

# CHAPTER 6

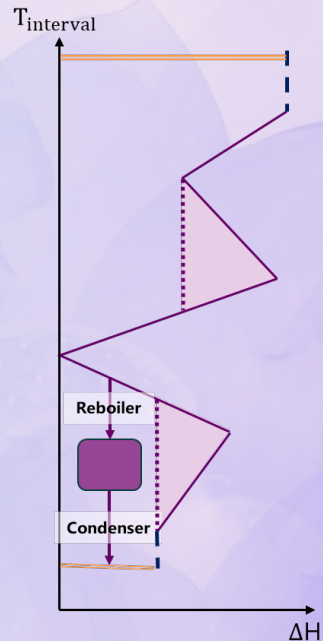
## Process Integration

### Heat Integration of Major Equipment

Consider equipment which involves heat to integrate with the process.

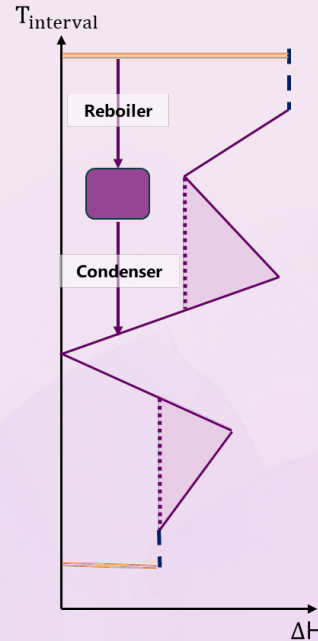
#### Distillation Column Integrated Below Pinch

- Reboiler duty can be supplied by integration with the process
- Part of condenser duty can be integrated while the remainder can be rejected to cold utility



#### Distillation Column Integrated Above Pinch

- Reboiler duty can be supplied by utility
- Condenser duty integrated with the rest of the process



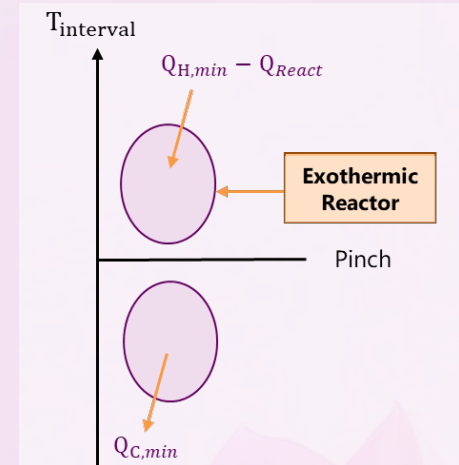
#### Appropriate Placement for Distillation Column

- Must **not** be integrated across the pinch
- Principle applies to any separator or distillation column which takes in heat at a higher temperature and rejects it at a lower temperature

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#### Appropriate Placement of Reactors

- Depends on the reactor type
- **Exothermic** reactor integrated above pinch
- Hot utility can be reduced



- **Endothermic** reactors integrated below pinch
- Cold utility can be decreased

