JSW, Mahindra group of companies, Tata Quality management Services, Tata Steel, and other organizations.

## Annual Conference 2021 Theme: Rebooting Quality for competitive India



17-18, December 2021 Crowne Plaza Gurugram



There were many firsts in the annual conference 2021

- It was held in a silver jubilee year of ISQ.
- For the first time, it is conducted in hybrid mode (physical and virtual)
- Awards night was organized for the first time.
- Four awards were given to eminent personalities for the first time.
- 5 international speakers addressed during the conference.

100 participants participated in the physical mode at the venue, 350 participants registered for the virtual presence.



### Speakers in the conference

**Chief Guest:** Mr. T. V. Narendran, CEO and MD, Tata Steel Ltd.

**International Speakers:** Mr. Masahiro Sakane, Prof. Noriaki Kano, Mr. Christian Levin, Mr. Lars Sörqvist, Sr. Mary Jean.

**Speakers from India :** Mr. Nandan Nilekani, Mr. Arun Maira, Mr. Avneesh Gupta, Mr. C. K. Venkataraman, Dr. Subhash Narayanan, Mr. Shankar Venkateswaran

**Awards Nite :** ISQ gave away 4 awards who have excelled contributing to quality in India.

Jamsetji Tata Award to Mr. Nandan Nilekani, Ashoka Award to Mr. C. K. Venkataraman, Harsha Awards to Mr. Avneesh Gupta and Mr. Surender Kakkar.

**Coffee Chat :** Mr. N. Ramanathan as host and the Dr. Bhimaraya Metri as the guest speaker

**Case Studies :** 6 case studies from well known organisations related to the theme were presented during the conference as practical examples.

For details please [click here](#)

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## Quality Month Lectures – November 2021

ISQ organized series of 4 lectures on the 4 Saturdays of November 2021 between 10 30 AM to 12 PM to the benefit of members and quality fraternity. The lectures were delivered by some of the great Quality minds in India as mentioned below.

**6, November 2021**

by **Mr. Arun Maira**, Former Member, Planning Commission, Thought Leader

### **Topic: My Vision for the People of India and the role of Quality**

Mr. Arun Maira spoke about why India not progressing as fast as it wants to—and needs to—to improve the quality of life of all Indians? Why is there so much confusion and so much contention amongst people at all levels of the Indian system, top to bottom, that is retarding progress towards outcomes that will make India shine for everyone in India?



An approach of “total quality management” is the solution to improve the quality of lives of all Indians. He shared some of the great insights

1. The only appreciating asset is in an enterprise or a country are the human beings in it.
2. You don't buy scale. You learn and grow into scale. Learn well and fast. Your operation size will scale.
3. Competition can come from any country or any other industry. Competitive advantage can come when you learn fast and improve faster.
4. Indians can produce high quality items on scale with very less resource if they cooperate with each other.

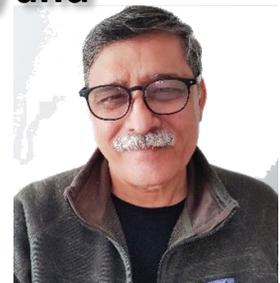
**13, November 2021**

by **Mr. Vivek Talwar**, Former Chief Culture Officer & Chief Sustainability Officer, Tata Power

### **Topic: The compelling case for embracing Sustainability and the key role Quality can play in it**

**Gist of his address:**

Imagine standing on the deck of an expedition ship in Antarctica, surrounded by amazing light, watching huge chunks of gigantic glaciers fall into the ocean with a thunderous crash, at a frequency and severity never before experienced by humankind. Imagine being on another expedition ship, this time on the polar opposite side of the planet, in the Arctic, desperately looking for Polar bears that have had their habitat impacted by the melting sea ice.



Imaging travelling deep into the Amazon rain forest, considered as the lungs of the planet, experiencing amazing wildlife and then seeing the impacts of the large scale deforestation.

If ever there was an idea whose time has come, it is the idea of embracing sustainability. And while it is an idea whose time has come, if we don't seize it, time will run out for us all. Being a significant contributor to impacts associated with climate change, environmental degradation, as also economic disparity, there is a path towards mitigating risks, as well as leveraging on the opportunities in Sustainability for the corporate world. What are these risks, what are the opportunities, and what are the approaches one can use to excel in this? What role can systematic approaches play, using the tenets of quality? Who are the role models out there, that can be emulated? Join naturalist, wildlife photographer, story-teller and sustainability champion Vivek Talwar as he takes you through his amazing journeys and then into the concepts of sustainability that we could use to make a difference.



20, November 2021

by **Dr. Jairam Varadaraj**, Managing Director, Elgi Equipments Ltd.

## Topic: The role of quality in building a nation



Every nation and its citizens aspire to become developed and thus raise the standards and quality of lives. To deserve high standards we need to be worthy of them. And our worth is dictated by the value of the work that we produce.

One of the important dimensions of the value of work is the quality of work. Building a nation is much more than building good quality products. We are all at various times in life, customers as well as suppliers. In the market place as well as in the work place.

As customers, we have high expectations but somehow when we become suppliers, we resort to many excuses. Bridging this hypocrisy within us and behaving like customers every time we sell, is the foundation of building a nation that is developed and admired. It is not only good for the nation and the company, it is the right thing to do. There is a "Golden Rule" followed by all faiths in the world and that is "do to others what you would like others to do to you". Thus sell great products, services and experiences first, if you want to buy great products, services and experiences.

27, November 2021

by **Mr. Ashok Sharma**, President of Agriculture Sector and MD & CEO, Mahindra Agri Solutions Ltd.

## Topic: "Does winning a Deming Prize improve Business Performance?"



He explained about Deming Prize and how it helps in improving the performance including superior financial performance.

He explained about the global leadership journey of M & M, Farm Equipment sector and its journey from No.6 in the world to become the largest tractor producing company in the world. M&M also won many international awards. M&M became the first tractor manufacturer in the world to win the prestigious Deming Application Prize in 2003. Deming Grand Prize in 2007.

They key learnings from their TQM journey are

- Top management leadership, belief and commitment.
- Systematic strategies & Objectives to achieve vision.
- Alignment of individual roles with business priorities.
- Thorough understanding of customers & their requirements.
- Quality across value chain. – Big Q.
- TEI- High skill, morale and kaizen – analytical ability and innovation to create value
- Companywide use of TQM principles.

He also how M&M moved from customer satisfaction to customer delight and then customer loyalty.



## News:

### Knowledge sharing sessions –Chennai Chapter

#### **Topic: COTS- Creativity Of ThingsS**

Speaker: Melvin Errold Joseph      Date: 25<sup>th</sup> September 2021



The Chennai Chapter continued its offerings of Knowledge Sharing sessions to the Quality Community, by hosting its 3<sup>rd</sup> such session on 25<sup>th</sup> Sep 2021. The session was addressed Mr. Melvin, (DGM Knowledge Management@ M/s TAFE ) on the topic of “COTS- Creativity of Things “ a subject very close to his heart .

#### **Key points of the session were:**

1. Belief and Realisation that we are creative beings
2. Demystifying the definition of Creativity
3. Myths on Creativity
4. Playing the TIC-TOC game to rediscover creativity / positivity
5. 8 Stages of Creativity and the Eureka Moment
6. Snapshot of Tools & Techniques for creativity
7. The Creative ME – Traits and Attributes of the creative individual
8. The Creative Mindset
9. Commitment to Creativity.

Melvin’s way of communicating the key points sprinkled with a touch of humour and practical examples resonated well with the audience.

The full program is hosted on the Chapter page in You Tube as well as Linked In for those who missed.

### Knowledge sharing sessions –Pune Chapter

#### **Topic: How is artificial intelligence, machine learning changing manufacturing landscape.**

Speaker: Uday Kumar, Caizin      Date: 9th October 2021



The session gave some of the answers to questions such as: How does AI/ML fit in Industry 4.0? What kind of changes will it bring to manufacturing? What are the challenges and how can companies overcome them and realize benefits?



## News:

## Chennai Chapter - Inter Collegiate Quiz write up

ISQ Chennai Chapter commemorated the birthday of Dr Deming on 12 th Oct in a fitting manner – by taking the principles of TQM to the student fraternity in a fun way – an intercollegiate quiz. This was a hybrid model with the Prelims being virtual and the Finals was on stage . The Quiz was designed and conducted by our own Nandakumar, Secretary of CC.

The prelims had 35 teams =105 students participating. The virtual quiz was a tone setter and 4 teams qualified for the Finals, which was hosted by the Jerusalem College of Engineering. The chief guest on the day was Dr. Ramesh the principal of the college.

**Welcome address**  
**Dr. Ramesh S**  
Principal, Jerusalem College of Engineering

**Chief Guest**  
**Dr S.Rajkumar**  
Sr. VP Operations – Rane Engine Valve Ltd.

**Vote of thanks**  
**Thomas Mathew**  
Unit head, Chennai Plant - Apollo Tyres Ltd

**Quiz Master**  
**R. Nandakumar**  
Founder - PQSI

**Chennai Chapter Celebrate**  
121st Birthday of Dr. Deming by conducting  
**INTERCOLLEGIATE QUIZ ON 12TH OCTOBER : 3PM ONWARD**

*"courage people to learn new skills to prepare for future changes and challenges" - Dr.D*

The finals were attended by the EC members of the Chapter in person and many more on the web. It was an intriguing session, where the guile of the Quiz Master was well matched by the knowledge of the students. The event was won by the host college after many rounds in different formats.

The chief guest spoke very well about the Principles of Dr Deming and the Chapter president and Vice president spoke on the role of ISQ. The prizes were handed over on the spot by the EC members to the colleges. The event was executed by Vinothkumar EC & team of IT wizards.



The winning team



The participants with the dignitaries



## News:

### Pune Chapter – MSME initiative

#### Udaan 1.0:

The Micro, Small and Medium Enterprises (MSMEs) sector is of special significance for the future of Indian Economy with 29% of India's GDP. As a commitment to MSME sector, Indian Society for Quality (ISQ) initiated a mission of hand holding MSMEs by helping them on Quality improvement journey leading to business excellence. As MSMEs need to be accustomed to a larger compliance climate in ever growing competitive market, ISQ planned session on Mind-set change on 23rd October-21 for a better level of preparedness and discipline in conducting business which will gradually take a positive turn to fulfil customer/ societal demands.

Mr. Valmik Sangle and Mr Rahul Yadav Jointly conducted this insightful session. Ms.Sarika Joshi briefed about ISQ, Mr Devraj Chattaraj introduced the speakers. Mr. Kannan moderated Q and A session and Mr. Santosh Bandal expressed vote of thanks. 75 participants attended this session. Post event, several supplier organizations have shown interest in further participating in this journey.

Mr. Sunil Kaul, Chairman and Mr. Mahesh Hegde, President- Pune Chapter guided and supported the whole team during the preparation for the module effectively.



खास MSMEs के लीये।

## उड़ान भाग 1: “बदलाव सोच मे”



बस एक कदम बढाकर हमारा साथ दीजिये; एक सुविचारित कार्यक्रम मे; जो भारतीय उत्पादन को एक ऊचाई पर पहुचाने मे सहायक होगा।



## News:

## IAQ Quality Sustainability Award (QSA)

The global award for projects demonstrating good results with sustainability achieved by quality management.



Quality  
Sustainability  
Award

International Academy for Quality

## Congratulations SRF Limited

The final contest at international level for the Quality Sustainability Award was held on 9<sup>th</sup> December 2021.

ISQ is happy to announce that the following project from SRF Limited, Packaging Fills Business, India, was declared as winner 2021 by International Academy for Quality along with a project from China.

**“The Conversion of non-usable metalized BOPET film waste into raw material by unique de-metallization and recycling process”**

## National level contest of Quality Innovation Award

Quality Earth Forum of ISQ, a national partner to international Quality Sustainability Award brought out by IAQ Quality in Planet Earth Concerns Think Tank, called for applications from Indian organisations to participate in the contest. 45 applications received were short listed for the final presentation round by the well defined evaluation process with the expert assessors.

12 shortlisted project presentations were organised on 1<sup>st</sup> October 2021 to decide on the six Gold Winners at national level. A team of three jury members selected the top six projects as national winners who were eligible to go to the international competition. Balance six were declared as silver winners.

Mr. Vivek Talwar, Former Chief Culture Officer & Chief Sustainability Officer, TATA Power gave an interesting keynote address before the contest begin with his real life experience on concerns of planet earth and the need to follow sustainability initiatives. Ms. Kiran Sarkar of Head – M & M Sustainability, Auto division spoke about the sustainability initiatives of her organisation and its benefits.

Sl No.	Name of Project	Name of Company
1	Volatile Organic Compounds (VOC) reduction: A proactive approach	Ashok Leyland, Chennai
2	Sustainable Initiatives through Total Quality Management to produce Greener Steel	Tata Steel Tubes
3	Conversion Of Hot Water Curing System To N2 Curing to Save Steam Generation	JK Tyre & Industries Ltd, Vikrant Tyre Plant, Mysore
4	Sustainable manufacturing in harmony with Neighbourhood community	CEAT Ltd.
5	Conversion of non-usable metalized BOPET film waste into raw material by unique DE-metallization and recycling process	SRF Limited Packaging Films Business
6	3 in1 Low Carbon Technology Project- TRIGEN	Mahindra & Mahindra Ltd

## Presentation by merit winners of national QSA

As a part of knowledge sharing session, On 30<sup>th</sup> October 2021, QEF-ISQ organized presentations by the six merit winners of QSA 2021 (Those who cleared the first round of assessment but did not make it to top 12). Ashok Leyland, Brakes India, Mahle Anand, Ceat Ltd participated and shared their projects with members of ISQ and sustainability professionals.

# Newsletter Indian Society for Quality



## Abstract of award-winning project by SRF Limited in the IAQ Quality Sustainability Award



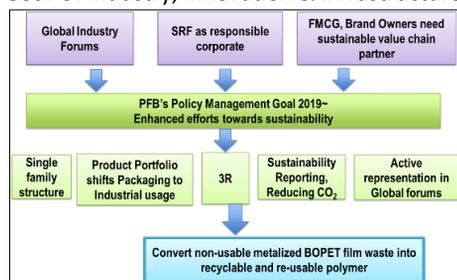
### Project: Conversion of non-usable metalized BOPET film waste into usable polymer by unique De-metallization and recycling process



**Organisation:** SRF Limited, Packaging Films Business (PFB), Dhar (Indore), India

**UN Sustainability Goals impacted:** Goal 12: Responsible Consumption and Production, Goal 9: Industry, Innovation & Infrastructure

**Imperative and Goal:** PFB is India's largest exporter of BOPET films, part of SRF, a multi-business chemical conglomerate which has won two Deming Prizes. Metallised (MET) films, constituting ~24% of total production of 90.1 KTPA at two sites, provide barrier protection to laminates used in packaging by brand owners like Unilever. About 2.51% of MET film (535 TPA, FY 19) made is non-recyclable waste, and is salvaged by unorganised players before its end of lifecycle in landfill. In line with the business' environmental policy as a responsible manufacturer, our goal was to create a breakthrough in *eliminating this non-usable waste and re-use it through recycling at full scale production.*



**Methodology:**

SRF's Task-achieving problem-solving process was used from new process development to scale up, with FMEA in process design and lean methods in layout planning and implementation.

**Requirements and Challenge:**

- Complete removal of aluminium coating needed recycle MET waste to make contamination-free resin
- No known method of scaling up of above recyclable material use beyond lab scale for BOPET films

**Exploration, Solution generation (Lab scale to prototype and pilot establishment):**

Lab studies were done using PDPC to select one suitable solvent combination, considering used solvent treatment and disposal. Fluff was analysed for ash content, moisture and contamination, compared with regular fluff for recycling use. For piloting, a prototype equipment set was developed using adjacencies and collaborating with an equipment supplier. Design iterations were carried out for residence time, flowability and surface area renewal. Various supplier end trials were done and the de-metallized film fluff introduced in 4-sequential trials on the main film line to confirm runnability.

**Implementing detailed solutions, Commissioning PDCAs**

Applying FMEA, supplier side pre-order trials were conducted with large quantities. Further design PDCAs were done during detailed design and a full-scale plant ordered. During commissioning, plant floor layout space was reduced by 49% using lean principles.

Full scale operation posed a challenge to use de-metallized fluff in a uniform mix. At 5% loading, filter mesh choked, caused by carry over of polymer fines generated during the upstream shredding process. Changes were made to blade angle & gap, filter mesh, upstream screening and back-feeding, reducing output loss from 28.1% to 1.5%. As a result, demetallized fluff input was raised to targeted levels, while maintaining product quality and filter life.

Existing part-time people executed the project end-to-end in 17 months.

**Results and Effects:**

- Line stable with recycled fluff use, with Cpk of 1.44 on tensile of final film
- Sale of non-usable waste eliminated from earlier ~45 TPM, resulting in carbon footprint reduction of 918 TPA

Overall plant waste on 90.1kTPA production reduced from 1.3% to 0.5%, with annual savings of US \$ 230,000 @ 70% ROI

**Transfer to DM, Reflection:**

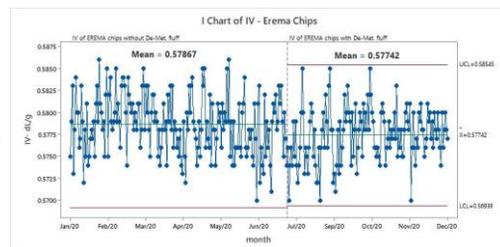
Extrusion QCPC was revised; DM, safety standards and operational controls set for the new de-metallization plant. Further, automation of metallized waste feeding and chemical dosing is planned to improve efficiency.

**Uniqueness, Overall Impact:**

- Project horizontally deployed at PFB's Thailand plant, with plans to deploy at both other overseas locations
- PFB's pioneering and innovative work in establishing a viable commercial recycling process readily adopted by two large Indian competitors, a recognition of our contributions in creating a new industry benchmark
- Increased confidence of FMCG brand owners such as Unilever with SRF as a responsible and innovative partner
- Successful increase of end of life cycle of the polymer to support circular economy

Overall, this breakthrough project represents an important milestone in SRF PFB's capability development, and on our sustainability journey as a responsible manufacturer.

FAILURE MODE & EFFECT ANALYSIS										
Machine - De-Metallization plant					Process responsibility: Sachin Bhangar			PFB Date(Chg.): 20th Jul 2020		
Core Team: SR, RC, PI, AT, AS, ST										
Process	Process Function	Potential Failure Mode	Cause	Severity	Occurrence	Detection	Existing process control	Impact	Recommended Action(s)	
Passing of film from NaOH tank	Removal of Metal from the surface of the film	Metal not removed fully	Lower concentration of NaOH	6	7	5	ph value maintained using ph indicator	5	210	Automatic feeding of chemical
			Excess trim feeding	6	6	3	Cutting trim before feeding	3	108	Inline trim cutter at all units/litters-Sep'20
			Less residence time for material in tank	4	1	1	RPM of motor and tank size designed as per the residence time requirement	1	4	





## ANQ CONGRESS 2021

**Theme: Relentless Pursuit of Quality in a VUCA World"**

*(Volatile, Uncertain, Complex, Ambiguous)*



**SINGAPORE  
QUALITY  
INSTITUTE**

**Organised by:** Singapore Quality Institute through Zoom Dates: 20- 21, October 2021

35 papers shortlisted by ISQ were presented from India during the ANQ Congress 2021.

Following are the three winners of best paper awards from India.

Organisation	Members	Title of the paper
Tata Power	Parshuram Mishra <sup>1</sup> , K Rohit <sup>2</sup> , Prashant Shinde <sup>3</sup>	Reliability & Maintainability: - Transforming Operation & Maintenance and achieving excellence through Reliability Centered Maintenance
Ceat Limited	Ritesh Arora <sup>1</sup> , Mahesh Soni <sup>2</sup>	Digitization of Sales and Channel Experience
Tata Steel Limited	Rajeev Kumar Malhotra, Amit Kumar Chatterjee, Avijit Bose, Umesh kr. Singh, Ramesh Kumar, Satish Agarwal, Avijit Halder, Abhishek Choudhary, Naresh Dhal,	Reducing Energy Consumption Using Optimization and Machine Learning Technique

## Quality Innovation Award

As a national partner to the coveted international Quality innovation award, ISQ, for the second year in succession, has called for applications for the Quality Innovation Award 2021 from India.



64 applications were received. This time the papers were submitted from all the 8 categories.

One winner in each category was selected after going through the systematic assessment process. These 8 applications were sent to contest at international level.

Business Innovation Category	Organisation	Innovation topic
Innovations ( Large)	Tata Steel Ltd	Branding: On-The-Fly Laser Marking of Hot Rolled Coils
(Micro & start-up)	Indian Hotels Company Limited	Stays & Trails – Branded Home Stays from IHCL
(Small and Medium)	Fluid Controls Pvt Limited	Method of case hardening a ferrule
Circular Economy	Tata Chemicals Limited	Wealth from Waste: Dead Batteries To Pigments - Cobalt aluminate
Education Sector	Global Indian International School	Design thinking: create innovative solutions to prototype and test
Health care sector innovations	Tata Consultancy Services Noida	Digital BioTwin (DBT) – A virtual human Suite
Potential innovations	Tata Chemicals Limited	Leveraging Next Generation Agri technique – Aeroponics to grow Patchouli for extraction of essential oils, proven to reduce human stress.
Public Sector Innovations	Tata Consulting Engineers Limited	220 kV Double Circuit Compact Tower for Transmission Lines

## Dynamic Demand on Quality and AR for Quality Improvements

**By Pradeep Chandrasekaran**

**Associate Director – OLA Electric Technologies Pvt Ltd**



Demand on Quality have been increasing day by day and in Industry and society both along horizontal and vertical directions. We need to understand the drivers of Quality and formulate strategies to focus, improve on the Quality in future.

With more online transactions & digitalization in all aspect of life , the customers are no more selecting items with the opportunity to inspect and reject the defect item. This selection process is now in the scope or extent of Manufacturers , distributors who need to have more emphasis on their quality control. In Addition , the way in which feedback, reviews are made in social media , it signifies the influence of quality at global level.

While rapidly changing global technology alarmingly makes some products obsolete, it also results in significant quality advancements, enabling quality community groups to perform predictions , calculations more quickly and accurately than before. This allows for better, consistent data analysis. The drivers for quality in any organization can be consolidated as in table 1.

Drivers	
<b>At Industry level</b>	Value driven Approach
	Regulatory Framework
	Increasing customer requirements
	Globalization
	Benchmarks
<b>At Organization level</b>	Quality compliance
	System Requirements
	Talent & Capability
	Brand Image with positive word of Mouth
	Productivity Improvements

The digitization has transformed the way goods are being manufactured. Key to this evolution is the convergence of several current information and communication technologies (ICT) such as mobile devices, social networks, cloud computing, application platforms, and analytics and cognitive technologies with operational technologies (OT) such as sensors, robots, and additive manufacturing.

The convergence of technologies from the best of both the worlds—IT and OT—is exemplified in the Industrial Internet of Things (IIoT). This combination has implied upon manufacturing the revolutionary potential to customize, predict, and diagnose forthcoming machine or process discrepancies ; improve efficiencies; and boost productivity by as much as 30 to 40%. Nevertheless, not all manufacturers have embraced the digital transformation, and a majority remains hampered by significant quality-related challenges.

Some of the quality issues that are common across major manufacturing verticals globally are Real time alert and traceability of quality feedback across regions , adapting to the dynamic customer requirements, faster time to market are few to be mentioned.

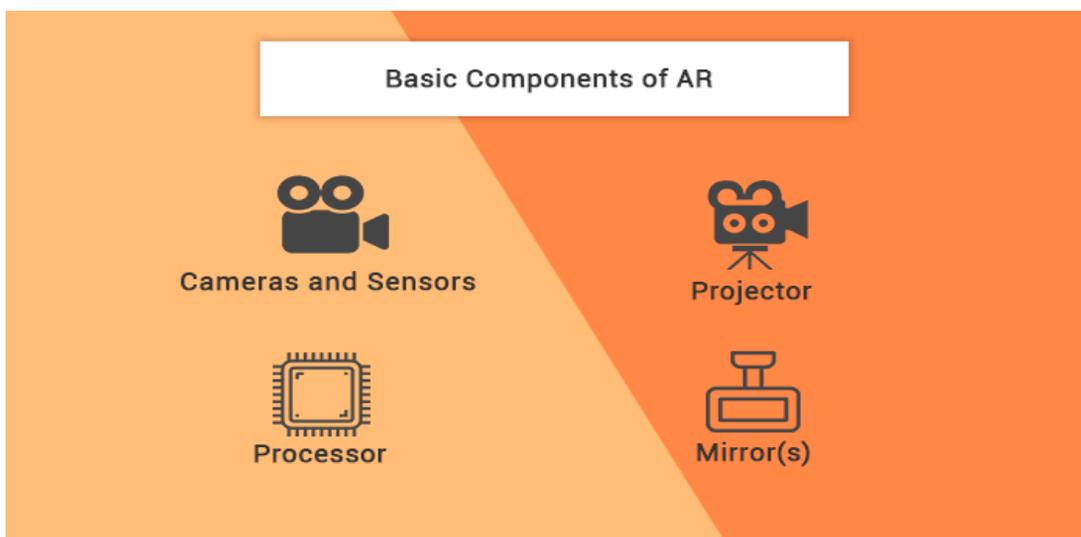
This has resulted in Manufacturers looking for more smart quality solutions which are able to do more assessments, with evaluation of more criteria, easy to implement and scalable from small, medium and across the entire organization

Automotive companies have spent the best part of a century investing billions into their enterprise systems. Now the ecosystem needs to keep pace with the digital revolution of Industry 4.0 which is critical to their survival. The digital transformation of today requires a complete culture shift, involving automakers and auto suppliers investing in change-management strategies that realign the entire supply chain. The raw computational power and foundational technologies supporting Industry 4.0 include artificial intelligence and Big Data, the Internet of Things (IoT), cloud computing, augmented and virtual reality, advanced robotics, 3D printing and cybersecurity. Here we shall discuss augmented reality for improvement in quality control.

One emerging trend is the [use of augmented reality](#) — digital constructs projected onto real-world locations — to improve quality control. Tesla has developed an AR program that automates the calibration and setup of cars leaving the assembly line. This is a [logical evolution of the assembly line](#), beginning first with Oldsmobile's assembly line in 1901, Ford's new moving line in 1913 and Nash's dip tanks of anti-rust treatment in 1934. Robotic welding by General Motors followed in 1961, Kawasaki's 1974 use of robot arms and increasing computerization from the 1990s on have gradually led to the AR implementation we see today.

The invisible-to-visible technology (I2V) from Nissan ,AR-powered virtual guide app from Hyundai,BMW's adoption of AR on the factory floor,Tesla's patent of a Google Glass-like [AR-based system](#) ,Visual Inspect AR(Augmented Reality) solution, FARO are some of the developments. Manual quality control inspections can also be improved through the addition of augmented reality. While this practice is getting adoption , it presents an interesting new option for companies looking to improve their quality control measures.3D models can be embedded into the digital world with the help of either markers or sensors. The basic components of AR are,

**Fig 1: Components of AR (Source : mobileappdaily)**



Two of the most prevalent paths for experiencing AR are marker-based and markerless. Early-stage AR technologies were marker-based. Marker less AR is now the preferred image recognition method for AR applications.

Marker-based AR apps use markers (target images) to indicate things in a given space. These markers determine where the AR application places digital 3D content within the user's visual field or through a camera feed.

Marker less AR places virtual 3D objects in the physical environment depending on the environment's real features rather than identifying markers. This differentiation eliminates the need for object tracking systems. Marker less AR experiences are possible because of advancements in cameras, sensors, processors, and algorithms capable of accurately detecting and mapping the real-world.

**Fig 2 : Components of AR (Source : Business community)**



The AR enables CAD (Computer Aided Design) models to be accurately overlaid onto a video image. The same is shown in fig 3. This enables a direct comparison of the component with the plan or CAD data; any discrepancies can be recognized instantly. These discrepancies can be documented in the program instantly using photo or video evidence, with the documentation or error report being linked directly to the corresponding geometry. After checks have been made, these reports can be exported as a document "at the push of a button" or transferred straight to the relevant PLM (Product Lifecycle Management) or PDM (Product Data Management) systems. For example, post-processing the results of the checks by manually entering them into systems or laboriously creating PowerPoint presentations, is no longer necessary.

These checks can also be carried out with the guidance of checklists or step-by-step instructions, which provide additional security. In addition to the pure geometry of the part or assembly, the inspector also has all other necessary information on the device, such as metadata, ISO standards, core data, etc., so no other medium is needed for the inspection process. The same is shown in fig 4. This all makes it possible to carry out incoming goods inspections more quickly and easily than ever before.

**Fig 3 : AR How it Can Help Production and Manufacturing**



**Fig 4: AR - Precise overlay of a workpiece with the CAD target data for verification (source : FARO for Quality Assurance)**

With the use of Visual Inspect AR is that faster intermediate checks can now be made anywhere and at any time during the manufacturing process. Errors can be detected and rectified at an early stage, thus reducing the rejection rate of finished goods and reducing scrap work. There are ways that AR can improve QC(Quality Control) in automotive manufacturing - Complex assembly, Expert Assistance, Maintenance

AR can become more relevant with the iterations of complex assembly projects , when Vehicles designs are more complex, meaning technicians need to increasingly specialize.

The advantage in using AR is that technicians can wear a digitally linked pair of lenses supplying a heads-up display like a manual, overlaid on the actual machinery before them. For maintenance, the technicians can compare digital blueprints to assess what's before them. When they have any clarification, they can compare the part to what his library contains concerning that part.one such application is shown in fig 5 of Progea UK, where a AR app is developed for HMI.By superimposing digital information onto physical objects, the AR HMIs empower factory workers to interact with machines and manufacturing processes virtually. The AR app was created to allow plant operators to follow key performance indicators (KPIs), receive alerts and notifications as well as interact with critical plant processes in real-time from anywhere across the factory floor. More precisely, the app connects wearables to the factory's SCADA (supervisory control and data acquisition) system, thus creating a self-contained, hands-free and ergonomic HMI (human-machine interface)

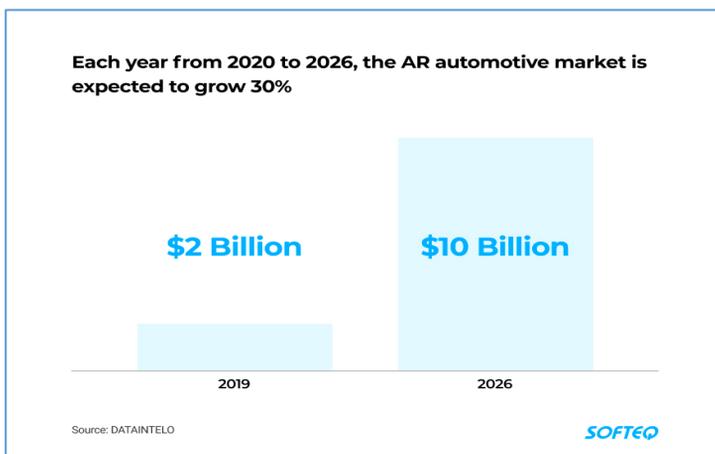


**Fig 5. Progea augmented reality (AR) app that incorporates Human Machine Interfaces (HMIs) onto Smart Glasses (Source : pbsionthenet.net )**



If the technician requires further guidance beyond their specialty and purview of knowledge, they can get direct expert help on the machine. The former practice was for the technician to arrange another correspondence with an engineer. These days, an engineer can gain remote access and make drawings on the heads-up display or send a message to support the technician. Exciting innovations such as AR are the new normal in automotive quality control, as they improve coordination intra- and inter-manufacturing floors.

On the way forward, Autonomous vehicles are steadily going to be mainstream, indicating that detecting issues will likely need fewer technicians. IoT, Electric Vehicle Technologies, Autonomy has created an environment where Quality Control management will be required, even after the vehicles are no longer on the manufacturing and showroom floors. There needs to be a more significant consideration for QC in manufacturing. It is reasonable to expect these trends to grow exponentially there is no doubt that with all capabilities, there is going to be a 30% AR Market Automotive growth in next 5 years. AR applications seem to stay, spread, and evolve in the automotive industry. The global automotive augmented reality market is expected to hit \$10 Bn in 2026



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#### About the author:

Mr. Pradeep Chandrasekaran M.E(Automobile) MMS(Master of Management science) is currently working as Associate Director - Vehicle Engineering , OLA Electric Technologies Pvt Ltd. He Has 20+ years of rich experience in Automotive Industry with 2 Six Sigma Black Belt Certification. He had been associated previously with EICHER Tractors Ltd, JCB India Ltd , TATA Motors Ltd , Mahindra & Mahindra Ltd , FORCE Motors Ltd on various roles and responsibilities in New Product development and Engineering. His areas of expertise include New product Vehicle development , Electrification of Vehicles, Quality improvements,CNG Vehicle development to mention a few.He is a professional Member in Indian Society of Quality from 2019.He has 10 Technical paper publications in various International and National Forums /conferences. His paper was chosen as Best Paper Award @ 18<sup>th</sup> Asian Network of Quality (ANQ2020) conducted by Korean Chamber of Commerce and Industry(KCCI) , Korean Society for Quality Management(KSQM) for Application of 6 sigma for Product Improvement. He is a Management Committee Member in SAEINDIA Southern Section for 2020-2022



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We look forward to the fresh ideas and enthusiastic participation during ISQ events in your journey to become knowledgeable professionals.

## Be a member of ISQ

Download the membership form [here](#)

ISQ look forward to you to introduce professionals with passion for quality, align with its objectives willing to contribute; as members of ISQ. Those whose membership has ended in March 2021, it is time to renew the same.



### Networking

(share & learn)



### Volunteer/lead

Activities/events



### Concessional fee

for conference, seminars  
training, contests



### Get Newsletters

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Enhance writing skills



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A flagship event of ISQ with Eminent invited speakers,  
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### Local chapters

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### Showcase your talent

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like Asian Network for Quality,  
Quality innovation award etc.