Department of Commerce
Ministry of Commerce & Industry
Government of India

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EEPCINDIA
ENGINEERING THE FUTURE

Knowledge Paper

Role of Standards for Globalizing Opportunities for Engineering MSMEs

20 January 2023

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CONTENTS

Standards key to the success of Indian MSMEs

The bitterness of poor quality remains long after the sweetness of low price is forgotten. – Benjamin Franklin (1706-1790)

Some of the highest quality exports in the world like software, automobiles, textiles and drugs come from India. However, for an average Indian consumer, the quality of the same product categories, and others such as medical devices, toys and electronic items available in the country lags behind the domestic markets of even developing countries like China, Malaysia, Thailand or Brazil.

While the big and established players have better wherewithal to pursue holistic growth, it is the micro, small and medium enterprises (MSME) segment that needs handholding. Thanks to the Make in India and Aatmanirbhar Bharat Abhiyan, India is witnessing large investments in manufacturing, resulting in MSMEs now having the capacity to become the backbone for existing and future high-growth businesses.

Today, over 60% of exports come from large manufacturers. MSMEs contribute the rest. With India rapidly upscaling its manufacturing and its growing share in the global value chain the significance of standards, testing and certifications has reached unprecedented levels.

In order to promote standardization, awareness about infrastructure and services related to testing, inspections and auditing are the key enablers. To facilitate the envisaged next generation of innovations and technologies under the Make in India and Aatmanirbhar Bharat mission for domestic manufacturing, MSMEs need active and robust state-of-the-art support. On account of the new and stringent standards that cater to the emerging needs of socio-economic and environmental priorities, many a time, MSMEs face mammoth challenges.

Today, Standardization and Quality Certifications have emerged as the underlying need for the success of domestic as well as export-oriented manufacturing and has also become the indispensable criterion that adds credibility, an authenticity that facilitates brand acceptability globally.


PROCESSING.....
PROGRAM RUNNING...
Control System
System
Performance
Daily Target
Robotic Arm Performance

Key Stakeholders of Standardization & Quality Testing Certifications in the Engineering Manufacturing

Ministerial / Key Government Players

- Ministry of Commerce & Industry
- Ministry of Heavy Industries
- Ministry of Micro Small & Medium Enterprises
- Department of Scientific and Industrial Research
- Ministry of Power
- Ministry of New & Renewable Energy
- Ministry of Steel
- Department of Defense Production
- Ministry of Electronics and Information Technology (MEITY)
- Ministry of Textiles
- Ministry of Skills Development and Entrepreneurship development

Standardization Bodies

- Bureau of Indian Standards
- Automotive Research Association of India (ARAI)
- Bureau of Energy Efficiency (BEE)
- Directorate of Standardization (DoS)
- Directorate General of Quality Assurance (DGQA)
- Inter Plant Standardization in Steel Industry(IPSS)
- Railways Design & Standards Organization (RDSO)
- Central Drugs Standard Control Organization (CDSCO)
- Central Pollution Control Board (CPCB)
- Oil Industry Safety Directorate (OISD)
- Petroleum and Explosives Safety Organization (PESO)

Accreditation Bodies

- Quality Council of India (QCI)
- National Accreditation Board for Certification Bodies (NABCB)
- National Accreditation Board for testing & calibration Laboratories (NABL)
- National Accreditation Board for Hospitals and healthcare providers (NABH)
- National Accreditation Board for Education & Training (NABET)
- National Board for Quality Promotion (NBQP)

Key Public public-funded R&D and Testing Laboratories in the engineering sector

National Test House (NTH) has been actively involved in various aspects of technology connected trade, import substitution, export promotion and standardization. It is an active partner with BIS in standardization and formulation of National Standards. It has range of test facilities at various locations across India: https://nth.gov.in/

The Ministry of Micro Small & Medium Enterprises has set up series of Tool Room & Technology Centres across major engineering clusters offering services related to testing calibration, etc

MSME Technology Centres - IDTR-Jamshedpur, CTR-Ludhiana, PPDC-Meerut, IDEMI-Mumbai, CITD-Hyderabad, FFDC-Kannau, CTTC-Kolkata, IGTR-Ahmadabad, PPDC-Agra, CIHT-Jalandhar, CDGI-Firozabad, CTTC Bhubaneswar

http://dcmsme.gov.in/MSME-TECHNOLOGY-CENTERS.pdf

Functioning as an autonomous institute under the Ministry of Heavy Industries, ARAI is a premier research, testing and standardization organization:

https://www.araiindia.com/services/department-and-laboratories

The Council of Scientific & Industrial Research is the leading public funded R&D establishment. It has range of R&D Labs which besides offering latest technology transfer, also provides Testing, Calibration and Certifications services to industries.

CSIR Laboratories include– CSIR CSIO, Chandigarh; CSIR- NPL, Delhi; CSIR- CMERI, Durgapur; CSIR-NML, CSIR- AMPRI, Bhopal; CSIR- CEERI,Pilani; CSIR-CECRI,Trichy; CSIR-CBRI,Chennai; CSIR-CFTRI,Mysuru; CSIR-NAL, Bangalore; CSIR-SERC, Chennai; CSIR-NIIST,Thiruvananthapuram; CSIR- NEERI, Delhi

https://www.csir.res.in/csir-labs

Key Public public-funded R&D and Testing Laboratories in the engineering sector (contd)

Ministry of New & Renewable Energy(MNRE)- The MNRE has created autonomous institute for R&D, Performance Testing and Certification in Solar, Wind and Bio Energy.
https://mnre.gov.in/quality-standard-policy/

The DRDO offers its Test Facilities to Industries which are engaged in the Defense manufacturing sector. https://www.drdo.gov.in/test-facilities

The central Power Research Institute provides research and testing facilities for Electrical Machineries and Equipments at par with that of international standards: https://cpri.res.in/

NABL Approved Testing Laboratories in India
https://nabl-india.org/
https://nabl-india.org/nabl/file_download.php?filename=202203080517-NABL-500-doc.pdf

Department of Defense
https://www.ddpmod.gov.in/test-facilities-available-private-defence-industries

Key Government Schemes for the adoption of Standardization and Certification for Engineering Manufacturing and Exports

S No	Ministerial / Key Government Players	Highlights
1	Ministry of Commerce and Industry	**MAI Scheme for Reimbursement of Testing Charges** • Offers 50% of the total costs incurred towards acquiring statutory compliances, testing and certifications • Maximum claim ceiling of Rs 2 Crore per year per manufacturer exporter • Applicable for technical testing of engineering goods *Contact: Executive Director, EEPC India, Email: ed@eepcindia.net*
2	Ministry of Micro, Small and Medium Enterprises	**MSME Sustainable (Zed) Certification - Subsidy on cost of ZED certification** • Joining Reward of Rs. 10,000/- (Bronze will become free if availed) 80-60-50% for Bronze, Silver & Gold ZED certified MSMEs • 10% for Women/SC/ST owned MSMEs OR MSMEs in NER/Himalayan/ LWE/Island territories/aspirational districts • 5% for MSMEs which are also a part of the SFURTI OR Micro & Small Enterprises - Cluster Development Programme (MSE-CDP) of the Ministry. • Up to 75% of the total cost of Testing/Certification, with the maximum ceiling of subsidy being Rs. 50,000/- • Up-to Rs.2 lakh for handholding/Consultancy in order to achieve the next Certification Level. • Up-to Rs. 3 lakhs for moving towards zero effect solutions/pollution control measures/cleaner technology • MSMEs can avail graded incentives as prescribed for the three ZED Certification Levels

S No	Ministerial / Key Government Players	Highlights
2	Ministry of Micro, Small and Medium Enterprises	All MSMEs registered with the UDYAM registration portal (of the MoMSME) will be eligible to participate in MSME Sustainable (ZED) Certification and avail related benefits/incentives. Eligible MSMEs shall apply through online portal Email: https://zed.msme.gov.in/ Phone no: 011-23708371 The guidelines of ZED scheme is available on https://zed.msme.gov.in/ **ISO 9000/ISO 14001 Certification Reimbursement Scheme** • Reimbursement of 75% of expenditure subject to a maximum of Rs.75,000 in each case. Contact www.dcmsme.gov.in **Technology & Quality Upgradation Support for MSMEs (TEQUP)** • For acquiring product certification licences from national/international bodies MSME manufacturing units will be provided subsidy to the extent of 75% of the actual expenditure, towards licensing of product to National/ International Standards. The maximum GOI assistance allowed per MSME is Rs.1.5 lakh (Average Rs. 0.75 lakh) for obtaining product licensing /Marking to National Standards and Rs. 2.0 lakh (Average Rs. 1.50 lakh) for obtaining product licensing /Marking to International standards Contact: http://www.dcmsme.gov.in/scheme **Enabling Manufacturing Sector to be Competitive through QMS&QTT** • Scheme envisages Micro and Small Enterprises to understand and adopt the latest Quality Management Standards (QMS) and Quality Technology Tools (QTTs) to become more competitive and produce better quality products at competitive prices. Amount or percentage of subsidy: • GoI contribution of Rs.2.5 lakh for professional study on threatened products. • GoI contribution of Rs.7.5 lakh for technical exposure visit • GoI contribution of Rs.2.5 lakh for procurement of samples • GoI contribution of Rs.5 lakh for product development • GoI contribution of Rs.1.5 lakh for popularisation of improved products • GoI contribution of Rs.2.5 lakh/unit for covering the costs of diagnostic study and for implementation of Quality Technology Tools/Quality Management Standards (25 to 50% cost will be paid by the participating units) • GoI contribution of Rs.2.5 lakh per SME for international visit (25% and 50% cost to be collected by the micro and small enterprise respectively) Contact https://my.msme.gov.in/MyMsmeMob/MsmeScheme/Pages/ssub_2.html

S No	Ministerial / Key Government Players	Highlights
3	Directorate General of Quality Assurance, Ministry of Defense	• Under a Scheme, the MoD has allocated Rs 400 Cr to set up testing facilities for MSMEs. The scheme would provide a grant-in-aid up to 75 per cent of the cost of equipment for the testing units, while the balance 25 per cent would be brought in by a consortium of private investors. Each facility will function as a special purpose vehicle (SPV). https://www.ddpmod.gov.in/sites/default/files/pdfupload/RFI%20DTIS.pd
	Defense Research & Development Organization	• DRDO Offers its Testing Facility for projects sanctioned under the DRDO-Technology Development Fund Scheme, for the development of the products. The projects under the scheme are eligible for exports Contact: https://tdf.drdo.gov.in/
4	EEPC India Technology Centre	**Discounted package of Testing & Certification to its Technology Centre members from leading International and NABL Accredited Laboratories in India** Contact: Executive Director, EEPC India, Email: ed@eepcindia.net

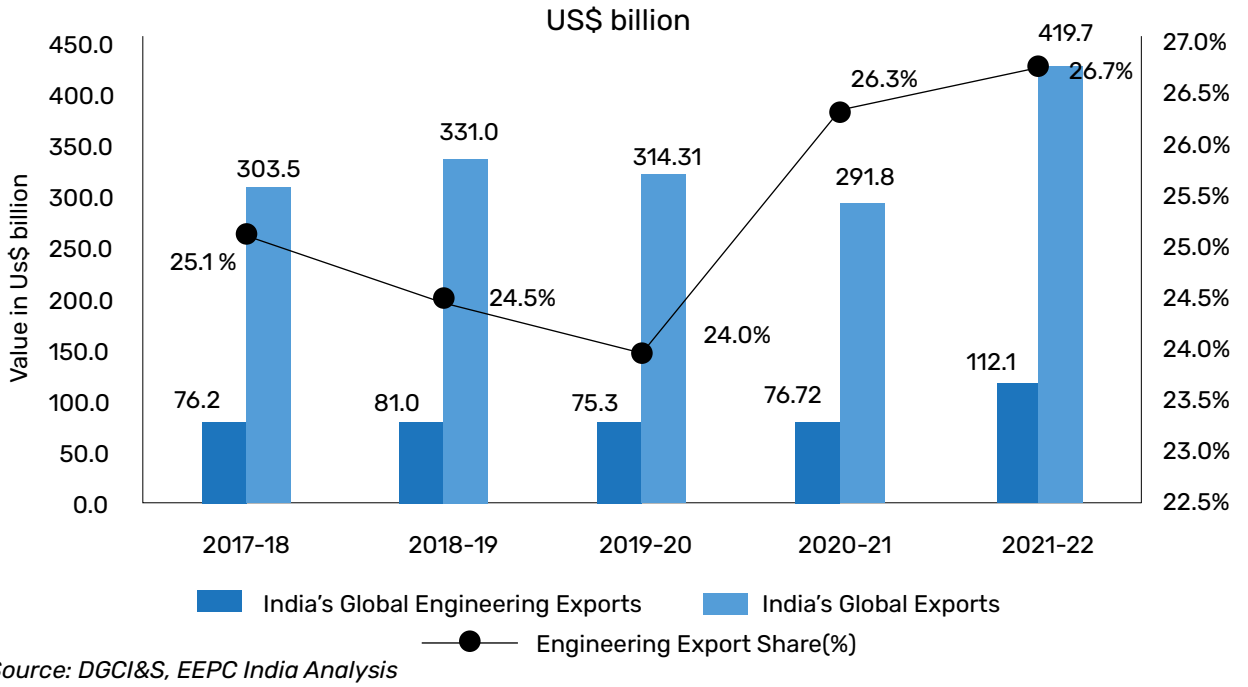
Overview of India's engineering sector

India's exports have followed an upward trajectory in the last decade. Engineering exports from India reached US$ 112.10 billion in FY 2021-22. India's share in global engineering trade is around 1.2% whereas China's share is around 12.3%. In the 34 product categories as defined by DGCIS classification, India does not hold a dominant position in any product category. Clearly, India has a long way to go to establish a leadership position in any engineering product category. In order to do so, standardization and certifications are likely to play a vital role.

Following a stellar performance in 2017-18 and 2018-19, India's engineering exports fell down in 2019-20 due to trade conflicts and protectionist measures adopted by many countries. Between 2018-19 and 2019-20, India's engineering exports fell down by 24 percent. This trend mirrored that of the merchandise exports which also fell down in 2019-20. As the COVID pandemic disrupted global trade since the end of FY 2019-20, India's exports experienced further decline and reached only USD 76.72 by end of 2020-21. In 2021-22, as global trade recovered, India's exports also followed a path of recovery and clocked a remarkable performance. While merchandise exports surpassed US$400 billion, engineering exports surpassed US$100 billion (refer to the figure below).

Although India exports engineering goods to around 200 countries, the exports are concentrated among the top 25 countries with 74% of its total exports share. The table on the opposite page highlights the top export destinations:

Figure 1: Trend in India's engineering exports

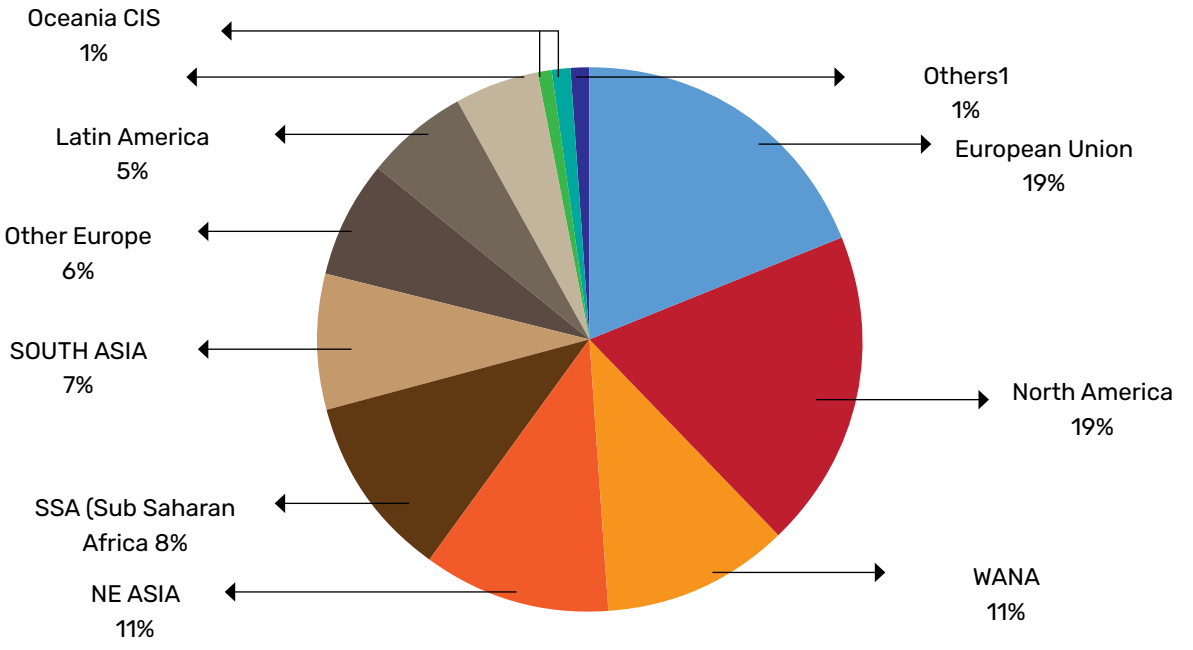


Source: DGCI&S, EEPC India Analysis

Table1: India's Top 25 engineering export destinations		
	US$ Million	
Country	**Engineering exports from India in 2022-23**	**Share in India's total engineering exports**
USA	17329.6	15.5%
UAE	5577.9	5.0%
China	5456.2	4.9%
Italy	4127.1	3.7%
Germany	3855.4	3.4%
Nepal	3445.7	3.1%
Turkey	3363.2	3.0%
South Korea	3079.5	2.7%
UK	3037.5	2.7%
Bangladesh	2929.3	2.6%
Mexico	2746.5	2.4%
Singapore	2635.9	2.4%
Vietnam	2580.7	2.3%
South Africa	2483.1	2.2%
Thailand	2478.6	2.2%
Belgium	2374.3	2.1%
Indonesia	2118	1.9%
Netherland	1988.3	1.8%
Saudi Arabia	1910.2	1.7%
France	1863	1.7%
Brazil	1775.6	1.6%
Japan	1741.8	1.6%
Sri Lanka	1634.6	1.5%
Spain	1596.3	1.4%
Malaysia	1544.4	1.4%
Total engineering exports to top 25 countries	83672.8	74.6%

Source: DGCI&S, EEPC India Analysis

Figure 2: Trade Block wise India's engineering exports



India's share in the global engineering exports has remained stagnant at around 1 percent for the last decade implying that India has not been able to increase its exports share even reduction of tariff barriers. Deliberations with the industry have implied that the non-tariff barriers such as standards and quality certifications are the major areas of interventions required to help find expand the market opportunities.

'The Relentless Pursuit of Perfection'

In 1989 Toyota entered the luxury car market with the Lexus line of vehicles. When advertising began for the new line, the slogan was simple: "the relentless pursuit of perfection." Over the years it has been modified, appearing as "The passionate pursuit of perfection," and most recently, "the pursuit of perfection."

With the first version of the slogan – the relentless pursuit of perfection. It may be worth noting that this approach isn't intended to imply that we are never satisfied with the achieved results; moreover, it reflects an approach of continually striving for continual improvement – the fundamental principle of ISO 9001 Quality Management Systems.

Emerging importance of Quality Certifications and Standardization

Standards play an important role in facilitating international trade and commerce. They provide authenticity, interoperability, reduce transaction costs and provide a signal of quality to customers. International standards act as a major catalyst for trade – allowing companies to meet customers' expectations and offer credibility and reliability for their

goods and services, across multiple markets without the need for adaptation.

The COVID-19 pandemic brought significant disruptions. The pandemic killed millions of people, disrupted economies, increased unemployment and above everything impacted several important global value chains, a major component of trade in today's world.

Since the pandemic, global trade has been hit by a number of events. The Russia-Ukraine conflict which has led to a major energy crisis in Europe; China is reeling under continuous COVID waves, a strict zero-COVID policy and a real estate crisis. In our South Asian neighbourhood, Pakistan and Sri Lanka are facing significant debt crises. The situation is further affected by rising energy raw material prices. As per the recent UNCTAD "Global Trade Update", geopolitical tensions, persisting inflation and debt crisis in certain countries are expected to have a negative impact on trade in 2023.

The crises have increasingly highlighted the need for greater global cooperation and collaboration. This collaboration can be built around international standards. As per the British Standards Institute, standards provide for interoperability and reduces transaction costs simultaneously also ensures quality for the end user. However, while there is a positive impact of adopting standards in the long run, until and unless properly adopted, standards can act as non-tariff barriers, hindering exports and increasing cost of trade. It is important to understand where India stands in terms of adoption of international standards in its engineering sector. This article looks at how standards have evolved in the current context and whether it has actually promoted India's engineering exports.

1.What are standards?

A standard is a document prepared by consensus between subject matter experts and approved by a recognised body. It specifies or provides a guidance on the design, use or performance of materials, products, processes, services, systems or persons.
Standards can be developed by
• National or regional or international organisations such as the American National Standards Institute (ANSI), The European Committee on Standardization (CEN) and the International Standards Organisation (ISO)
• Private companies or a consortium of businesses can also develop standards to cater to the need of a particular market place

2. Benefits of standards

As per the British Standards Institute, standards can be beneficial in following areas:
a. Quality
• Standards ensures quality products for its end-users
• It drives quality based competition and improves transparency among the businesses

b. Compatibility and Economies of Scale
• The standards create compatibility among products and services by creating a common technical language for the producers – it lowers trade barriers and promotes economies of scale in the long run
• It promotes participation in Global Value Chain (GVCs)

c. Cost of transaction
• Compatibility of standards promotes opportunities for firms to offshore or outsource part of their production process
• It increases efficiency within business and also promotes participation in GVCs

d. Innovation
• Promotes innovation among local businesses
While standards surely have the above benefits in long run, in short run, standards can contribute towards non-tariff barriers. The next section looks into that aspect.

3. Role of standards as Non-tariff barriers

Countries take recourse to many mechanisms

to restrict imports. Till the beginning of the 1970s tariffs were the principal mode of protectionism. But with successive rounds of GATT negotiations there was a large drop in the average tariff levels of manufactured goods in the developed country markets. When tariffs became insignificant the countries resorted to a form of administered protection known as Non Tariff Measures (NTM). These can be broadly categorized into:

Technical Measures
Sanitary and Phyto-sanitary measues (SPS)
Technical barriers to trade (TBT)
Non-technical measures
Pre-shipment inspection and other formalities
Price control measures
Export restrictions
Government procurement restrictions
Intellectual property
Rules of origin

When these non-tariff measures imposed by one country negatively impact the trade of another country, they become non-tariff barriers (NTB).

The World Trade Organization (WTO) through the Agreements on Sanitary and Phytosanitary (SPS) measures and on Technical Barriers to Trade (TBT) has played a significant role in this respect. These are now basic prerequisites for market access embedded in the global trading system. The term "Technical Barriers to Trade" (TBT) refers to mandatory technical regulations and voluntary standards that define specific characteristics that a product should have, such as its size, shape, design, labeling / marking / packaging, functionality or performance. The specific procedures used to check whether a product is in compliance with these requirements are also covered by the definition of TBT. These so called "conformity assessment procedures" can include, for example, product testing, inspection and certification activities.

The TBT and SPS Agreements of WTO encourage governments to establish national measures consistent with international standards, guidelines and recommendations. But it has been observed that these measures have reduced competition and created unjustified barriers to trade, particularly for the poor countries. It is being increasingly realized that these kinds of measures are posing major problem for small-and medium-sized enterprises (SMEs), which often do not have the resources to address these problems on their own.

As per a recent ISO paper, standards can create the following issues especially for MSMEs in developing countries in the short and medium terms:

- Standards especially in the importing market can contribute towards increase in cost of production for the exporters as the need to adopt the production process and also follow the compliance procedures relating to testing and certification.
- It impacts exporters especially MSMEs from developing countries as they have poor access to finance and may not be able to absorb the increased cost – hence they may lose competitiveness in the importing market.

While listing the above problems the paper also indicated that if a developing country harmonises its standards to international standards such as ISO, it is easier for them to adapt to newer standards and thereby lower the cost of export. Also, in the long run once a country harmonises itself with international and import market specific standards significantly, it actually reduces trade cost. Hence there is a need for harmonisation of local standards with the international once. It is in against background we now look into the impact of standards on Indian engineering sector

Recent examples of challenges faced by Indian engineering exporters in key markets due to various Non-Tariff Measures in the form of Standardization and Certifications

Region: EU

Italy

Italy accepts Stainless Steel (SS) utensils and cutleries made of only 202 and 304 Grade SS. They do not accept the same items manufactured using 200 Grade SS which is mainly exported from India. This is despite the fact that other European Countries like France, Germany UK, and even USA accept it. It needs to be mentioned here that SS 200 grade contains chromium 13% and is food safe. Also, some of the grades have passed three Bureau of Indian Standards (BIS) tests viz N1, N2 and N3.

Region: North East Asia

South Korea

South Korean standards in the automotive sector are equivalent to EU, i.e higher than BS 6.2 (which is currently used in India) – this impacts India's automotive exports to South Korea. In case of motors such as air compressors, for certification, Indian exporters need to register their products at Korea which makes the whole process cumbersome, time-consuming and expensive.

Region: Latin America

Brazil

INMETRO Certification: In Brazil, certification bodies must be accredited by INMETRO (National Institute of Metrology, Standardization and Industrial Quality). Electrical & electronic products that meet Brazilian requirements and that are certified by an INMETRO accredited organization must carry the mandatory INMETRO Mark along with the mark of the certification organization, such as UCIEE.

Region: ASEAN

Indonesia

National Indonesian Standards (SNIs): Standard Nasional Indonesia (SNI) certification process needs to be followed for components like, Glasses, Tyres and wheel-rims whereas ECE certification which is widely accepted internationally is not accepted in Indonesia. Compliance with SNIs is verified by means of burdensome third party conformity assessment procedures.

Malaysia

Restrictive import licensing system know an 'Approved Permits' which are only given to 'qualified' local personnel and companies known as 'bhumiputra'. The amendment to the Customs (Prohibition of Imports) (No. 4) Order 2009 specifies that the import of iron and steel products (shall be accompanied by a certificate of approval or a letter of exemption issued by or in behalf of Chief Executive Officer of the Construction Industry Development Board (CIDB) for the construction sector or SIRIM QAS for non-construction sector.

Thailand

Despite Thailand being a signatory of the UNECE 1958 Agreement, additional tests in Thai laboratories are required for vehicles and parts even if they have already been type-approved in accordance with UNECE Regulations and

test results showing compliance with UNECE Regulations are made available.

Singapore

The existing Mandatory Water Efficiency Labelling Scheme (MWELS) for clothes washing machines intended for household use is amended to mandate a minimum water efficiency level rating of 1-tick. Only clothes washing machines registered and labelled under MWELS with a water efficiency level rating of at least 1-tick and higher will be allowed for sale and supply in Singapore.

Growing challenges due to private standards set up by individual industries or multinationals belonging to a particular industry

Apart from the mandatory standards, in recent times there has been a growth of various private standards set up by individual industries or multinationals belonging to a particular industry. These standards are voluntary in nature. The objective is to protect the host country domestic industry on various grounds such as labour and environmental issues, etc. These standards can be broken down into three categories:

- Consortia Standards are those which are often developed by a sector specific consortia
- Sometimes non-profit organisations may also establish standards to address a global concern
- Companies may also develop specific standards that apply throughout their value chain

A Case study: Blue Trade Barriers and their impact on Indian foundry industry

Blue refers to the trade barriers and working environment of workers the right to life as an excuse to take trade protection measures, is a new trade barrier. SA8000 is one the major blue trade barrier faced by Indian foundry industry. This standard is recognized by the Bureau of Economic Rights Promotion Committee developed and promoted for industrial and commercial enterprises such as the protection of basic labor rights of the common social responsibility management system. At present, many overseas importers request the export enterprise to conform to SA8000. Some years ago,an organization by name of Finn Watch, Helsinki, Finland started a campaign against the foundry industry of India. They sent a group of journalists to India to visit some foundry units, meet workers and take pictures of the workplace. Based on the reports received from the journalists, the above company prepared negative report about Indian foundry industry. It seems from the negative reports that efforts were made to bar exports of Indian foundry industry to Finland and perhaps to the European Union on the pretext of poor working conditions.

The need for standards for the Indian engineering Industry

Indian industry at various scales of economic production needs to standardize its technology and product. This also has positive externalities. Some of these benefits are:

• Ensuring better safety and quality
• Consistency in quality (repeatability)
• Performance will be better (within a bandwidth)
• Pricing will also be within a bandwidth
• With the increasing recourse to FTAs, Intra industry trade is getting a boost. Further there is the global relocation of production stages that has resulted in `Production Networks' across countries. Production Networks (PN) are driven by firm-level decisions regarding relocating different parts of their value chain in different countries based on economies of scale, wage cost, transportation costs, and mobility of factors. Once PNs are established then intermediate inputs may criss-cross national boundaries multiple times. Often because of low standardisation at the Indian end of the value chain, the product becomes prone to more errors.

Some challenges facing the Indian engineering industry

For a late industrializer and whose industry, particularly, the MSME sector has developed through reverse engineering, import of second hand capital goods, etc the main challenge in gearing up to a technically "standardized" world, is primarily domestic or our own manufacturers. Some of these challenges are:

• The lack of substantive indigenous technology. Hence using technical standards as a non tariff barrier will also impact our own domestic industry which is already locked into a technology that is part of the global technology of different generations/vintages;
• After independence, a number of public sector technology laboratories were set up under CSIR. Over the years, it was realized that the technology developed under these labs were largely not adopted by Indian industry. Thus, there has not been any significant co-operation of technology sharing between the research institutions and domestic industry in India unlike in countries like China, Japan, South Korea and Taiwan
• Standardization also entails excess cost which may be difficult for the MSMEs to absorb. For instance, steel is the main component of Indian engineering industry. The secondary steel producers use induction furnace technology which produces differing standards of steel. Thus, a reference standard has to be developed and for this investments will have to be made in testing and measuring equipments like online spectrometers and as also in secondary refining so that the hardness of steel is uniform and does not vary across a product.
• The inadequacy of certification bodies in the country: Often the certifications by Indian agencies have been doubted by Indian companies themselves. Material measurements certified by Indian agencies sometimes are at variance with what foreign agencies measurements and this often leads to dispute and rejections. The alternative is to test in Government labs but Industry says that it

takes two weeks to get a chemical report in government labs and such a delay is not acceptable in today's day and age

Finally, lack of harmonisation of most Indian standards with international ones has also created difficulty for our exporters to meet the conformity assessments requirements demanded by various trade partners

Steps taken by the Government of India to address the issue of standards

The government of India has been aware of the standard related issues faced by our industry especially the MSMEs. In recent years it has come up with a number of initiatives to address these. Some of them are:

• QCOs or Quality Control Orders for ensuring quality input availability in the domestic market

• Standard mark or ISIS mark granted by Bureau of Indian Standards (BSI) for products conforming to Indian standards

• UdyogManthan which is a first-of-its-kind brainstorming exercise to enhance productivity and quality of Indian products

• Finally the Government also initiated the India National Platform on Private Sustainability Standardsunder the Secretarial oversight of Quality Council of India (QCI) to facilitate dialogue between core public and private stakeholders on how to maximize the sustainable development benefits and market access opportunities of private sustainability standards (PSS), whilst addressing potential challenges and cost of PSS implementation, in particular for small-scale producers.

Recommendations and the way forward

As the global trade pattern is changing and production networks are evolving, standards are emerging as important factor for the expansion of trade. While it is important for the Government of India and our private industry to come together and share the burden of making standards an important aspect for Indian exports, it is also important that during India's ongoing negotiations, standards become an important topic. While quality of products is important, it also comes at a cost. Therefore our future negotiations should be able to help our exporters produce quality products at a cost competitive price. Some of the recommendations in this respect are:

• Equivalence should be an important factor of standards particularly when FTAs are being negotiated. Indian manufacturers can manufacture similar quality steel as per many international standards. Therefore India should sign Mutual Recognition Agreements (MRA) which allows for such equivalence

• To ensure seamless movement of products and services under preferential route, the quality schedule also needs to be included along with the tariff schedule during negotiation

• The R&D investment in many engineering segments like electrical machinery, base metals, construction, miscellaneous manufacturing is still rather low and innovative policies are required to encourage R&D investments in these sectors so that it is possible to have a national standard or

reference points for these industries which can be used as policy instrument for trade negotiations

• There is a need to enhance the quality of our certification bodies as well by monitoring their performances. There is an acute lack of credible agencies across the country

Finally, the small and medium enterprises are far away from the changes of regulatory requirements. Hence, there is an urgent need to increase the awareness of our MSMEs about developing markets and emerging standards and regulation. Also, it is important for the government, the standard setting bodies, industry and other stake holders to work together to create globally harmonized standards which can be accepted by our industry as well as our potential buyers.

Useful links or resources to understand Standardization and Quality Ecosystem

https://www.bis.gov.in/

http://indiastandardsportal.org/

https://parakh.ncog.gov.in/

https://www.iso.org/news/ref2784.html

https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100448.pdf

https://ansi.org/trade-development/standardization/overview

https://ustr.gov/sites/default/files/2022%20National%20Trade%20Estimate%20Report%20on%20Foreign%20Trade%20Barriers.pdf

Quality Council of India – Improving quality in all aspects of life

WITH the motto of 'Gunnwatta se Atmanirbhata', Quality Council of India (QCI) leads nationwide quality movement in India by involving all stakeholders for emphasis on adherence to quality standards in all spheres of activities, primarily for promoting and protecting interests of the nation and its citizens.

India's progress towards development would incorporate the two main pillars of competitiveness in an economy - Quality and Productivity. Quality will define Brand India in the coming time by not only saving cost, but also increasing productivity. India needs to build the pillars for attaining excellence in manufacturing and services. The key for India is to ingrain culture of quality in the nation for it to be a developed country by 2047 by working in tandem towards building a world-class quality system in India and make quality a national mission.

The Panch Pran (Five Resolves) outlined by hon'ble Prime Minister Shri Narendra Modi, as India celebrated 75 years of independence, targets to move forward with resolve of developed nation by 2047, erase all traces of

servitude, take pride in legacy, be committed in solidarity and think beyond our rights to commit ourselves to duties. India at the helm of G-20 presidency, would build on principles governing Prime Ministers' key initiatives focused on being accessible and of high quality.
Alignment of initiatives with international quality standards, through benchmarking, would further strengthen the national quality mission.

1. About QCI

QCI was established as the National Body for Accreditation on recommendation of Experts Missions of EU after consultations in Inter-Ministerial task force, Committee of Secretaries and Group of Ministers in 1996. The Council came into existence in 1997 through a cabinet decision. It was created as an autonomous non-profit organization through seed funding initially by the Government of India and the Indian Industry represented by the three premier industry associations, Associated Chambers of Commerce and Industry of India (ASSOCHAM), Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI).

The Department of Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry is the nodal department for all matters connected with Quality and QCI. The Chairman of QCI is appointed by the Prime Minister.

Project Analysis and Documentation Division (PADD) was created to cater to the request received from various stakeholders for design and development of Schemes for various products, processes and services, capacity building initiatives and operationalizing schemes.

PADD, QCI handles projects which aim towards the design, development, and implementation of conformity assessment frameworks for governmental, inter-governmental, regional, and global organizations.

2.Engineering sector in India

Hon'ble Prime Minister's vision for Atmanirbhar Bharat presented a unique opportunity for the Indian industry to rebound with resilience. India has been making gigantic strides to transform the economy by usage of technology and engineering services which has enhanced effectiveness, efficiency and scale of implementation of government programmes and schemes.

Technology in the government processes including IT and innovation, has become a significant enabler across areas such as cybersecurity, drones and medical devices which helps in increasing productivity and aid in real-time monitoring of outcomes.

The engineering sector is the largest of the industrial sectors in India, accounting for 27% of the total factories in the industrial sector and representing 63% of the overall foreign collaborations. Demand for engineering sector services is also being driven by innovation in industries like medical devices, healthcare and unmanned aircraft systems and further innovation in various engineering sub-sectors.

3. Sectoral initiatives by PADD

Quality standards are designed to ensure that organisations meet the minimum requirements to become an integral part of different industries including engineering sector. Recent events in the world have highlighted the importance of building a resilient and adaptative organization.

PADD has developed purpose-driven strategies and has been at the forefront in enabling several impactful initiatives in the form of design and development of conformity assessment frameworks cutting across various sectors such as agriculture, healthcare, technology, industry, social impact, incorporating the element of sustainability. PADD has been working towards creating an accreditation and certification framework based on international practices and national guidelines through a multi-stakeholder consultative process. PADD ais also involved in SDG Mapping of quality standards and benchmarking with international best practices.

Overview of frameworks associated with engineering sector are:

3.1.Cybersecurity:

a. Agreement was signed between QCI and National Critical Information Infrastructure Protection Centre (NCIIPC) for development of conformity assessment framework for strengthening cyber security in Critical Information Infrastructure (CII). NCIIPC is an organization which is a National Nodal Agency designated in respect of protection of CII.

b. CII, by definition, is the backbone infrastructure supporting our National Security and Growth. This infrastructure is spread across multiple (Energy, Power, Finance etc.) sectors and domains (Government, PSU, Indian Private entities, etc.) and protection of these CIIs is of paramount concern to governments worldwide.

c. In order to create a trustworthy cyberspace, it has become imperative to create a cyber security assurance framework consisting of various components of accreditation, inspection and certification.

d. Further, it is required to have in place a pool of certified resources (individual professionals and organisations) imparting training and consultancy services to Critical Sector Entities (CSEs) having CII for successful implementations of criteria and procedures.

e. QCI has been entrusted with the responsibility of creating a framework incorporating the following:

i. Development of Scheme for Inspection and Certification of CII and Accreditation of IBs and CBs

ii. Development of Certification System for Cyber Security Competence of IT and ICS Professionals.

iii. Development of Accreditation Schemes for Cyber Security Consultancy Organisation and Training Bodies

3.2. Healthcare:

a. To fill the regulatory vacuum in quality certification space for medical devices in the country, the Association of Indian Medical Device Industry (AIMED), jointly with QCI, rolled out the quality certification scheme for Medical Devices for level I and level II viz., ICMED 9000 and ICMED 13485 on March 15th, 2016, World Consumer Day. While on one hand, ICMED 9000 Certification scheme lays out the parameters of ISO 9001, on the other hand ICMED 13485 aligns itself with the ISO 13485, along with Indian MDR 2017 requirements.

b. 138th Parliament of India Rajya Sabha report on 'Medical Devices: Regulation & Control' pertaining to Department of Health & Family Welfare, mentioned the following points: 'Committee appreciates QCI for filling up the vacuum in quality certification space by extending the option of Indian Certification of Medical Devices (ICMED) 13485. The Committee believes that QCI can play a pivotal role in establishing norms of quality and ensuring that Indian manufactured products have competitive product advantage, vis-à-vis, the international standards in terms of quality.'

c. The scheme also caters to the vision of Make in India. With more quality consciousness, it could help forge an Indian standard and provide huge impetus to Atmanirbhar Bharat initiative. The ICMED Plus Scheme is an upgrade of the earlier scheme since it also takes care of product quality and product certification in India.

d. ICMED Plus Scheme, a product certification scheme that aims towards establishing quality assurance of medical devices product manufactured in India, was launched on June 18, 2021. It provides the much-needed institutional mechanism to assure quality of medical devices and fill the interim regulatory gap.

e. ICMED Plus will pave ways in establishing quality assurance of domestic medical devices adhering to the global benchmarks, eventually granting the manufacturers a foreign market access and give comfort to domestic buyers that they need not seek USFDA / CE Certification. Presently, the scheme is operational through approved certification bodies for the following levels:

i. Level I: ICMED 9000 (based on ISO 9001:2015

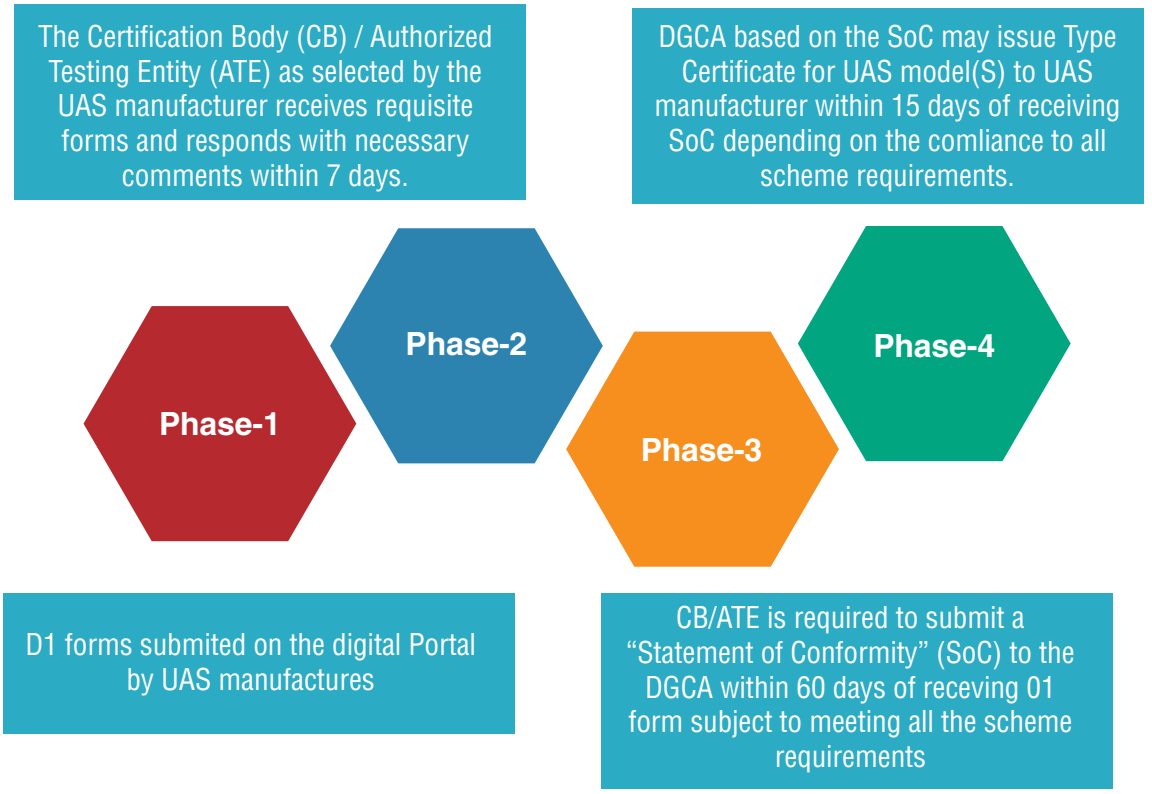
+ Additional requirements)
ii. Level II: ICMED 13485 (based on ISO 13485:2016 + (MDR 2017 + Additional Requirements)
iii. Level III: ICMED 13485 Plus (based on ICMED 13485 + product specifications as per ISO/IEC/ BIS/NHSRC etc.)

3.3. Drones:

a. Drone technology is emerging as one of the promising sectors poised for an exponential boom worldwide. It has emerged as a force multiplier in global economy over the last two decades. Usage of drones has skyrocketed, and the global drone market is projected to become a US$ 54 Billion market by 2025.
b. Atmanirbhar Bharat, the clarion call given by the Honorable Prime Minister Shri Narendra Modi, envisages India to become a Drone Hub by 2030 by working towards achieving self-sufficiency in Drone manufacturing.
c. PADD envisaged design and development of Certification Scheme for Unmanned Aircraft Systems (CSUAS), duly approved by the Directorate General of Civil Aviation (DGCA), Ministry of Civil Aviation (regulator of UAS), to enhance competitiveness of Indian industry by underlining the need for establishing an impartial, independent third-party conformity assessment built on parameters like quality, reliability, safety of UAS. Drone Rules 2021 cites QCI as the body for specifying standards and the recommending authority assisting DGCA to issue type certificates.
d. Certification process involves issuance of a written assurance (statement of conformity) by a certification body that the product meets

Issuance of Type Certifications:

A Glance



specific requirements as per the Scheme. This process culminates with issuance of a type certificate by DGCA (as given under Drone Rules 2021) based on the statement of conformity issued by QCI approved Authorized Testing Entities (ATEs).

e. With multiple efforts undertaken for sensitization and capacity building of manufacturers, in association with institutions such as NITI Aayog, World Economic Forum, FICCI, PHDCCI, Drone Federation of India, several Ministries, significant reduction in rejection of D1 forms has been witnessed over a period of time. Focused on industry-driven deliverables, QCI also engages directly with national and international organizations working proactively on drones in varied sectors.

f. India's first Type Certificate, under Drone Rules, 2021, was awarded by the Union Civil Aviation Minister, Sh. Jyotiraditya Scindia.

g. India's drone journey is meant to have a trickle-down effect across multiple sectors thereby strengthening the Indian industries and revolutionizing the Indian drone ecosystem. Synergies with allied sectors is opportune for India to realize domestic manufacturing of drones thereby giving fillip to the drone industry.

4. Way Forward

The 'Make in India' initiative and the government's focus on ease of doing business is likely to present several opportunities in the engineering sector in the upcoming years.

As the journey of reforms continues, the proposed focus areas to enhance quality in

engineering sectors are:

4.1. Cybersecurity Framework

Protection of CII, through development of Conformity Assessment Framework, is based on layered vigilance, readiness and resilience. These fall under the guiding elements of risk management and should be dynamic enough to counter such attacks by Identifying, Protecting, Detecting, Responding and Recovering. Future strategies may include:

a. To prevent and detect such attacks on CII, a holistic approach is required to implement robust framework with specific strategies, tactics and proactive capacity building measures.

b. Capacity Building workshops to raise awareness on the framework and build capacity of professionals associated with the domain.

4.2. Medical Devices

Multifaceted nature of medical devices industry results in increased complexity and the need of updation of requirements, in line with international best practices, on regular basis. This requires adoption of a robust certification scheme, in form of ICMED, aimed at end-to-end quality assurance. Proposed future interventions in this area are:

a. ICMED is based on Indian MDR and in addition to Indian regulatory requirements, ICMED also covers ISO/IEC/BIS standards.

b. Emerging sector demands to be met by responding to current regulatory framework & importing country requirements, subsequently upgrading the scheme.

c. Capacity building programs on ICMED for medical devices industry professionals.

d. Plan to liaison with industries and associations on certification and preparation of model certification template. Additionally, engagement with testing laboratories to assist in developing specific tests.

4.3. Drones

With the internet and GPS technologies taking over, the introduction of drones in the Indian skies has reinvigorated the Indian marketplace. CSUAS ensures safety and reliability of drones by issuance of Type Certificate after which it is legal to fly a drone in Indian airspace in green zone by applying for Unique Identification Number (UIN) for their drone from Digital Sky Platform (DSP). For operating drones in the yellow and red zone, prior permission is needed from various central and state agencies. Future areas in this regard are:

a. The aspirational areas to take forward the drone story in terms of expanding its utility and coverage while ensuring the safety requirements are met adequately that necessitates widening the technical scope of the regulatory ecosystem. Among various such initiatives is to leverage functionality such as BVLoS i.e., Beyond Visual Line of Sight operations, as one of the key aspects being explored in the scope of the Scheme.

b. Strategic collaborations with national and international organisations to help in furthering the vision of making India a drone hub by 2030.

c. Development of Standard Operating Procedures for UAS to ensure safe operations.

Further, Sustainable Development Goals (SDG) Mapping of standards and benchmarking with international best practices may be explored by the engineering sector. Mapping of quality standards with SDGs of the United Nations (UN) would ensure alignment with sustainability impact themes while also ensuring sustainable value chains across the industry. This would not only allow organisations to enter international markets but would also contribute to economic growth by promoting reach of SDG-aligned quality standard.

Industries associated with engineering sector needs to ensure that their products and services meet international quality standards and help build a 'Brand India' as the country aims to become a developed nation by 2047. As also emphasized by Union Minister of Commerce and Industry, Consumer Affairs, Food and Public Distribution and Textiles, Sh. Piyush Goyal, idea of quality can truly transform our country faster than anything else.

Relevance of Accreditation for the engineering sector

India has emerged as the fastest-growing major economy in the world and is expected to be one of the top three economic powers in the world over the next 10-15 years. The engineering sector is the largest of the industrial sectors in India. It accounts for 27% of the total factories in the industrial sector and represents 63% of the overall foreign collaborations. Demand for engineering sector services is being driven by capacity expansion in industries like infrastructure, electricity, mining, oil and gas, refinery, steel, automobiles, and consumer durables. India has a competitive advantage in terms of manufacturing costs, market knowledge, technology, and innovation in various engineering sub-sectors. India's engineering sector has witnessed a remarkable growth over the last few years, driven by increased investment in infrastructure and industrial production. The engineering sector, being closely associated with the manufacturing and infrastructure sectors, is of huge strategic importance to India's economy. The Indian engineering sector forms a crucial backbone of the Indian economy accounting for 3% of total GDP, and contributes almost 25% to India's total exports and remains the largest foreign exchange earner.

Quality and consistent performance have always been a benchmark for business enterprises in the manufacturing and engineering sectors. As sourcing of components, parts by the industry and supply of products happens across the globe and given the complexity of today's supply chains, demonstrating compliance to international standards and other requirements needs a robust conformity assessment mechanism for the industry as well as global value chains.

Standards, technical regulations, conformity assessment and accreditation play a key role in demonstrating compliance to the requirements and provides assurance to the stakeholders and consumers that products and services meet desired specifications.

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Accreditation, underpinned by internationally agreed standards, adds value to global value chains as businesses seeks to maximize value and satisfy contractual terms, while maintaining a level of confidence that products meet standards, technical regulations and technical specifications as applicable, and are

safe to use. As per OECD, 80% of trade involves elements of testing, calibration, inspection and certification activities, collectively known as conformity assessment. Accreditation provides an independent evaluation of these conformity assessment bodies against internationally recognized standards such as ISO/IEC 17020 for inspection, ISO/IEC 17021-1 for management systems certification, ISO/IEC 17025 for testing & calibration, ISO/IEC 17065 for product/ process certification, etc. to ensure their impartiality, competence and consistency. Accreditation, therefore, plays an important role in reducing the costs of trade and doing business, enhancing technology transfer, and increasing investment. It also enables businesses, irrespective of their size and scale of operations, to integrate into global supply chains, as they can demonstrate their product quality and compliance to requirements.

India has a robust Quality Infrastructure in place, comprising of the National Standards Body (BIS), the Technical Regulators in key industry sectors (such as FSSAI, CDSCO, BEE etc.), the National Accreditation Body (QCI along with its constituent Boards NABCB and NABL), the National Metrology Institute (NPL) and a host of conformity assessment bodies providing its services to the across industry

sectors. The Quality Council of India (QCI), an autonomous body under the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, Govt. of India was established by the Government as the National Accreditation Body and has been mandated to lead the quality movement across industry sectors by undertaking a National Quality Campaigns.

The National Accreditation Board for Certification Bodies (NABCB), one of the constituent Board of the Quality Council of India, provides accreditation to Inspection, Certification and Validity & Verification Bodies in accordance with the international standards (ISO/IEC). These include providing accreditation to bodies for certification of Management Systems (such as for ISO 9001, ISO 14001 etc. certifications), Product/Process, and Persons; Inspections of products, processes, facilities, and installations across industry sectors. NABCB is a full member and a signatory to the Multilateral Recognition Arrangements (MLAs / MRAs) of the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC). This not only ensures quality of goods and services across industry sectors being placed in the domestic market, but also facilitates international equivalence and acceptance of accredited conformity assessment reports/certificates in other economies. For more information on NABCB accreditation, please visit https://nabcb.qci.org.in//

In recent years, globally there has been a growing trend towards greater recognition of accreditation and the acceptance of the international arrangements (MLAs / MRAs) by Governments, Technical Regulators and the Industry. In India too, various government bodies, especially in the process public procurement, prescribe accreditation and/or accredited conformity assessment as a prerequisite. Various technical regulators in the country across industry sectors are increasingly relying on NABCB and NABL accredited bodies for verifying compliance to their regulations. The Indian industry, including the engineering sector, has also been relying on accreditation and accredited third-party conformity assessment bodies to demonstrate quality of their products and compliance to the standards and technical regulations.

The Indian industry while relying on accreditation & accredited conformity assessment, also needs to verify the credibility of the accredited conformity assessment bodies, so that it only seeks authentic conformity assessment services. Both NABCB and NABL provides information on their websites the details of their accredited conformity assessment bodies along with the scope of accreditation granted. Internationally, IAF CertSearch (www.iafcertsearch.org) is a tool that supports industry and procurement officials for verification of accredited management systems certifications. This online portal, currently contains over 400,000 management system certificates from accredited suppliers, allows purchasers to check if their potential suppliers hold such valid and authentic certificates. It also helps to distinguish between certificates issued by accredited conformity assessment bodies (CABs) from the certificates issued by non-accredited CABs, and to check the authenticity of a certificate.

About UL Standards & Engagement

THE UL enterprise is three organizations united by one mission: "Working for a safer world". Together, the two nonprofit organizations, UL Research Institutes and UL Standards & Engagement, and the commercial business, UL Solutions, form an enterprise with the diverse expertise needed to confront current and emerging challenges head-on. Since 1894, we have dedicated ourselves to advancing the public good by providing innovative research, tools, services and solutions.

Each organization in the enterprise has a distinct focus. UL Research Institutes advances safety science by sensing risk and conducting rigorous independent research that accelerates discoveries. UL Standards & Engagement mobilizes that powerful science into action through advocacy and standards. UL Solutions brings safety science to life, helping businesses solve pressing challenges and innovate with confidence.

UL Standards & Engagement translates data and research into action and impact. As a consensus-building body, we bring together leading minds to create standards and policy proposals that improve safety, security, and sustainability around the world. UL Standards & Engagement's standards development process adheres to the six principles: 1) Transparency, 2) Openness, 3) Consensus and impartiality, 4) Effectiveness and relevance, 5) Coherence and 6) Development dimension.

We are proud to be an accredited standards developer in Canada and the U.S. and authorized to develop national standards for Mexico.

Initiatives of UL Standards and Engagement in India

UL Standards & Engagement works very closely with National Standardization Body (NSB) – Bureau of Indian Standards (BIS), regulators, policy makers, industry associations and academia as a facilitator in developing science-based standards through adoption, adaptation with national differences, or the development of new standards to address safety, security and sustainability challenges in India.

Having worked together to identify current standardization needs in India, UL Standards & Engagement has initiated the following:

1. Standards capacity building
• Workshops and webinars on the standards development process
• Workshops on the importance of standard as trade facilitator
• How to participate in standardization activities as a technical member

2. Topic specific standards awareness programs through masterclass series, workshops, roundtable discussions and conferences. Topics of the workshops include the following:
• Standards for energy storage systems
• Standards for safe deployment of electric vehicles in India
• Standards for circular economy
• Standards for cybersecurity
• Standards for risk analysis and mitigation
• Façade safety standards for a safe built environment

3. Participating in Indian standards development as an active member of various sectional committees of BIS.

4. Promoting standards through participation

in strategic initiatives in India such as Regional and National Standards Conclave, National Quality Summit etc.

5.Collaborative working through Memorandum of Understanding with NSB and

6. Other industry associations.

How UL Standards & Engagement can help Micro Small and Medium Enterprises (MSME) in exports:

UL Standards & Engagement takes two district approaches to facilitate exports by MSME:
Approach #1: Standards Awareness Building and Free View Access to UL Standards

UL Standards & Engagement conducts workshops and topic specific standards awareness programs available to all stakeholders in India to promote better understanding of the safety principles and standards requirements. Through this initiative, MSMEs can build products that meet global market requirements.

UL standards are also available to access free of charge to all stakeholders. To view UL standards, visit https://shopulstandards.com/Catalog.aspx

Approach #2: Encouraging Participation of MSMEs in the UL Standards Development Process:
As the UL standards development process conforms to the six principles of WTO for international standards development, UL Standards & Engagement encourages the participation of subject matter experts from all over the world. By participating, MSMEs can contribute to standards development and ensure that the standard addresses industry challenges and remains globally relevant. You can join our Technical Committees (TCs) by accessing https://csds.ul.com/Home/Default.aspx

Challenges and Emerging Trends in Standards

Technologies are evolving at faster pace than ever and with emerging technologies, there are associated safety, security and sustainability challenges. These challenges include:
1. Keeping the pace at which standards are developed aligned with technologies as they advance.
2. Reducing the reinvention or duplication of standardization work through adoption or adaption of international standards.
3. Encouraging the participation of all stakeholders in the global standards development.
4. Increasing the participation of young professionals in standardization activities.

The Automotive Research Association of India

THE Automotive Research Association of India (ARAI), established in 1966, is a leading automotive R&D organisation set up by the automotive industry with the Government of India. ARAI is affiliated with the Ministry of Heavy Industries and is recognized by the Department of Scientific and Industrial Research. An ISO 9001-certified organization, ARAI is accredited by National Accreditation Board for Testing & Calibration Laboratories (NABL). ARAI is also accredited with ISO 14001, ISO 27001 and ISO 45001:2018.

The state-of-the-art Laboratories of ARAI are well equipped with the most advanced facilities in the areas of Emission evaluation, Noise Vibration and Harshness, Structural Dynamics, Engine Development, Computer-aided engineering, Vehicle Evaluation, Active and Passive Safety, Material Evaluation, Automotive Electronics and Calibration etc. ARAI also has an Academy.

ARAI has its registered office at Kothrud, Pune. Its Forging Industry Division (ARA-FID) and Homologation and Technology Centre (ARAI-HTC) are situated in the industrial area of Chakan, Pune. ARAI has a regional office in Chennai, named Regional Centre South which coordinates with customers in the southern region. ARAI also has representatives in China and Korea. ARAI has strategic alliances with a few global associates.

An experienced and well-trained human resource of 720+ is ARAI's main strength. ARAI inter alia offers Testing & Validation, Certification & Homologation, Design & Development, Research & Development, Projects & Consulting, Standardisation & Harmonisation, Education & Training, Testing Solutions services. It also offers Automotive Technologies, Data Bases, Software tools, Testing Facilities as some of its products.

ARAI serves around 1,600 customers in a year which includes most vehicle manufacturers; major engine, component and system suppliers; and a large number of small industries.

The Research Programme of ARAI includes R&D projects in the areas of Simulator EV Chargers, Hybrid Vehicle development, HCCI Engine, HCNG Engine, New High Specification 3 Cylinder Engine, Bio-Diesel Engine, Dual Fuel Engine, Electronic Fuel Injection System, Integrated Safety System, Material Data Bank, ECU development for GDI, Electric and Hybrid Electric Vehicles, ADAS, Autonomous vehicles, Transmission, Vehicle Dynamics, 3D Road Profile, Advanced Front Lighting System (AFLS) solution, etc.

Some of the R&D projects of national interest supported by the Government of India include Smart Structures implementation in automobiles, the development of Lightweight Bus with Aluminium Superstructure, Offline & Real-time Simulators for EV / HEV, Power boosting of Small Diesel Engines with Supercharger, Duty Cycle of Public Transport Vehicles, Advanced Low-Temperature Combustion System, Lightweight Forging Processes, Road Profile Measurement, Ambient Air Quality Monitoring, Measurement of Nano Particle Emissions, Source Profiling of Vehicular emissions, material compatibility for Ethanol Blended Petrol and Anthropometrical Data Measurement of Indian Driving Population.

To keep itself at the forefront of technologies, ARAI continuously upgrades its facilities through government and internal funding. Major expansion and upgradation were carried out under National Automotive Testing, R&D and Infrastructural Project (NATRiP) in the areas of Crash, Power Train and Fatigue at ARAI – Homologation and Technology Centre (ARAI – HTC). Also, Centres of Excellence in the areas of Power-Train, Fatigue and Materials have been established at ARAI – HTC. ARAI has also set up Environmental Research Laboratory which undertakes environmental research programmes like Air Quality monitoring for cities.

ARAI has established a comprehensive infrastructure and facilities for testing, certification and development of electric and hybrid vehicles under the FAME scheme of the Government of India at its Green Mobility- Centre of Excellence. ARAI offers comprehensive certification and homologation services for an entire range of automotive vehicles, systems and components. ARAI also assists vehicle manufacturers with export homologation activities. ARAI is recognised by the international certification authorities of Singapore, Netherlands and Australia for carrying out tests as per their standards and regulations.

ARAI assists the Government of India in formulation of automotive industry standards and harmonisation of regulations. ARAI is also assisting Government of India in establishing vehicle Inspection and Certification centres across the country.

ARAI works on futuristic & sustainable technologies, and regulation roadmap and provides policy inputs to the Government of India with the objective of protection of environment, sustainable transportation and road safety. With new and renewable energy sources being the prime focus as an alternative to conventional fuels, ARAI is laying a major thrust for developing green technologies.

Leveraging its domain knowledge & expertise, bundled with design and simulation capabilities, ARAI's thrust is on development of indigenous cost-effective technology solutions in areas like green mobility, clean energy, active safety, intelligent vehicle systems, light weighting etc.

ARAI has drawn its Innovation roadmap with identified advanced technology projects. Besides there are number of initiatives being taken toward supporting and strengthening the start-up/MSME ecosystem.

Initiatives like Technovuus innovation portal, Common Engineering Facility Centres for digital twin-based automotive technologies, start-up & student skilling and education programs etc.

ARAI also offers Doctoral, Post Graduate and Graduate Programmes in Automotive Engineering and related fields jointly with reputed National and International Institutes. ARAI conducts Proficiency Improvement Programmes for professionals in the areas of various automotive engineering and technology areas. ARAI organises conferences and seminar like the Symposium of International Automotive Technology, (popularly known as SIAT) for knowledge sharing and dissemination.

ARAI also lends its capabilities to non-automotive sectors such as defence, railways, medical etc., to help in their development work.

With its pursuit towards the advancement of automotive technology to create safer, cleaner, reliable and affordable mobility solutions, ARAI envisions becoming a global automotive R&D organisation by providing R&D services to the automotive industry world over and being the preferred choice of customers.

Intertek – A purpose-led safety, performance and sustainability services enterprise

INTERTEK is a leading Total Quality Assurance provider to industries worldwide. Our network of more than 1,000 laboratories and offices in more than 100 countries delivers innovative and bespoke "ATIC" (Assurance, Testing, Inspection and Certification) solutions for our customers' operations and supply chains. Our Total Quality Assurance expertise is delivered consistently with precision, pace, and passion, enabling our customers to power ahead safely.

Assurance - Enabling you to identify and mitigate the intrinsic risk in your operations, supply chains and quality management systems.

Testing - Evaluating how your products and services meet and exceed quality, safety, sustainability and performance standards.

Inspection - Validating the specifications, value and safety of your raw materials, products and assets.

Certification - Formally confirming that your products and services meet all trusted external and internal standards.

Products and how they are designed and brought to market are becoming more complex. End users demand not only safe products, but products that operate as intended, provide value against competing products, and are sustainable. ATIC is not only a list of defined services as above, but a whole new way to approach the complex world in which our customers operate and succeed.

For more than 130 years, Intertek's story has always been about innovation. In 1885 we began testing and certifying grain cargoes before they were put to sea, and in 1888 we pioneered the idea of independent testing laboratories. Then in 1896, the greatest inventor of them all became part of our story. When Thomas Edison released the wonders of electricity and the light bulb, he wanted to ensure that his products were checked, tested and safe. He established the Lamp Testing Bureau, later to become the Electrical Testing Laboratories (ETL). Over a century later, we maintain his ETL mark of safety, and continue to establish new standards in quality to protect consumers and our clients' reputations across the world.

Intertek offers assurance, testing, inspection and certification under electrical business verticals for various engineered products. The industry segments where we operate are Appliances, Industrial machinery, robotics and automation, Transmission & Distribution equipment, Renewable Energy, Measuring Instruments, Medical devices, Lighting products, Information Technology, Audio Video, Life Safety and Security, HVAC and Refrigeration products as well as battery and Electric vehicles. The services cover safety testing, performance testing, EMI/EMC both onsite and offsite, hazardous location related products evaluation and benchmarking testing. Training and preliminary design review support is provided to create more awareness at the design stage about compliance requirements. Intertek provides inspection for certain product categories to comply with the buyer's requirements including retailer requirements.

Intertek offers testing & certification to domestic and export markets by addressing the specific compliance requirements for each country. The compliance requirements in each country and region are unique and understanding these requirements before placing the products in those markets is critical and necessary from a legal aspect.

Intertek, having been in the business for over 130 years, has in depth knowledge and expertise to address the requirements and provide a broad portfolio of services to enable our customers to expand their business globally.

The standards continuously evolve in order to incorporate the latest trends, technology and practical scenarios. Keeping abreast of all the developments and incorporating the same into the testing and certification is one of Intertek’s core responsibilities. Intertek is involved in various technical committees across the globe participating in standards-writing committees for safety, performance and sustainability. The insights from such technical forums and the deliberation that happens is incorporated into our compliance evaluation to address the needs sufficiently. As standards continually evolved to cover the emerging risks presented by new technology, such as cyber security and remotely-operated products, Intertek is constantly assessing and optimizing its expertise to meet the increasing needs of manufacturers.

Intertek understands the importance of leading the industry by pushing the boundaries of what Total Quality Assurance means to its customers. This includes constantly improving the delivery of access to global markets. Access to global markets is not only intelligence on the regulatory environment, but also how a product can be designed such that R&D

costs are drastically reduced using intelligent design approached through a global lens. Equally important is the need to read the end user. Customers will always determine which products are successful and which are not. Helping our manufacturer and retailer clients achieve this vision provides additional insight into what consumers expect from a product.

Hundreds of Intertek experts participate in standardization work in IEC, UL, BSi, NFPA, and NEC technical committees and subcommittees in conjunction with different national authorities and manufacturers association representatives. Intertek shares its technical expertise and contributes to formulating requirements of industry, government, test & research laboratories, academia and other user groups at the global level.

Intertek offers expertise on a neutral and independent platform where we discuss and agree on state-of-the-art technical solutions with global relevance and reach, which often results in publication. In turn we provide our customers full support on understanding and being educated on the updates for each standard.

Our customers spread across many segments. MSME is one of the sectors actively involved in innovation and capturing the export opportunities. Intertek works with many such MSMEs to provide the support in terms of understanding the requirements, handholding to manage the compliance requirements and also address the cash flow through flexible payment options. On the testing front, Intertek can leverage the client's own facility and other third-party and Government labs in order to leverage the available capacity and keep testing costs to a minimum. These options as part of certification schemes support the MSMEs to get their compliance requirements addressed effectively and economically as much as possible. Intertek supports the local manufacturers by addressing all the necessary accreditations for the laboratory and certification scheme which enables the manufacturers to obtain the necessary testing and certification in a timely manner. Intertek continuously works with customers regarding updates and upgrades to the standards, and revisions for compliance and ensures the products comply with the latest versions of the standards.

Intertek owns over nine proprietary certification marks and operates more than 40 certification schemes overall. Globally it has more than 40,000 customers and provides expertise across many certification schemes.

At Intertek, we have a very clear purpose – to bring quality, safety, and sustainability to life, now and for future generations. It shapes everything we do and how we do it. At Intertek, we live by the same values that our wide range of sustainability services enables our clients to embrace. We are committed to leading by example with our own Sustainability Excellence framework. This is imperative to our own business activities and operations, and the continuing innovation of our ATIC solutions, to help our clients become Ever Better.

Intertek is a leading Total Quality Assurance provider to industries worldwide. Our network of more than 1,000 laboratories and offices and over 43,000 people in more than 100 countries, delivers innovative and bespoke Assurance, Testing, Inspection and Certification solutions for our customers' operations and supply chains. Intertek Total Quality Assurance expertise, delivered consistently with precision, pace and passion, enabling our customers to power ahead safely.

Indian Institute of Foreign Trade (IIFT)

About IIFT

• The Indian Institute of Foreign Trade (IIFT) was set up in 1963 by the Government of India as an autonomous organization to help professionalize the country's foreign trade management and increase exports by developing human resources; generating, analyzing and disseminating data; and conducting research. The Institute visualizes its future role as:

- A catalyst for new ideas, concepts and skills for the internationalization of the Indian economy.
- The primary provider of training and research-based consultancy in the areas of international business, both for the corporate sector, government and the student community.
- An institution with proven capability to continuously upgrade its knowledge base with a view to servicing the requirements of government, trade and industry through both sponsored and non-sponsored research and consultancy assignments.

• The Institute's portfolio of long-term programmes is diverse, catering to the requirements of aspiring International Business executives and mid-career professionals alike.

IIFT was set up with following objectives

• Impart **professional education** in modern management techniques relevant to international business.

• Enable the participants to appreciate the interrelationship between the diverse and complex tasks of **international business.**

• Develop capacities among graduates,business executives, policy makers for improved understanding of various **trade and economic issues**.

• Conduct high **quality research** that addresses domestic as well as world trade and business issues.

Vision & Mission Statement of IIFT

Vision Statement :

To be an Academic **Center of Excellence** in International Business research, training and education

Mission Statement :

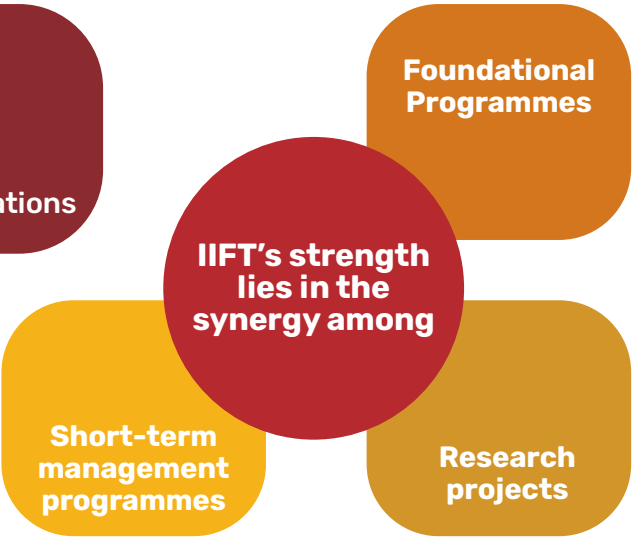
To **create and foster a learning environment** that enables **participants to be leaders in international business** with **sensitivity towards society**.

Our Pillars for Progress

Generic Approach

Our aim is to reach new heights of performance through –

Inner discipline and professionalism to remain updated and relevant, External validations, and Wide range of collaborations



Whom do we Serve?

IIFT – Major Contributions to MSMEs last year

1. Conducted several capacity development programmes on Export Procedures and Documentations to MSME Entrepreneurs under the guidance of Department of MSME, Govt of West Bengal, Ministry of MSME, Trade Promotion Organizations, Trade Facilitating Body, etc
2. Developed mobile application and software for the Micro, Small and Medium Entrepreneurs of West Bengal namely Export Facilitation for West Bengal and Product Market Matrix. It gives detailed information about the tariff and non tariff barriers faced by India and the software helps in the identification of potential products and markets
3. Conducted Value Chain Mapping of two blooming clusters of the state and are also engaged in the development of the clusters by creating SPVs and training the small entrepreneurs in International Business
4. The Institute has developed three Export Facilitation Cells in West Bengal, Assam and Nagaland to facilitate the export of Micro, Small and Medium Entrepreneurs
5. IIFT has established a Centre for North Eastern States (CeNEST) to promote the MSME Units of the North Eastern States in the International Market

Initiatives in Standards and Testing

- Enabling exports from the state requires removing the hindrances of a common exporter to make him feel exports as a carrier is easy. MSME often is sound in understanding its products but fails when it comes to compliances.
- Compliances are fundamentally provisions which best suit a destination market as enlisted by the importing country. Fulfilling such compliances are always easy provided the awareness about such compliances exists.

EXPORT FACILITATION FOR WEST BENGAL "BENGAL: GATEWAY FOR EXPORTS"

INITIATIVES TAKEN

- A web portal and an application is developed to help the exporters specifically for West Bengal. The application gives such compliance requirement of important export destination for West Bengal exporters in the products of interest to the state.
- The application not only provides the compliance requirements of important countries for the product but also guides the entrepreneurs on the agencies to approach for such compliances and the approximate cost for such certifications.

SGS India – enabling a better, safer and more interconnected world

Overview of India's Engineering Exports

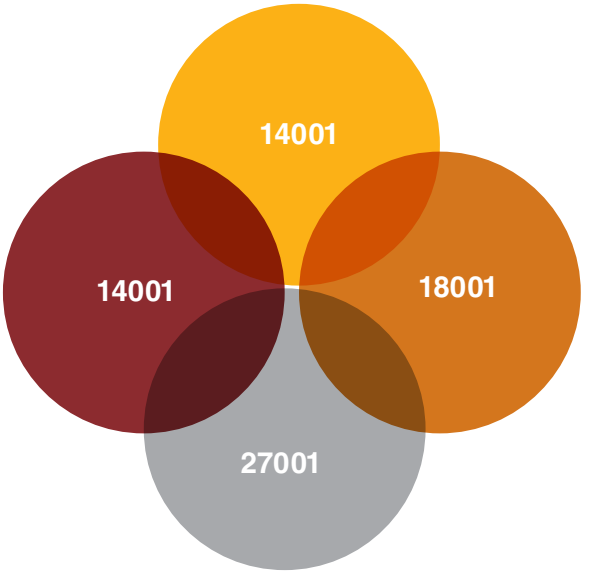
- Engineering is the largest industrial sector in India and accounts for 3.53% of the country's Gross Domestic Product (GDP).
- India's engineering sector has witnessed remarkable growth over the last few years, driven by increased investment in infrastructure and industrial production. In 2019, the government announced an investment of Rs. 100 lakh crore (US$ 1.5 trillion) in infrastructure development over the next five years.
- The engineering goods export of India had a share of 23.77% out of the total exports during April-September 2022 from the country. Exports of Engineering Goods jumped to US$ 54.45 billion during April-September 2022 compared to US$ 54.52 Billion during the same period in the previous year.

Why are certifications important for Engineering Exporters?

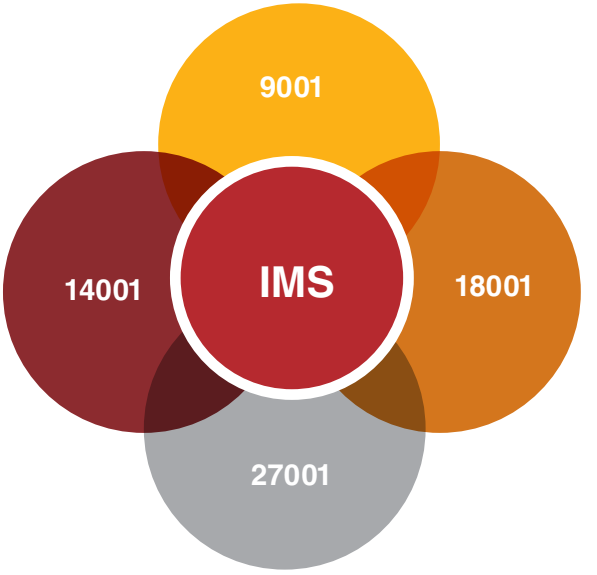
Why Certification?

- Getting ISO Certification for your export house could add value and raise your brand image globally. It will help you in finding new market opportunities easily and grow your market fast.
- Having an Internationally Accredited Certification for the export house will help you gain acceptance fast as a quality-first brand in the international markets. Certification provides Framework for Organizations to improve in the specific aspect
- Aim is to Define, Sustain and improve
- Data analysis, Result review are structured ways
- ISO 9001, ISO 14001 & ISO 45001 are among the most Popular Standards
- Implemented by more than a million Organizations in some 175 Countries
- ISO 9001 helps organizations to implement Quality Assurance Framework
- ISO 14001 helps organizations to implement an Environmental Management framework to assess the Impact on the Environment
- ISO 45001 helps organizations to implement Health and Safety Management, To improve H&S within the organization

Combined Audit Service (CAS)



Integrated Management System (IMS)



Integrated Management is Not Limited in Scope

An IMS is not limited to Quality, Health and Safety and the Environmental standards. Other areas where processes may need to be addressed such as Information Security, Food Safety etc., lend themselves to the same approach as there are many similarities with these standards.

How to incorporate social compliance in Organization's Overall Sustainability Journey?

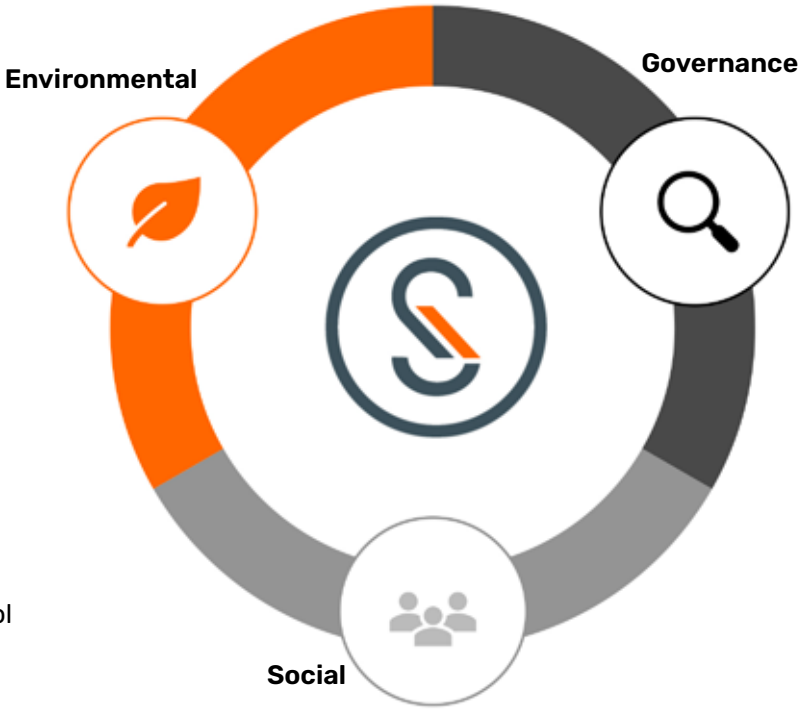
Sustainability is the Heart of all our Business Lines

Components of ESG

Environmental
- Water Use
- Resource Use & Biodiversity
- Waste generation & Recycling
- Energy Emissions

Social
- Employee Management
- Supply Chain Management
- Communities
- Customers

Governance
- Board Composition
- Board Independence
- Functioning & Experience
- Management track record & control
- Disclosure & Shareholder relations
- Compliance & controversy checks



ESG Evolution in India

2009	2011	2012	2015-16	2019	2021
MCA released voluntary guidelines on CSR	National Voluntary Guidelines on Social, Environment al and Economic Responsibilities of Business	SEBI mandated top 100 listed entities to file Business Responsibility Report (BRR)	SEBI Mandated top 500 listed entities to file BRR	SEBI Mandated 1000 listed entities to file BRR	Business Responsibility and Sustainability Reporting (BRSR)

Indian Regulatory Frameworks
- Companies Act 2013
- BRSR, SEBI 2021

What is Product Conformity Assessment?

- Product Conformity Assessment (PCA) is a verification program designed to ensure that specific products meet the requirements of the technical regulations and standards set by a regulatory authority in the importing country.
- Assessment is carried out at the country of origin.

Certification Solutions for Exporters

100,000+ Certifications
across major industries

Our Service Offerings:

- ISO Certifications
- Food Certifications
- Complementary food certifications
- Organic & Global GAP
- Information Security & GDPR assessments
- Automobile quality & functional safety
- Good Distribution & manufacturing certifications
- Medical Devices & PPE certifications
- Forestry, Aqua Stewardship certification, BAP

Certification Solutions-Industry Expertise

- Over 50 years of quality audit experience
- Working in all major industries
- Partnerships with various compliance organizations
- Technical Experts: Global and local product specific experts
- Conducted over 1 million audits
- Expert product managers who are highly involved with key industry associations

What is Product Conformity Assessment?

The PCA program consists of verifying product compliance with the requirements of applicable standards and technical regulations of the importing country.
Verification of Conformity is done following the review of reports from one or a combination of conformity assessment interventions e.g. laboratory testing, physical Inspection and/or factory audits.

PCA Objetives

Protection of consumer health and safety

Safeguard local producers and industry from unfair competition

Reduce the risk of becoming a dumping ground of substandard products from othercountries

Minimize the risk of rejection of the products at the destination country

Facilitate customs clearance process

Benefits for exporting countries

- Improves economic growth and development
- Facilitates trade and access export markets (product counts with an added value)
- Reduces the risk of rejection of the products by the importer and by the local market at the country of destination
- Provides good information of the quality of the products (certified products = quality guarantee)
- Generates trust in the client countries
- Consumer confidence in products and services
- Image of quality
- Helps the private sector to solve the quality , compliance and certification problems

Compliance Services We Offer: PCA

- Product Conformity Assessment (PCA) is a service aimed at ensuring imported products meet specific requirements set by the regulatory authority of the importing country
- SGS is designated by governments to verify conformity of imported goods to standards and regulations
- Current PCA programs in 15+ countries
- Depending on the nature of the product and the applicable certification scheme, the verification procedure may include one or a combination of the following intervention activities (inspection, testing, factory audits)
- Goods that were found conforming to the requirements are issued a 'Certificate of Conformity' to be used for Customs clearance at the ports & airports of destination
- SGS utilizes several IT platforms & tools, to offer our clients a digital service:
- -Global IT Platform called Tradeworks® / eTrade (Started in Nov'22)
- -Exporter Portal
- -QiiQ Digital Inspection application

Compliance Services We Offer: Digital Inspection

- Digital Inspection Service (thru SGS QiiQ®)
- Fully-developed application system which can be customized according to the inspection needs of government regulators
- QiiQ ® makes full use of the latest digital technology in making virtual visits, inspection, engagement with your clients, anytime, anywhere*
- QiiQ ® can easily be fitted into the current processes in various verification activities in various governmental activities/operations, such as:
- Market surveillance
- Quarantine checks
- Government infrastructure monitoring
- Border and customs controls
- Port and coastguard operations
- Ordered goods verification
- Routine inspections by regulatory bodies
- Etc.

Compliance Services We Offer: Digital Application for CoC

- Web based Digital application for Certificate of Conformity. (Exporter Portal)
- Accessible - To any exporter 24x7 for his shipment to PCA program.
- User Friendly – Operate like on line purchase.
- Easiness - Can be operated by person with basic knowledge of mobile & laptop / documents.
- Tracking status - Real time status of application and submission of documents before and after shipments.
- Secure – Protected by user ID and password.
- Automation - Less dependency can work independently for certain tasks.
- Support - On line support thru chat boat for client in case of any challenges, user guidelines available for easy understanding.
- New development Exporter can give approval on Draft CoC by just clicking one button.

Current SGS PCA Programs

15+ PCA Programs

- Algeria
- Burundi
- Cameroon
- Central African Republic* 03.2021
- Ivory Coast
- Egypt
- Ethiopia
- Gabon
- Kenya
- Kuwait
- Morocco
- Qatar
- Saudi Arabia
- South Sudan
- Tanzania
- Uganda
- Zanzibar


SGS

Why SGS?

- We are trusted for impartiality, inspection, testing, certification solutions
- We are recognized as the Global benchmark for Quality and Integrity
- We cover your industry
- We provide end-to-end supply chain services
- We think globally, we act locally
- We provide leading-edge technology

CENTRAL POWER RESEARCH INSTITUTE

Sectorial Initiatives for Promotion of Quality, Standards & Certifications

- Established in the year in 1960 – National Research Institute in the Power Sector
- Associated with initiatives of the Power sector from the inception.
- Started operation in Bangalore and Bhopal with R& D, Testing facilities established.
- Declared as Autonomous Society under Ministry of Power, Government of India in 1978.
- Assisted in development of quality products Indian Power sector.
- Established Six units across the country with Head Quarter in Bangalore.
- Developed expertise in High Power and High Voltage areas and other fields of Power sector.
- Associated with the Distribution system reforms of the country.
- Established state of art facilities in High Voltage, High Power, Power Cables, Power Capacitors, Power System studies, Seismic studies, Transmission Tower Studies and other areas of the Power System in the country.

Core areas

Research & Development at CPRI

Three Research Schemes

- National Perspective Plan (NPP) – To address issues for product / process developments with indigenous technologies
- Research Scheme on Power (RSoP) for Power Utilities, Manufacturers, Academic Institutions, to solve operational problems
- In house R&D Scheme (IHRD) – Exclusively for CPRI for augmentation, improvements / new techniques in testing, product / process Improvements

Promotion of Quality at CPRI

- Testing and Calibration Laboratories of CPRI are Accredited by National Accreditation Board for Testing and Calibration of Laboratories (NABL) as per IEC/ISO 17025:2017 for the disciplines of Electrical, Mechanical, Chemical for the units Bangalore, Hyderabad, Bhopal, Noida and Kolkata
- BIS Recognition for CPRI, Bangalore & CPRI, Bhopal
- ASTA Accreditation for CPRI, Bangalore & CPRI, Bhopal.

Standardisation at CPRI

- Higher clarity and requirements - Easier for the manufacturers to meet the quality standards.
- Key for Success- Laboratories follow International and National Standards for Testing and Certification in Electrical, Mechanical, Chemical and Photometry disciplines.
- Subject Experts of CPRI are representing as chair persons in many National standardization committees and representing the country at International standards formulation committees and contribute for the development quality standards

Training- To promote quality and to bring awareness among the manufacturers about standards, various training programmes and conferences are being organized in CPRI, such as:

- Residential Induction Training Programs for the Engineers
- Real Time Simulation of Power Systems on RTDS
- Cyber security issues for Advanced Metering Infrastructure
- Best Practices in Transformer Design, Testing and Diagnostic in respect of IS & IEC Standards
- Smart Energy Metering: Testing, Standards and Communication Technologies
- Internet of Things (IoT) Enabled Smart Grid
- Reactive Power Management
- Power Cable Technologies
- Grounding studies

Standardisation at CPRI

State-of-art Laboratories in Bangalore

- Cables and Diagnostic Division
- Insulation Division
- Capacitors Division
- Dielectric Materials Division
- Distribution Systems Division
- Earthquake Engineering & Vibration Research Centre
- Energy Efficiency and Renewable Energy Division
- Electrical Appliances Technology Division
- High Power Laboratory
- High Voltage Division

- Metering Utility Automation Division
- Materials Technology Division
- Mechanical Engineering Division
- Power System Division
- Short Circuit Laboratory
- Smart Grid Research Laboratory

Specialized expertise in various fields of the Power Sector

Units across India

- Central Power Research Institute, Bengaluru– Laboratories and Head Quarters
- Switchgear Testing & Development Station, Bhopal
- Ultra High Voltage Research Laboratory, Hyderabad
- Thermal Research Centre, Nagpur
- Regional Testing Laboratory, Noida
- Regional Testing Laboratory, Kolkata

Standardisation at CPRI

- Distribution and Power Transformers
- Current Transformers, Voltage Transformers
- Panels, Feeder Pillars
- Distribution Boards, APFC Panel, Busducts
- Cables and accessories
- Towers, Conductors
- Lightning Arresters, Insulators
- Energymeters, Smart Meters
- Capacitors
- Transformer Oil
- LEDs, Solar Streetlights, Inverters
- Air Conditioners, Refrigerators
- Material Characterization – CRGO, Insulating materials
- and many more

Quality Certifications And Credentials

ISO / IEC 17065: 2012-NABCB & ISO/IEC 17025:2017-NABL

BIS RECOGNITION-BANGALORE and BHOPAL

Member of STL - Only Laboratory in India

Intertek – ASTA, UK

INMETRO Brazil

Electricity Water Authority (EWA), Kingdom of Bahrain

Association with UL, TUV

ISO 9001:2015 – Research & Consultancy

STL www.stl-liaison.org

Corporate Member - DLMS UA (Device Language Message Specification User Association)

Corporate Member - UCA IUG (Utility Communication Architecture International User Group)

EWA هيئة الكهرباء والماء Electricity & Water Authority

UL

dlms device language message specification

UCA International Users Group

INMETRO

FACILITIES AT A GLANCE

2500MVA Short Circuit Generator

1500MVA Short Circuit Generator

50MVA Short Circuit Generator

3MV, 150kJ Impulse Voltage Generator

2400kV, 240kJ Impulse Generator

765 kV Porcelain Disc Single suspension insulator string under test

High Power Laboratory, Bangalore

- 2500MVA SC Generator for testing of Circuit Breakers/Transformers
- SC withstand test on Busducts, CTs, Isolators, CB, Panels, LA etc

Short Circuit Laboratory, Bangalore

- 50MVA SC Generator to test Low Voltage Switchgear and Controlgear

High Voltage Laboratory, Bengaluru

- Dielectric tests upto 400kV
- Artificial Pollution Tests on Insulators by Salt Fog solid layer method
- Type testing of Zinc oxide blocks from 3kV to 12kV

Cables and Diagnostics Laboratory, Bangalore

- Power cable test laboratories upto 400kV class
- Diagnostic and Field Consultancy services for Power Utilities and Industries

Power Capacitors Laboratory, Bangalore

- Low Voltage Capacitors and APFC panels upto 800kvar
- High Voltage Power Capacitors 3500kvar,16kV

Earth Quake Vibration and Research centre, Bengaluru

- Seismic Qualification of electrical equipment using Tri-axial Shaker System

Switchgear Testing & Development Station, Bhopal

- Direct Short circuit test station of 1500MVA capacity to test HV / MV Switchgears, Transformers and other equipment
- Online Testing Station drawing test power upto 100MVA

Ultra High Voltage Research Laboratory, Hyderabad

- Indoor double shielded lab with 1200kV, 2400kVA HV test system
- Dielectric tests upto 800kV
- Artificial Pollution Tests on Insulators strings by Salt Fog method

Sectorial Initiatives for Promotion of Quality, Standards & Certifications

EHV Cable Testing

Seismic Test

Energy Meter Testing

Facilities at A Glance

- Transmission Line Towers, Poles, Conductors
- Smart Meters, Conformance testing of Energy Meters
- Power System Simulation using Real Time Digital Simulator
- Unique computer controlled Impulse Current Generator for testing of Zinc Oxide blocks
- Substation Automation System lab for testing Intelligent Electronic Devices (IEDs)
- Heat Run Test, Ingress Protection
- Battery and domestic electrical appliances testing
- LED Lamps, Solar PV Lanterns, Solar PV Modules
- Grid Tied Solar PV Inverter facility upto 500kW, Solar Pumps
- Induction Motors upto 55kW
- Transformer Oil including Furan and DGA
- Materials evaluation, CRGO electrical steels

Consultancy Services

Expertise and facilities are applied for explicit studies, analysis, design etc

- Diagnostic & Condition Monitoring of HV substation and Power plant electrical equipment
- Site testing of Transformer oil
- Power System Studies, Real Time Simulation of Power System Controls, Protection Audit - Generating stations and substations
- RLA and R&M of Thermal & Hydro Power Plants, Failure analysis of industrial and plant components
- Energy Efficiency Services like Energy Audit, Fuel Audit of Thermal Power Stations, training services in Plant Optimization for Thermal Power Stations
- Power System Automation/Distribution Automation, Smart Grid
- Loss minimization in power distribution networks of utilities and Industries
- Third party inspection of Electrical equipment / Vendor Analysis

Capacity Building & Knowledge Dissemination

- Workshops
- Seminars
- Conferences
- Training Programmes

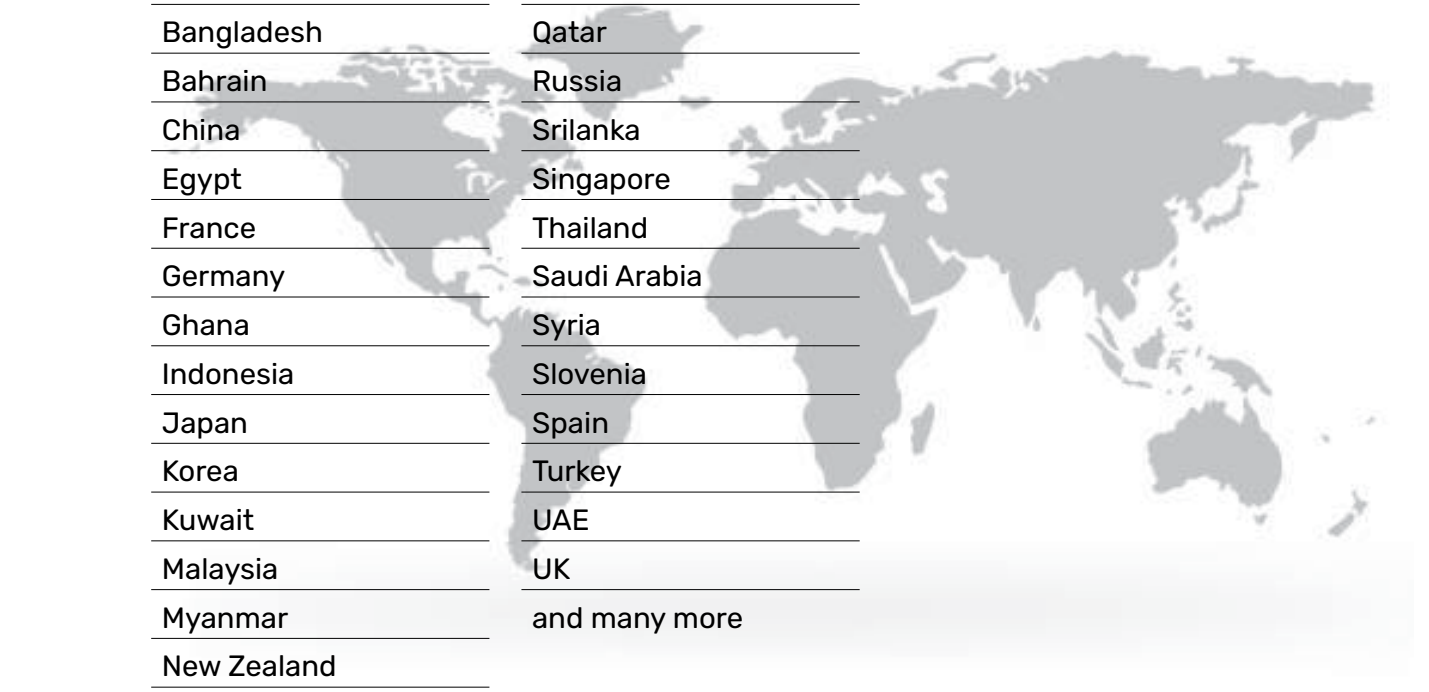
- Customized Training to State Utilities and Industry
- Areas - Power Generation, Transmission and Distribution
- Training modules designed to comprehensively address the specific needs of the Power Sector
- Large number of personnel from Electrical Utilities and Industries in India and Overseas

CPRI Customers

- Power equipment manufacturers
- Power Utilities
- Public Sector Power Utilities
- Process Industries
- Railways, Defence, Space, Aviation, Shipping, Automobile

Countries that utilised CPRI services

Australia	Oman
Bangladesh	Qatar
Bahrain	Russia
China	Srilanka
Egypt	Singapore
France	Thailand
Germany	Saudi Arabia
Ghana	Syria
Indonesia	Slovenia
Japan	Spain
Korea	Turkey
Kuwait	UAE
Malaysia	UK
Myanmar	and many more
New Zealand	



WTO – Only international organisation dealing with trade rules between countries

World Trade Organisation (WTO)

- Multilateral trade organisation – only international organisation dealing with trade rules between countries.
- It is also a forum for negotiating trade agreements;
- It settles disputes between its Members;
- It monitors the trade rules and their effect on international trade.

WTO Initiatives on Standards and Testing

- Two key agreements- Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) Agreements deal with rules regarding standard making for products and production process and procedure to verify compliance with such standards.
- Standards can be voluntary, private, industry based or prescribed by government (called Technical Regulations under TBT and SPS measures under SPS Agreement).
- Members encouraged to use international standards.
- Sets out a code of good practice for both governments and non-governmental or industry bodies to prepare, adopt and apply voluntary standards.
- Such rules/measures are also called Non-tariff Barriers.
- Integrated Trade Intelligence Portal (I-TIP): provides a single entry point for information compiled by the WTO on trade policy measures.
- I-TIP Goods provides comprehensive information on non-tariff measures (NTMs) applied by WTO members in merchandise trade. http://i-tip.wto.org/goods/default.aspx?language=en
- E-ping SPS and TBT Platform tracks sanitary and phytosanitary (SPS) and technical barriers to trade (TBT) measures. https://epingalert.org/en
- Can browse the measures notified by WTO Members, find information on trade concerns raised and discussed, can sign up for email-alerts, and reach out to Members' national and international counterparts.
- Specific Trade Concerns (STCs): Through country representative can raise concern over a specific non-tariff measure at the WTO Committees on SPS and TBT, respectively or directly with the concerned WTO Member.
- Standard and Trade Development Facility (STDF): provides funding to both develop and deliver innovative, cross-cutting projects. STDF projects help public and private sector stakeholders in developing countries improve food safety, animal and plant health to

facilitate safe trade. https://standardsfacility.org/
- Only for SPS issues.
- Example: Application by India for Strengthening the spice value chain and improving market access STDF/PG/517.
- Decarbonization Standards for Trade: Promoting coherence and transparency in the steel sector: WTO released information note series and 2022 World Trade Report.

How WTO services can help MSMEs in exports

- E-Ping can let MSMEs know about the upcoming measures in country of their interest. Can either prepare to comply with the measure or make representation via Indian government to raise trade concern;
- I-TIP Goods provides information on measures in place commodity and country wise.
- Specific Trade Concerns can be used to address particular trade measures by a WTO Member.

Procedure to avail WTO services by Engineering MSMEs

- Publicly available; can sign-up for email alerts on e-ping or make representation through Country Representative.
- Enquiry Points for India- BIS, TEC, Ministry of Health and Family Welfare – Department of Health http://indiastandardsportal.org/Detail.aspx?MenuId=20
- Information also available on https://www.indiantradeportal.in/alerts_implemented_spstbt.jsp?lang=0

Challenges and Emerging Trends in Standards, Testing and Certifications

- Awareness and Information Dissemination: MSMEs need to be informed as to what should be the standards to follow, how to implement them and what should be the procedures to comply with them;
- Financial Capacity: MSMEs need support in implementing international standards or Country specific standards
- Reach: MSMEs may not be able to reach the testing facilities, standard certification bodies and the intended market.
- Rising standards in labour, gender and environment which need to be complied with.

EEPCINDIA
ENGINEERING THE FUTURE

Vanijya Bhavan (1st Floor)
International Trade Facilitation Centre
1/1 Wood Street, Kolkata 700 016
Tel: 91-33-22890651/52/53
Fax: 91-33-22890654
e-mail: eepcho@eepcindia.net
www.eepcindia.org