

# Guide for Revival of Old Chemical Plant

April 2025

## Ergo Engineers Private Limited

DESIGN | ENGINEERING | SUPPLY | COMMISSIONING

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# Preface

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With passage of time, any operational chemical plant starts facing various issues such as – low energy efficiency, increased breakdowns, high maintenance costs, high labour costs, low productivity, non-viability as compared to new plants / technologies, non-compliance with environmental norms etc. Such problems lead to closure of the plant or increasing losses unless the owners decide to solve the problem.

A chemical plant whether in operation or closed due to one or more of the above causes needs a well-thought and planned Revival. Such revival may be done either by the existing owners or a new owner may acquire the old unit and revive it.

Whether you are an existing owner or you are someone who is planning to acquire an old unit, this Guide will give you the essential steps that you will need to undertake.

Revival is a comprehensive process which needs detailed economic assessment and evaluation combined with thorough understanding of the technologies involved. Most chemical units, especially in MSME sector, do not have in-house expertise to design and implement a Revival Plan. It is best to take professional help and do a well-planned and executed job.

We, Ergo Engineers Pvt. Ltd., are glad to assist and support you at every step of your revival journey. This Guide is the first step in our association with you.

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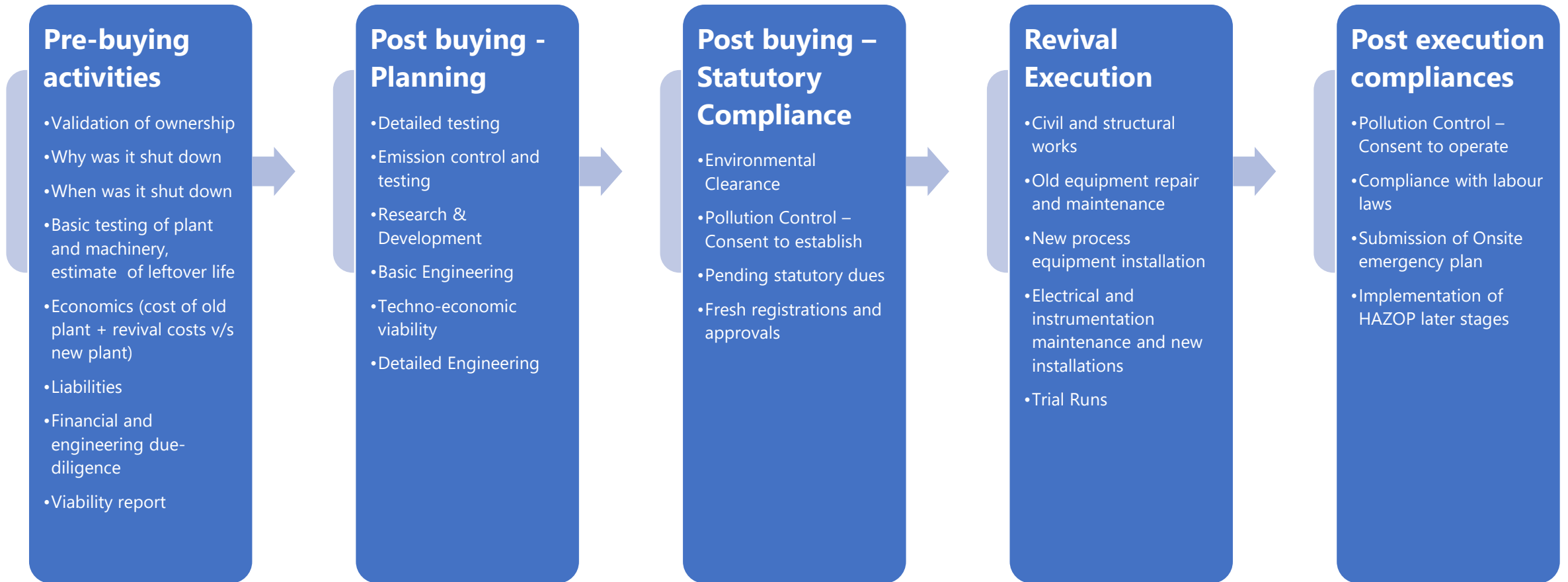
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# A. Stages for Acquisition and Revival

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## B. Pre-buying activities - Validation of ownership

- Validation of ownership
  - Who is the legal owner of land and building? - Ask an advocate to conduct thirty-year search at relevant sub-registrar office.
  - Are there permissions to construct factory at the location? – Ask a local advocate to visit relevant offices and give detailed report about permissions.
  - Ownership of movable assets – Ask for audited accounts of the company / firm for past three years. In case of company, ask a Practicing Company Secretary to conduct a complete search on MCA website for all filings done by the company.
  - Additional precaution in case of leasehold land – Check with the lessor for past dues and status of lease.
  - Other government, statutory dues – Check for electricity, water, property tax, PF, ESI and such other dues of the company / firm.

**(ADVOCATE NAME)**  
ADVOCATE  
X-YZ, X floor, ABC Colony, New Delhi – 110017

**Ref. No. X/XXX/2021** **Date: 15/01/2022**

**TITLE SEARCH REPORT OF PROPERTY**

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**ABOUT THE REPORT**

This Title Search Report (hereinafter referred to as “**Report**”) in relation to the title of the Flat No. ABCD, X Floor, ABC Towers, Ulwe, Sector 18, Navi Mumbai situated within the limits of Taluka Panvel, District- Raigarh to be investigated for the purpose of acquisition by you, i.e. (**Customer Name**), a resident of XYZ, DEF Towers, Navi Mumbai, Maharashtra (hereinafter referred to as “**You**”) is prepared by **Advocate (Advocate Name) (X/ABCD/2020)**, having his/her registered office at X-YZ, ABC Colony, New Delhi (hereinafter referred to as “**Advocate/ I**”).

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**CONTACT DETAILS AND ADDRESSES**

The following report has been prepared by (**Advocate Name**). **New Delhi**. You may contact the

## B. Pre-buying activities – Methods of acquisition

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- Purchase of movable and immovable assets
  - Very simple to execute. Least complicated.
  - Low likelihood of hidden liabilities appearing at a future date.
  - Stamp duty and registration charges on value of immovable assets.
  - GST on value of movable assets.
  - Licenses, consents and permissions generally not part of the transfer.
- Purchase of ongoing business as Slump Sale
  - Itemized price not decided.
  - Exempt from GST.
  - Slump sale agreement to be drafted to ensure liabilities not transferred.
  - Technology transfer may be part of the slump sale.
  - Licenses, consents and permissions may be part of the transfer.
- Purchase of shares of company / joining as Partner
  - Simple to execute.
  - Likelihood of hidden liabilities appearing at a future date.
  - Very low stamp duty.
  - Important to do due diligence since one inherits the complete past.
- Acquisition of Company under Insolvency / Liquidation
  - Process likely to take time.
  - One may acquire by paying only a fraction of the debts of the company.
  - Acquired company comes with a clean slate. No past hidden liabilities.
  - Advisable to avail services of an Insolvency Professional to guide through the process.

## B. Pre-buying activities - Why the plant was shut down

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- Possible technical reasons for shut-down – Investigate thoroughly
  - Obsolete technology/ product
  - Environmental and other compliances
  - Supply chain
  - Availability of skilled manpower
  - Any hazardous/ fatal incident
  - Inappropriate scale of plant
  - Natural calamity like floods, earthquake
- Possible financial reasons for shut-down – Conduct financial due diligence
  - High debt
  - High working capital requirements
  - Bad debts
  - Diversion of funds, pilferages, leakages including mismanagement
  - Disputes among stakeholders



Ergo Engineers Pvt. Ltd. can assist you with the above.

## B. Pre-buying activities - When was the plant shut down? What is scrap? What is useful?

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- When was the plant shut down?
  - Longer idle period will demand more work in refurbishing and higher cost of revival, or more items being written off.
  - Old stocks, work-in-process, raw materials etc. may need disposal, which may be expensive.
  - Plants idle for a long time are often dirt cheap.
- What is scrap? What is useful?
  - Important to estimate whether there is any leftover service life of each equipment.
  - Compare refurbishing cost versus cost of new equipment.
  - Important to estimate reliability issues and maintenance costs with refurbished equipment.
  - In some cases, land may be contaminated and may be difficult to use.



Forty years after the disaster, Union Carbide plant at Bhopal



## B. Pre-buying activities - Basic testing of plant and machinery, estimate of leftover life

- Sophisticated testing and measurement is often not feasible.
- For plants under shutdown, electricity is generally cut off making any testing almost impossible.
- Manual inspection and basic testing is often the only possibility.

### Key points for Inspection

- Check for structural cracks, concrete spalling, reinforcement exposure and rusting.
- Inspect the flooring for settlement defects, cracks etc.
- Check for water accumulation, water intrusion in foundation or seepage.
- Look for bending or buckling, missing or loosened bolts, vibration damage, rust in steel structures.
- Check paint / coatings condition, insulation and corrosion.
- Check corrosion due to chemical exposure / spillage.
- Inspect for fouling, blockage, corrosion and erosion in equipment and plant.
- Verify thickness and dimensions of vessels, equipment and pipelines.
- Inspect shafts, motors, bearings, seals, valves and check free movement.

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## B. Pre-buying activities - Economics (Old plant + revival v/s new plant)

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- Based on activities suggested in previous slides, prepare monetary and time estimates for various options of purchase and revival.
- Prepare monetary and time estimates for new equivalent plant(s).
- Compare the above two sets of estimates.
- Estimate approximate running costs and profitability for the revival options and new plant options.
- Based on the comparison of estimates as well as profitability projections, take well-thought-out decision.
- It is advisable to engage an external consultant to carry out the above steps and prepare a Techno Economic Feasibility Report.

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### TECHNO ECONOMIC FEASIBILITY & PROJECT REPORT

FOR

A Unit to Manufacture Xxxxxx Xxxxx  
XXXXX Capacity - xxxxx

Submitted to  
MP Industrial Development Corporation Ltd.

*XXX XXX Pvt. Ltd.*

Registered Office: xxxxx,  
xxxxxx xxxxx, xxxxxx - xxx 001  
Factory Plot No. xxx, Sector xxx,  
Industrial Area, xxxxx, Dist. xxx (xxxx)

***Ergo Engineers***

Prepared by  
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February 2025

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## C. Post-buying planning – Detailed testing

Purpose of detailed testing is to assess the present state of plant, machinery and utilities to plan the work needed for refurbishing or need for replacement. Typical tests that may be carried out are as follows:

- Visual inspection
- Earthing & grounding inspection; Checking circuit breakers and electrical protection devices; Testing of motors, transformers, cables, electrical connections, hot utilities etc.
- Inspection of pipelines, equipment and heat exchangers for blockages and corrosion, cleaning using chemicals or pigging
- Calibration of instruments
- Water trials & hydraulic and temperature testing
- Earthing and grounding inspection
- Spark test to identify defects or damage in glass and metals
- Ultrasonic testing, Radiographic testing, Dye penetrant testing, Magnetic particle inspection, Load testing to detect cracks and defects, Evaluation of mechanical strength, Vibration analysis to identify faults in alignment, imbalance, bearing failures
- Evaluation of backup power like UPS and battery set
- Review of interlocks and process monitoring in DCS/ SCADA



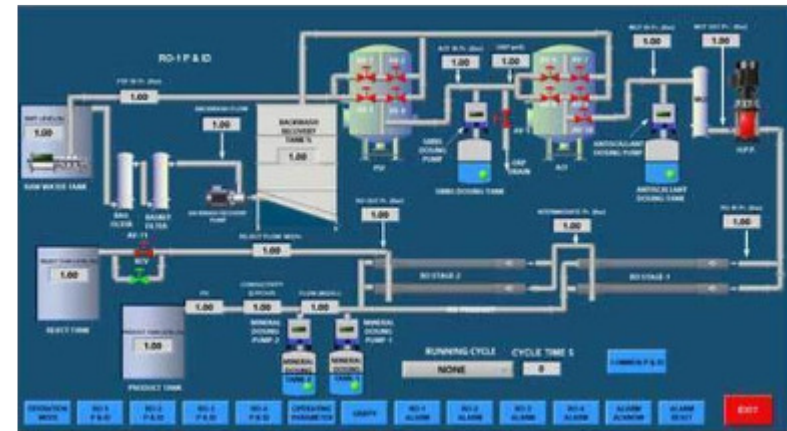
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## C. Post-buying planning – Research & development

Revival of an old plant is the right time to revisit the manufacturing process in light of the reasons for closure of the plant. Advisable to carry out Research & Development to achieve some or all of the following objectives:

- Better yield and quality
- Reducing number of steps / process time leading to higher productivity
- Better emission and effluent control
- Lesser effluent generation and treatment
- Lower utility consumption
- Reduced downtime
- Discover safer chemistry / process
- Better raw material sourcing
- Development of other products in same setup with minimal introduction of new equipment
- Improving profitability

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## C. Post-buying planning – Emission and effluent control

Emission and effluent control is necessary for (a) statutory compliances (b) improvement of process efficiency (c) recovery of precious materials and (d) safety. Any revival process planning must evaluate need to upgrade devices for emission and effluent control.

Typical steps in this connection are as follows:

- Check efficacy of scrubbers, observe fouling and blockage of scrubber column packing, inspect scrubber pipelines for corrosion.
- Re-evaluate stack heights.
- Check condition of bag filters, blowers, waste heat recovery boilers.
- Evaluate TDS, COD, BOD of effluent and plan control equipment; Advisable to go for zero liquid discharge.
- Check condition of relief valves, rupture disks, secondary containments, flame arrestors, seal-pots, flares etc.
- Inspect fire suppression systems, explosion prevention installations, and emergency shutdown processes.

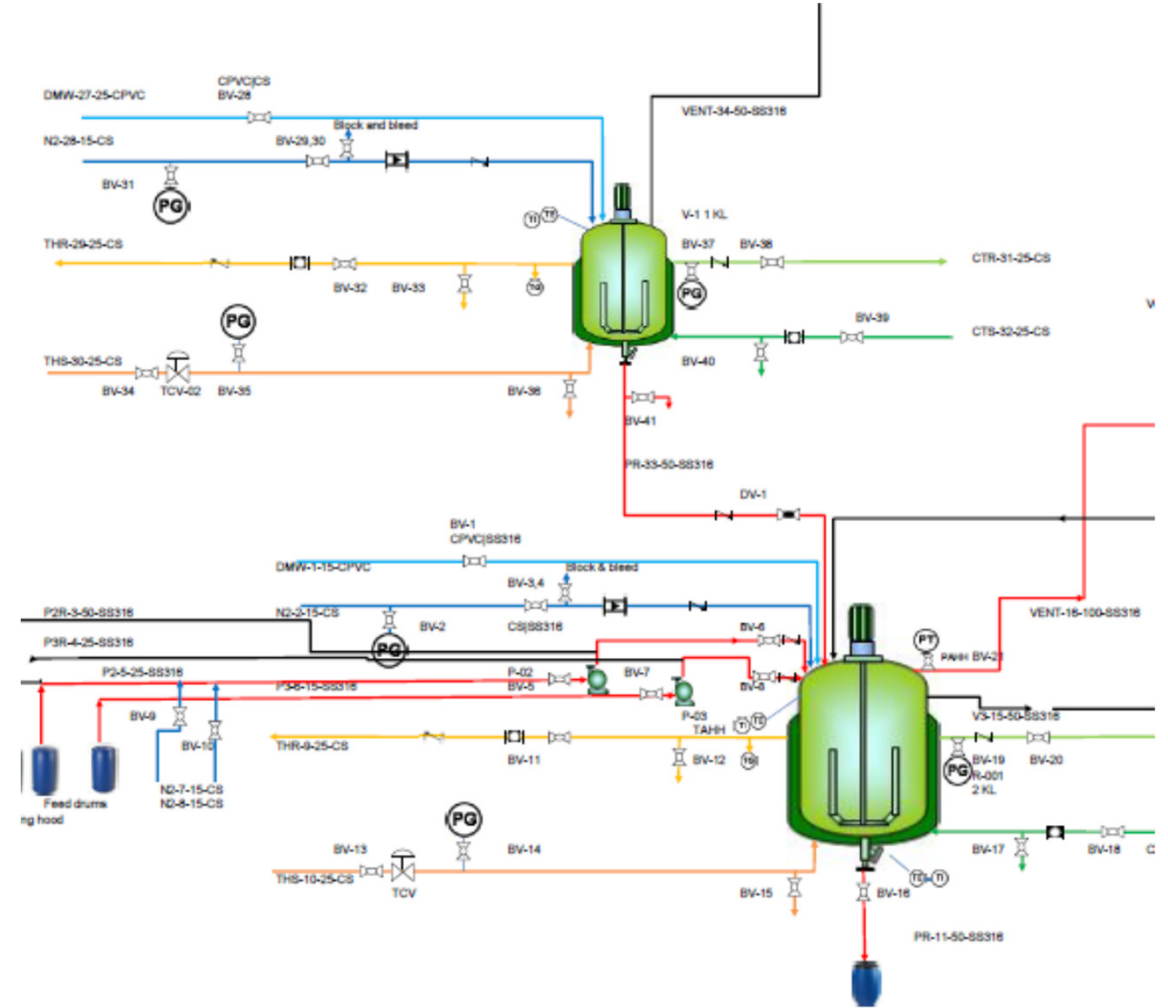
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## D. Basic engineering

Based on the Detailed testing, Research & development and inputs related to Emission and effluent control and technology transfer documents (if provided by seller), Basic Engineering is carried out which involves preparation of the following:

- Process flow diagram (PFD).
- Equipment list including equipment sizing and basic specifications.
- Utility list including sizing and basic specifications.
- Basic piping & instrumentation diagram (P&ID).
- Recommendations for replacement of some / all old equipment and purchase of new equipment.
- Plant layout
- Process Hazard Analysis and HAZOP (Discussed in next slide).
- After HAZOP HS-3, all the above are finalized.
- Outcome - Detailed bill of materials for civil, refurbishing of old plant & machinery (including electricals), purchase of new plant & machinery (including electricals) along with cost estimates (likely to be  $\pm 15\%$  of actual costs).



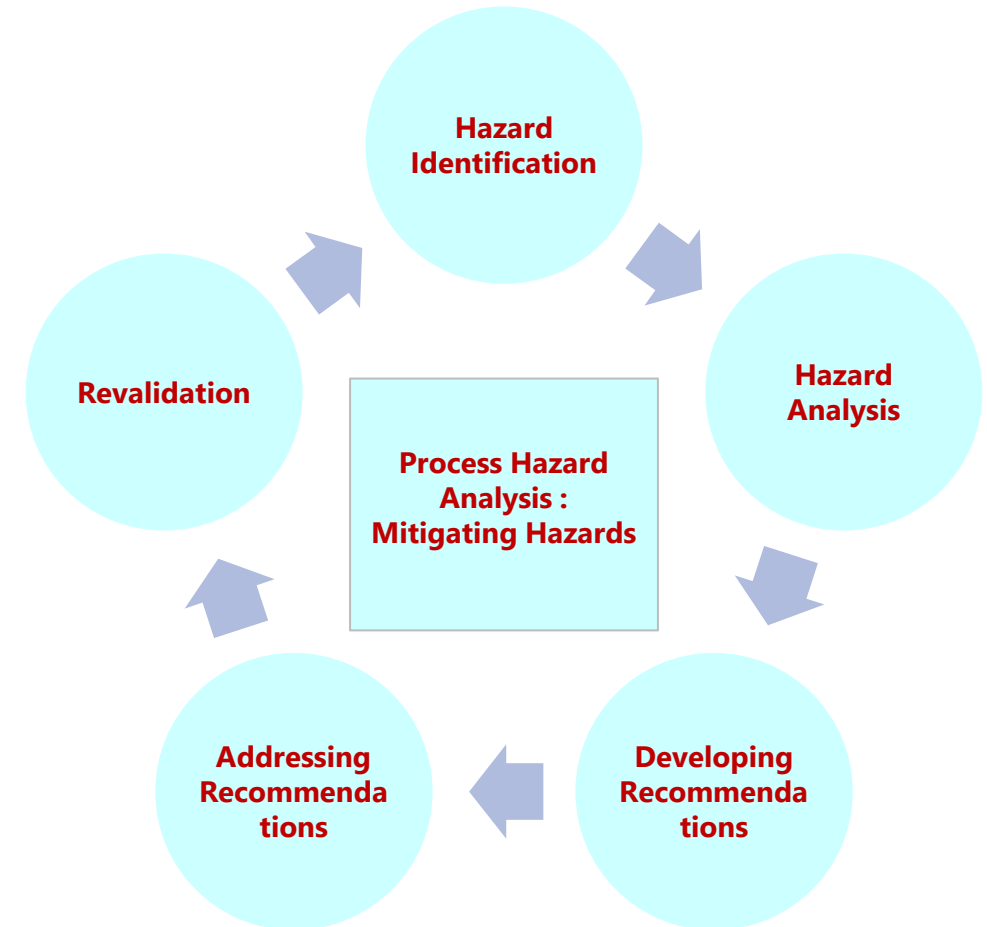
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## D. Basic Engineering Contd.

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### Process Hazard Analysis (PHA) and Hazard & Operability Studies (HAZOP)

- Recommended to conduct PHA and HAZOP for the planned refurbished / revived plant.
- Past owners may have implemented lower-level safety standards and may even have omitted to implement some recommendations made by professionals.
- Recommended to get a copy of HAZOP study done by previous owners. Recheck the basis of the past study and verify that all the recommendations of HAZOP were duly implemented.
- Extremely critical to conduct HAZOP with a fresh team of professionals in case the plant had closed due to any safety incident. Too risky to start a plant without it.
- Necessary since most revival plans will do one or more of the following - add new equipment, modification of product mix, change of process / recipe, scale up capacity, replace existing equipment.

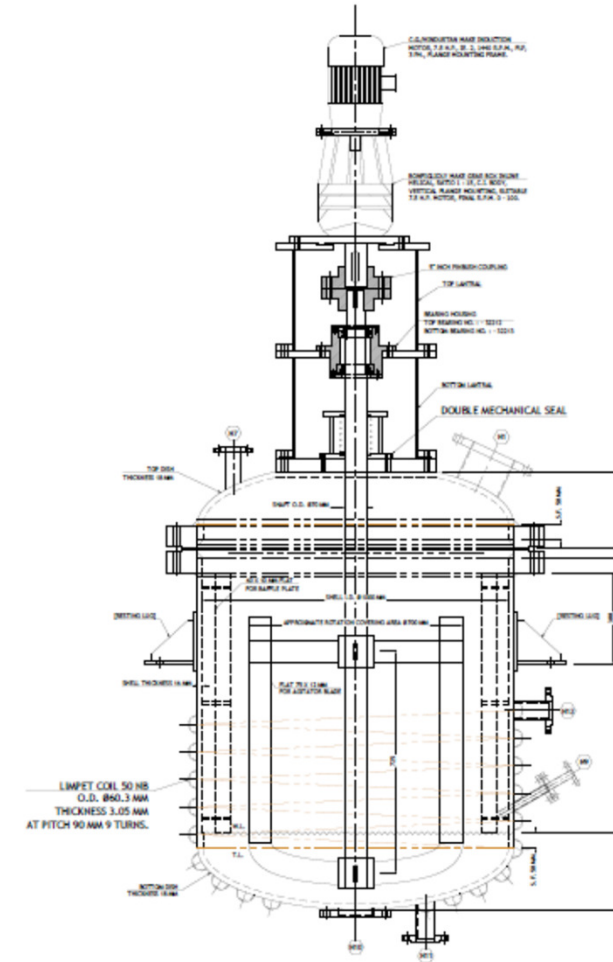


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# E. Detailed Engineering

Detailed Engineering includes review and preparation of following documents:

- Detailed structural drawings.
- Detailed specification sheet of each equipment, valves, fittings, instrumentation, panels, etc.
- General assembly drawings and manufacturing drawings of all equipment, valves, fittings, instrumentation, panels, etc. are obtained from the respective original equipment manufacturers.
  - The above are verified and approved by the project team before giving go-ahead for manufacturing in case of new equipment.
- Batch record sheets, SOPs, Corrective and preventive maintenance schedules, Maintenance work permits and Onsite emergency plan.



Ergo Engineers Pvt. Ltd. can assist you with the above.



## F. Implementation as per Detailed Engineering

After Detailed Engineering is carried out, it is advisable to split the refurbishing and revival work into different packages broadly as follows:

- Repair of old RCC as well as steel buildings, structures, boundary wall, roads etc. including water proofing, cleaning, de-clogging and painting.
- Construction of new RCC as well as steel buildings, structures, boundary wall, roads etc.
- Refurbishing and upgrading of old equipment, machinery, piping, storage tanks, vessels, instrumentation, HVAC systems etc. including decontamination, cleaning, coating, damage repair, replacement of seals, bearings and gaskets.
- Procurement of new equipment, machinery, piping, storage tanks, vessels, instrumentation, HVAC systems etc.
- Procurement / refurbishing of electrical equipment, cables, transformers, fittings, panels, generators, motors, utilities, circuit breakers, switchgear, earthing equipment, HMI systems, etc.
- Re-calibration of all old instruments.
- Procurement / refurbishing of all safety equipment.
- Installation, commissioning, testing and trial run.

Once the packages are clearly defined, identification of suitable vendors / suppliers / contractors and award of work is the next step.

Ergo Engineers Pvt. Ltd. can assist you with the above.



# G. Manpower Planning Recruitment and Training

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Based on Basic Engineering, it is recommended to prepare **Manpower Plan** including number of personnel needed along with qualifications, skills and experience required. With the Manpower Plan in place, the following steps are recommended to be carried out parallelly with the Implementation as discussed in previous slide:

- Decision about outsourcing of manpower requirement (contract labourers).
- Fixing up manpower supply contractor for outsourced personnel.
- Recruitment of personnel as per Manpower Plan.
- Training of recruited manpower.
- Carrying out compliance requirements under labour laws including ESI, Provident Fund, etc.



Ergo Engineers Pvt. Ltd. can assist you with some of the above.

## H. Statutory Compliances – Acquisition by way of purchase of assets or slump sale

In case the new owners have acquired assets of an old unit either by way of itemized sale or slump sale and have not taken over the company / firm, they will need to get all statutory approvals, clearances, consents and registrations as applicable to a new unit. Some or all of the following may be required:

- Modification of lease deed in case of leased land.
- Layout and building plan approval.
- Water and electricity connection.
- Environmental clearance (EC) – it may be possible to get the prior EC transferred if there is no change in process or product or capacity.
- Consent to establish from State Pollution Board.
- Factory License under Factories Act.
- Consent to Operate from State Pollution Board after implementation of Revival.



## H. Statutory Compliances – Acquisition by way of company / firm takeover

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In case the new owners have taken over a company / firm either by private negotiations or under legal process of Insolvency / Liquidation, they will need to get hardly any fresh statutory approvals, clearances, consents or registrations. However, it is advised to check if any of the following is required:

- Layout and building plan approval may be needed if revival requires changes from the original plan and fresh buildings are proposed to be constructed.
- Water and electricity connection may need to be revived or upgraded.
- Environmental clearance (EC) – In case there is some change in process or product or capacity, the same may need to be noted for EC.
- Consent to establish from State Pollution Board – may be required only in case there is some change in process or product or capacity.
- Consent to Operate from State Pollution Board after implementation of Revival – may be required only in case there is some change in process or product or capacity.



Thanks!

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*Ergo Engineers*

We look forward to hearing from you.  
We look forward to helping you revive an old chemical plant.

**ERGO ENGINEERS PRIVATE LIMITED**

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