

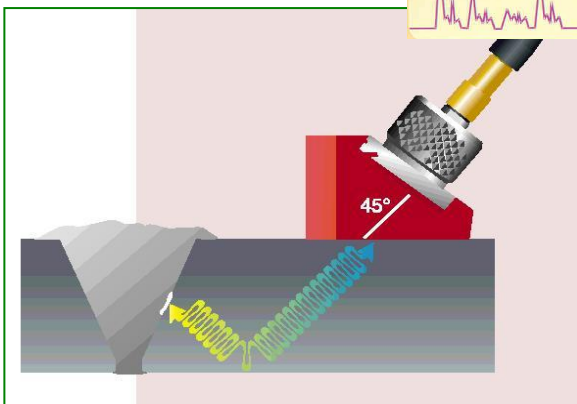
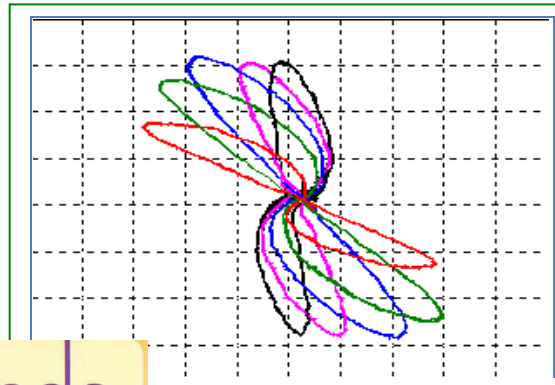
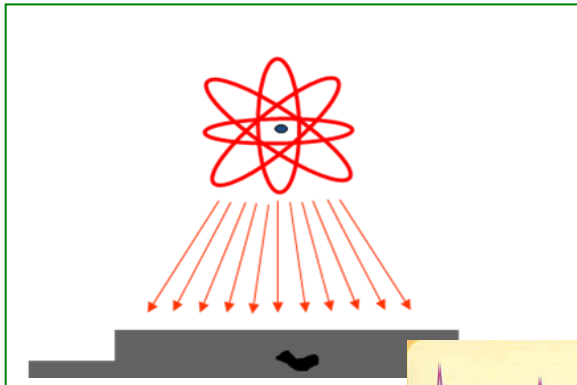
Nuclear Power Corporation of India Ltd.

(A Government of India Enterprise)

Directorate of Quality Assurance



CONSULTANCY SERVICES



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Dear Patron,

With great pleasure we introduce NPCIL's QA services to you.

Nuclear Power Corporation of India Ltd. (NPCIL) is a PSU of Govt. of India under the Department of Atomic Energy (DAE). NPCIL is the sole organization that handles country's ambitious nuclear power program. With a track record of successful design, construction, commissioning, and operation of nuclear power plants, the corporation is technically and managerially one of the best equipped organizations to meet the growing challenges of the power and process industries. Its superiority in selecting, training and nurturing engineers of the highest caliber has been globally recognized.

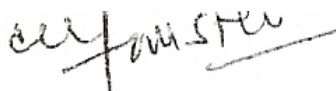
NPCIL has constantly endeavored to live up to its excellent reputation. We are committed to fulfill stringent controls imposed by regulatory bodies like the Atomic Energy Regulatory Board.

Our Quality Assurance Group is widely acclaimed all over for its technical expertise and you may bank on it for your QA assignments like Third-party Inspection, Vendor Evaluation, In Service Inspection, Technical Audit, Training of Engineers, Certification of Non-Destructive Testing. With years of experience and having rendered quality surveillance to mechanical, electrical and instrumentation equipment, we stand in the forefront of QA organizations worldwide.

To ensure compliance to the stringent requirements of Codes, Standards and Specifications, we have developed Quality Systems and procedures. We are ISO 9001-2000 certified.

It shall be our pleasure to associate ourselves with you to provide various services. Our expert group will be happy to make presentations, discussions or consultation at any time as and when required by your organization.

Assuring our best services all the time.



(C. Awasthi)

NPCIL is the company of international repute and have been rated as one of the best profit making public sector undertaking. QA Directorate has strength of 100 trained and professionally qualified engineers. Most of our engineers are qualified to various level in NDT.

We have offices located all over the India and they are well connected through our intranet network for most effective and fastest communication.

Our functioning and services:

Inspection is carried out based on Quality Assurance documents approved by the customer. Such quality assurance documents can be reviewed by us, if so desired, prior to approval by the customer.

Based on the Quality Assurance documents periodic visits are made by trained Engineers to carry out material identification, verification for process controls, measurements and checks, evaluation of test results and performance parameters and final acceptance tests to ensure quality of the product.

Materials are qualified by witnessing and certifying various tests such as impact, tensile, bend, hardness, metallography, etc as required in national and international codes.

Inspection can also be limited to checking the product conformance to drawings and specifications. Our Engineers can also carry out inspection based on sampling checks as called for in difference standards.

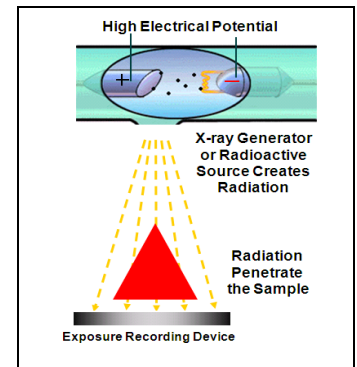
It is ensured by visits to supplier's works that the vendor adheres to generally accepted good engineering practices at all times and that internal inspection as agreed to in the vendors inspection plans is carried out.

Non-conformance is recorded, evaluated and commented for disposition by client.

Periodical reports are issued detailing the inspection carried out; indicating the status, hold ups and efforts required to meet the schedule.

Equipments and components accepted are identified by stamping and cleared for dispatch by issue of 'Shipping Release' document.

For major equipment, if so specified in order on vendor, completeness of a detailed end document can be verified.



Quality surveillance services offered include study of purchaser's specification requirements and drawings.

We can contribute in evolving detailed QA systems and procedures right from material qualification, welding electrode, procedure and performance qualification, through various stages of manufacture including welding inspection both by NDT and destructive examination to final testing of completed equipment by helium, hydrostatic, pneumatic and vacuum testing.



Use of gun drilling for tube sheets with close tolerance, tube to tube sheet welding, use of clean room conditions are involved in manufacture and inspection of heat exchangers.

Specialized inspection in valves includes dynamic response checks, seismic qualification, positional accuracy and helium leak, RT, UT, and checks on hard facing.

NPCIL can take up Quality Surveillance on electrical system equipments and electronic, instrumentation and control systems.

Our Expertise:

We are having experience of decades in rendering QA services for mechanical, electrical and instrumentation items and equipments.

We have experience of inspecting intricate components used in nuclear industry such as Steam Generators, Heat Exchangers, Calandria vessels, End Shield, Fuelling Machine, Turbines, Condensers and many more.

Also, we have experience of carrying out inspection on conventional equipment like Boilers Heat Exchangers De aerators Distillation Columns Pumps, Valves, Pipes etc. which are being used in petrochemical and refinery industries too.

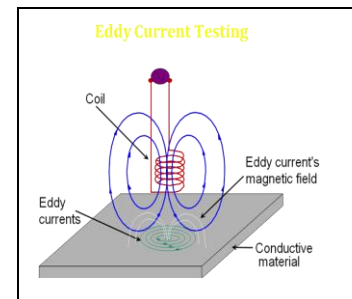
Stainless Steel fabrication is an important area of our specialization. Special methods have been evolved for control of distortion during fabrication, measurement of close tolerances and accurate alignment of nozzles using optical instruments.

QS on Electrical, Electronics and Instrumentation items – including large transformers, generators, motors, switchgear, current and potential transformers, lightning arrestors, isolators etc. upto 400 KV class.

QS on Electrical items includes large transformers, generators, motors, switchgear, current and potential transformers, lightning arrestors, isolators etc. up to 400 kv class, various types of cables, solid state and electro mechanical relays and protection systems, motor generator sets, UPS systems, diesel generator sets, high current batteries and chargers constant voltage and constant current rectifiers and inverter are among the other items covered.

NPCIL has considerable experience in QA on electronic and control system items

like control valves, PID controllers, excitation systems, voltage regulators, difference types of printed circuit boards, VHF/HF communication equipment, alarm meters, recorders and instrumentation systems.



Apart from routine and type tests as per specification, special tests such as environmental qualification of electronic components to MIL/JSS, component screening and qualification, EML/EMC tests. Seismic qualification tests, electric analyzer tests, partial discharge and short circuit test, heat cycle etc. are witnessed and certified. Vibration and noise level measurement and analysis are also carried out.

Other expertise:

Vendor evaluation and vendor development, Quality systems audit, in-service inspection, development of design qualification tests, furnace calibration and qualification of welding electrodes are other areas where our services can be utilized.

Vendor evaluation:

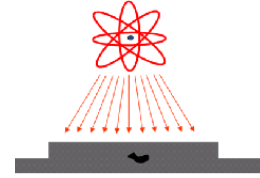
To meet the specific and special requirements of Nuclear Industry and driven by the compulsive need for indigenization, NPCIL has embarked on a systematic programme of vendor developments.

Our engineers have dealt with a wide variety of materials, equipments, components, devices, instruments and systems covering every discipline. Based on its field and operation experience, we can locate and advise on the suitability of various vendors to meet specific requirements of customers. Many product and processes developed by NPCIL for Nuclear applications are likely to find use in other industries.

We have evolved procedure for evaluation of vendors for supply of equipment and materials of acceptable quality. As a contribution to continuous quality improvement, we can undertake process capability studies and periodic audit of vendor's quality systems. We can also undertake type approval of components, devices and equipment.

In-service Inspection:

NPCIL has a dedicated group for In-Service Inspection of its operating plants. The know-how developed and the experience gained over last few decades for inspection, measurement, interpretation and evaluation of plants and systems can be of immense benefit to continuous process industries in their effort to reduce downtime, planned shutdowns, anticipate repair/replacement decisions, and assess residual plant life and other ageing-related problems. Industries have made use of this expertise of NPCIL, especially for Eddy Current Testing of heat exchangers using multi-frequency equipment to assess condition of tubes.



Typical QA services offered:

- Development of QA plans.
- Qualification and Development of Vendors.
- Testing and certification of welding electrodes, filler wires, inserts and other consumables.
- Inspection during procurement/fabrication/dispatch stages.
- Review and endorsement of procedures.
- Evaluation of results of non-destructive testing including Visual, RT, LPT, MPT, Eddy Current testing, Helium leak detection etc.
- Witnessing and analyzing, Destructive test results like Bend-tests, impact tests, Hardness tests, Etch-tests.
- Analysis of metallurgical and metallographic results
- Pressure vessel inspection, testing and certification.
- Evaluation of Labs and Vendors
- In-service inspection, condition-monitoring and plant life evaluation; shut-down inspection of piping, vessels and static/rotary equipment.

- QS on mechanical items such as pressure vessels, heat exchangers, material handling equipment, air handling units, pumps, valves, compressors, high efficiency filters, hardware items and raw materials.
- Evaluation and certification of special processes e.g. Soldering, Brazing, Painting, Electroplating, Heat Treatment and Surface hardening.
- Quality System Evaluation.

Human Resource:

Our skilled engineers with outstanding professional and managerial capabilities are all groomed to take up the challenges. Our trained human resources facilities are now available for rendering technical services of Industry.

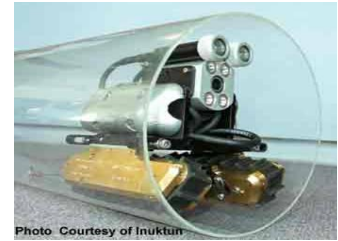
Our Inspection Engineers are well conversant with various Indian Standards, British Standards, ASTM, ASME, TEMS, DIN, API and other codes.

Most of our engineers are certified to Level-II and Level-III in NDT by ISNT (Indian Society for Non Destructive Testing) or ASNT (American Society for Non Destructive Testing).

Our offices:

Time is of essence in today's cutthroat industrial world. We are well poised to provide QA services with 14 QA offices located at convenient points all over the country i.e.

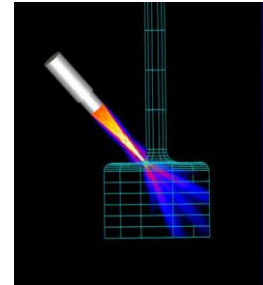
1. Mumbai,
2. Delhi (Noida),
3. Chennai,
4. Kolkata,
5. Banglore,
6. Hyderabad,
7. Secunderabad,
8. Pune,
9. Bhopal,
10. Baroda,
11. Surat (hazira),
12. Haridwar,



- 13 Walchandnagar, and
- 14 Trichy.

Our clients:

1. BHAVINI (Bhartiya Nabhkiya Vidyut Nigam)
2. BARC (Bhabha Atomic Research Center)
3. BHEL (Bharat Heavy Electricals Ltd.)
4. DRDO
5. Larsen & Toubro
6. Tata Electric Co
7. Electricity Boards of Rajasthan, Hariyana, Delhi, etc.



We have working experience with most of major manufactures. Some of them are:

1. M/s Larsen & Tubro
2. M/s Godrej And Boyce
3. M/s BHEL
4. M/s Walchand Nagar Industries
5. M/s MTAR
6. M/s Kirloskar Brothers Ltd
7. M/s KSB Pumps
8. M/s Bharat Forge
9. Number of other vendors across the country.

In short, the multidisciplinary exposure and versatile background of our engineers will greatly benefit clients in achieving promptness without sacrificing quality.

For more information please contact:

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Executive Director (QA), NPCIL

