SPESIFIKASI TEKNIS MEKANIKAL - HVAC & PLUMBING

PROYEK: GEDUNG KANTOR 15 LANTAI - PT. CONTRACTOR M&E;

LOKASI: JAKARTA SELATAN

A. SISTEM HVAC (HEATING, VENTILATION, AIR CONDITIONING)

1. PERHITUNGAN BEBAN AC:

- Rumus: $Q = A \times H \times \Delta T \times CF$

- Dimana: Q = Beban pendinginan (BTU/h)

A = Luas ruangan (m^2)

H = Tinggi ruangan (m)

ΔT = Perbedaan temperatur (°C)

CF = Cooling Factor (30-35 untuk kantor)

2. CONTOH PERHITUNGAN KAPASITAS AC:

- Ruang meeting 40 m^2, tinggi 3m, ΔT=10°C

- $Q = 40 \times 3 \times 10 \times 33 = 39{,}600$ BTU/h

- Rekomendasi: 2 unit AC 20,000 BTU atau 1 unit 40,000 BTU

3. STANDARD KAPASITAS AC BERDASARKAN LUAS:

- 18 m^2: 9,000 BTU/h (AC 1/2 PK)

- 24 m^2: 12,000 BTU/h (AC 3/4 PK)

- 36 m^2: 18,000 BTU/h (AC 1 PK)

- 48 m^2: 24,000 BTU/h (AC 1.5 PK)

- 60 m^2: 30,000 BTU/h (AC 2 PK)

4. SISTEM DUCTING:

- Material: Galvanized iron 0.6mm

- Velocity: 4-6 m/s untuk supply, 3-5 m/s untuk return

- Pressure drop: max 1.5 Pa/m

B. SISTEM PLUMBING

1. PERHITUNGAN KAPASITAS POMPA:

- Rumus: $Q = A \times v$

- Dimana: Q = Debit air (m^3/s)

A = Luas penampang pipa (m^2)

v = Kecepatan aliran (1-2 m/s)

2. KEBUTUHAN AIR:

- Kantor: 50 liter/orang/hari

- Toilet: 10-15 liter/use

- Restaurant: 75 liter/customer

3. DIAMETER PIPING:

- Main riser: DN 80-100mm

- Branch: DN 40-50mm

- Toilet: DN 20-25mm

C. SPESIFIKASI MATERIAL

1. AC SPLIT: Daikin, Mitsubishi Electric, Panasonic

2. PIPA: Wavin, Rucika, Supreme

3. POMPA: Grundfos, Wilo, Ebara

4. DUCTING: Galvanized iron, insulated

D. STANDARD REFERENSI:

- SNI 03-6570-2001: Sistem AC
- SNI 03-7065-2005: Sistem Plumbing
- ASHRAE Standard 62.1: Ventilation
- NFPA 90A: AC Installation