Review

Sistem Perawatan

TIP – FTP – UB

Keandalan

$$R(t) = \int_{0}^{\infty} \frac{e^{\frac{-t}{\theta}}}{\theta} dt = e^{\frac{-t}{\theta}}$$

$$\text{Laju kegagalan}\,(\lambda) = \frac{\text{Jumlah kegagalan}}{\text{Total jam operasi}}$$

- Peluang reliability
  - Seri $R = R(A) \cdot R(B) \cdot R(C)$
  - Paralel $R = 1 - (1 - R_A)(1 - R_B)$

Inspeksi

- Rumus Penentuan Faktor PM (semakin tinggi, semakin perlu PM)

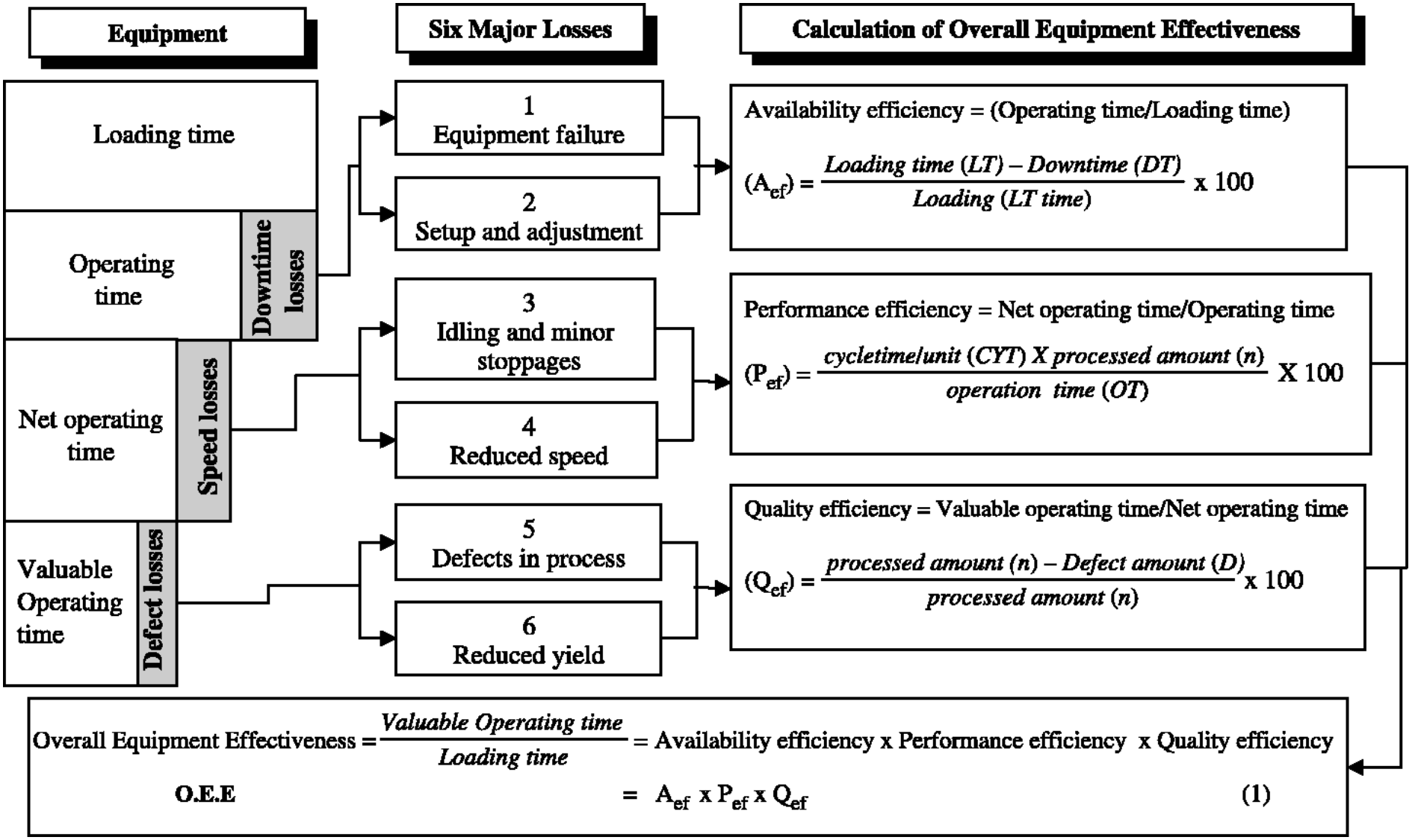
  $$PM = D(A+B+C)/(EF)$$

  PM = inspection factor
  D = number of break down/year
  A = cost of break down repairs
  B = cost of lost production
  C = cost of repairing other equipment involved in the breakdown
  E = cost of PM activity (average)
  F = number of PM cycle per year
- Do PM if number of break down x Average cost per break down x 70% > cost of PM system

Penggantian

- EUAC defender > EUAC chalanger

OEE


Equipment
Six Major Losses
Calculation of Overall Equipment Effectiveness
Loading time
Operating time
Downtime losses
Net operating time
Speed losses
Valuable Operating time
Defect losses
1 Equipment failure
2 Setup and adjustment
3 Idling and minor stoppages
4 Reduced speed
5 Defects in process
6 Reduced yield
Availability efficiency = (Operating time/Loading time)
$(A_{ef}) = \frac{Loading\ time\ (LT) - Downtime\ (DT)}{Loading\ (LT\ time)} \times 100$
Performance efficiency = Net operating time/Operating time
$(P_{ef}) = \frac{cycletime/unit\ (CYT)\ X\ processed\ amount\ (n)}{operation\ \ time\ (OT)}\ X\ 100$
Quality efficiency = Valuable operating time/Net operating time
$(Q_{ef}) = \frac{processed\ amount\ (n) - Defect\ amount\ (D)}{processed\ amount\ (n)} \times 100$
Overall Equipment Effectiveness = $\frac{Valuable\ Operating\ time}{Loading\ time}$ = Availability efficiency x Performance efficiency x Quality efficiency
O.E.E = $A_{ef} \times P_{ef} \times Q_{ef}$ (1)