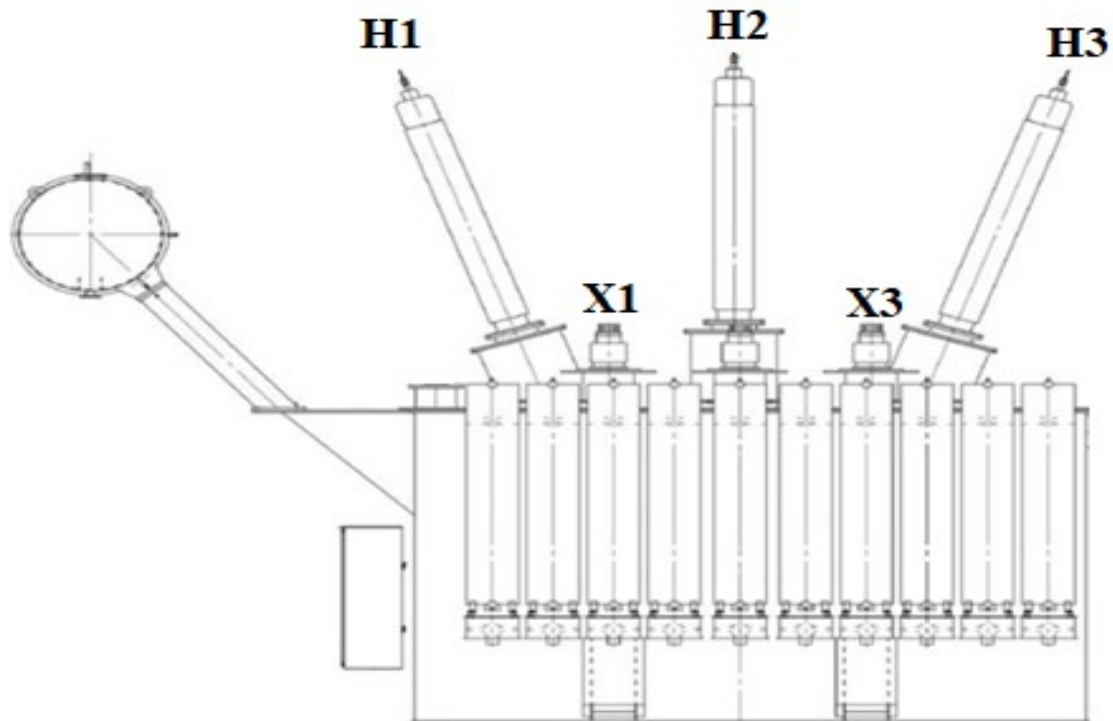


Quality Assurance of Transformer

- Ronnie Minhaz, P.Eng.

Black Box



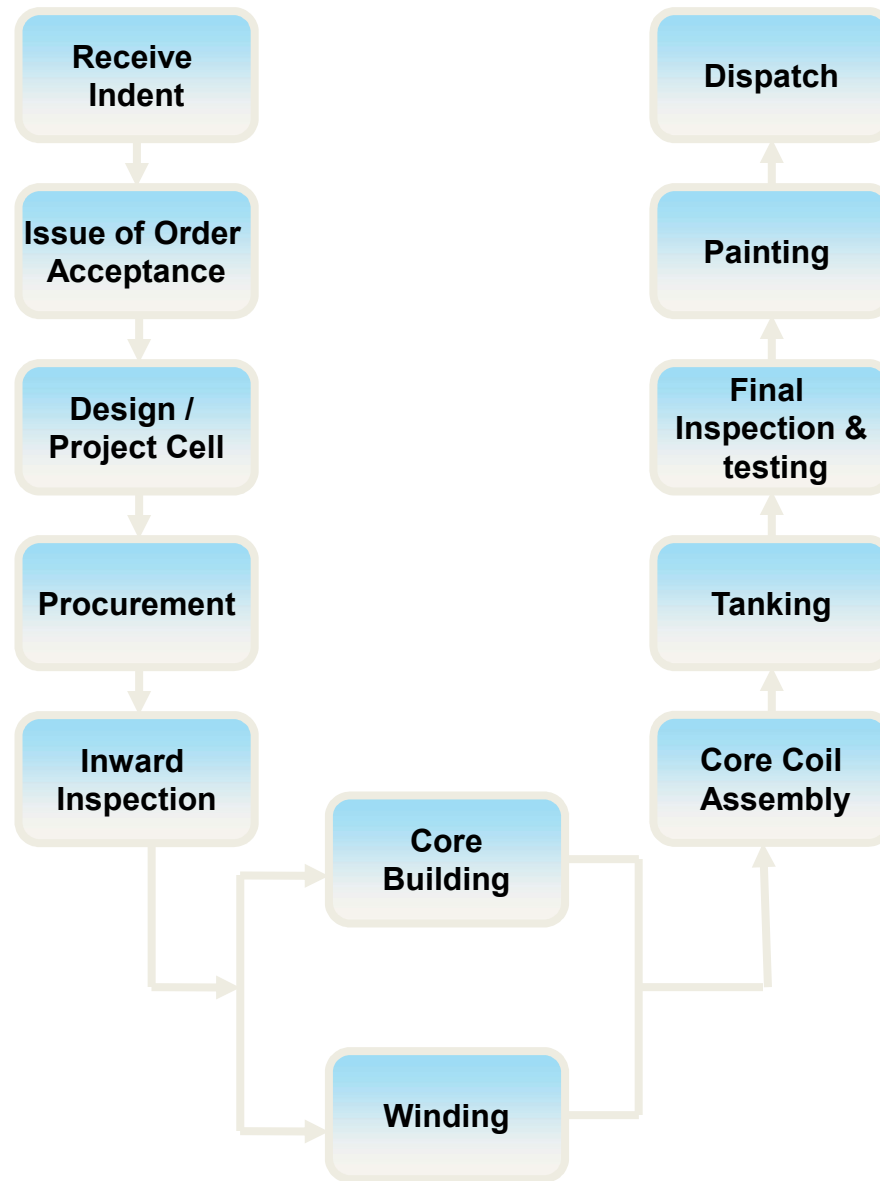
Why Quality Assurance?



Purpose of Quality Assurance

- Operational reliability
- Life expectancy

Transformer Manufacturing Flow chart:



Factory Location

Dry Area

Vs

Wet/Humid Area

Factory

Old Factory

Vs

New Factory

Climate control in Factory

Fully climate control

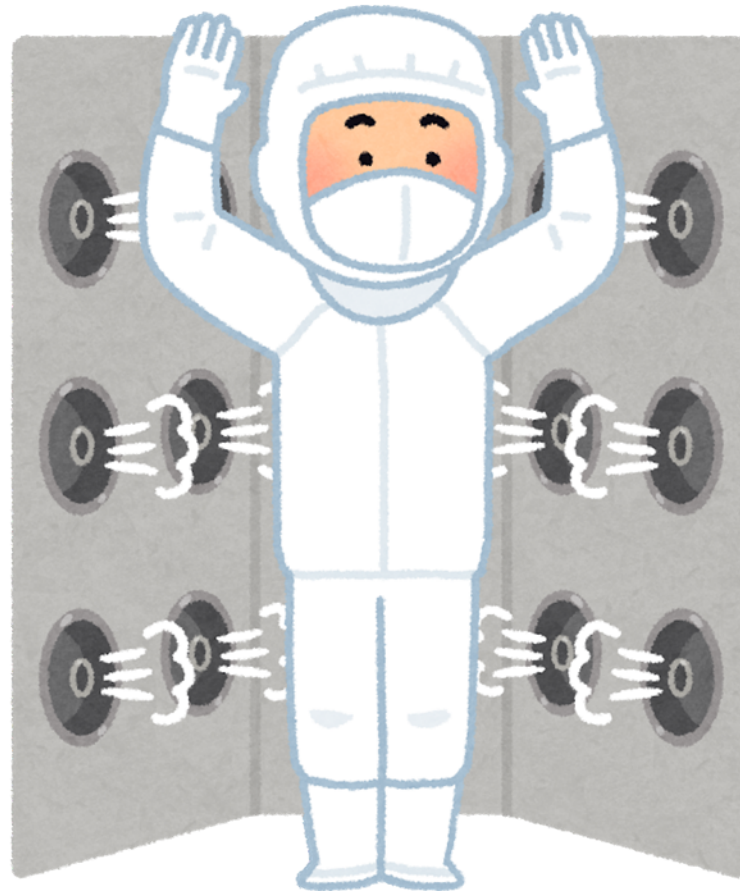
Vs

Partially climate control

Vs

No climate control

Is everyone using it?



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Inside Factory

Clean room

Vs

Non-clean room

Cleaning approach

All employees part of cleaning process

Vs

Cleaning company in charge of cleaning

Training for all employees

Continuous training

Vs

Occasional/no training

QA/QC management

Is ISO certification good enough?

QA/QC management

- Is there any check and balance in the QA/QC process?
- Is the process properly documented?
- How often auditing take place?

Non-Conformance Report (NCR)

- Is NCR a good indication for factory compliance to QA/QC?
- Is there any lesson learned session on issued NCR?

Subcontractors/Suppliers

- Is there any procedure to ensure subcontractors/suppliers are compliant to QA/QC?
- How often subcontractors/suppliers are being audited?

What could be viable solution?

Viabile Solution

- Factory audit
- Design review
- QA inspection during manufacturing

Factory Audit

What to look into during factory audit?

Design Review

How design review helps to ensure quality?

QA inspection(s)

- Core and Coil inspection
- Coil nesting in core
- Pre-vapor phase inspection
- Pre-tanking inspection
- FAT witness
- Inspection prior to shipping

Q&A?

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