

## CHAPTER XIII

### SUMMARY

#### 13.1 Summary

The location of a plant is vital to its sustainability and profitability. Companies evaluate geographical, technological, economic, and environmental aspects while deciding on a site. Based on technological factors, Semarang, Central Java, is the best site for hexamethylenetetramine production. This decision guaranteed that the plant would fulfil domestic demand.

The results that follow may be based on the analysis and calculations:

1. The production capacity of the hexamine plant is 24,000 tonnes per year.
2. The primary raw materials used in hexamine production are ammonia and formaldehyde.
3. The selected process in the reactor is based on the Alexander Maclean method, employing a continuous stirred-tank reactor (CSTR).
4. The planned form of the company is a limited liability company (PT) with a functional and staff structure.
5. The plant's intended location is in the Aviarna Industrial Estate, Central Java with considerations including the availability of raw materials, proximity to marketing areas near global trade routes, adequate transportation infrastructure, and access to water sources.
6. The required workforce amounts to 100 people.
7. The economic analysis of the chlorine plant provides the following key figures:
  - Total Capital Investment = Rp 629624575353, -
  - Profit = Rp 166940393878, -
  - Break Even Point (BEP) = 41%
  - Pay Out Time (POT) = 3.54 Year
  - Return On Investment (ROI) = 27 %
  - Shut Down Point (SDP) = 37 %

Based on the economic analysis and taking into consideration the domestic hexamine demand and bright prospects, it is possible to conclude that making a hexamine factory with a capacity of 24,000 tonnes per year is profitable.

### 13.2 Suggestion

To assess the prospect of developing such a facility, preliminary design of a chemical plant demands a thorough understanding of key ideas. Here are some suggestions:

- Reassessment of the physical properties of the raw material.
- Due to the uncertainty in the data collected by researchers, more investigation and full calculations within the reactor and product purification in the equipment will be needed.
- In preliminary design, a hexamine plant should prioritise waste management to ensure environmentally friendly operations in line with sustainable practices.

