

Priority List Method (Using full load average Production cost FLAPC)

- Priority list method is the simplest unit commitment solution method which consists of creating a priority list of units.
- The priority list can be obtained by noting the full-load average production cost of each unit.
- Full load average Production cost = { Net heat rate at full load} x Fuel cost

$$\text{FLAPC} = \frac{C_t \cdot (P_{GL})}{P_{GL}}$$

Assumptions

- No load costs are zero.
- Unit input – output characteristics are linear between zero output and full load.
- Start-up costs are a fixed amount
- Ignore minimum up time and minimum down time

Steps to be followed or Method of solving

- Determine the full load average production cost for each units.
- Form priority order based on average production cost,(Ascending order)
- Commit number of units corresponding to the priority order.
- Calculate PG1,PG2,.....PGN from economic dispatch problem for the feasible combinations only.
- For the load curve, each hour load is varying.
- Assume load is dropping or decreasing, determine whether dropping the next unit will supply generation and spinning reserve.
- If not, continue as it is, If yes, go to next step.
- Determine the number of hours H, before the unit will be needed again. Check H < Minimum shut down time

If yes, go to last step, If not, go to next step. Calculate two costs

- 1.Sum of hourly production costs for the next H hours with the unit up.
- 2.Recalculate the same for the unit down + start-up cost for either cooling or banking. If the second case is less expensive, the unit should be on.

Repeat this procedure until the priority list.

Merits

- No need to go for $-N!$ Combinations. Take only one constraint
- Ignore the minimum up time and minimum down time. Complication reduced.

Demerits

- Start-up cost are fixed amount No load costs are not considered