# CALCULATION OF CIRCUIT BREAKER SIZING

* HVAC Load is considered as one Panel.
* Water Treatment loads and Lift loads are grouped as HV Panel
* Lighting, Socket, BMS/ELV and Server Loads are grouped as LV Panel
* Here 2 Transformers are used. Because for 2\*100% redundancy. i.e., if 1Transformer fails, the other transformer will 100% of the load• The formula for full load current, Isc 𝐾𝑉𝐴

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* **CIRCUIT BREAKER SIZING FOR TRANSFORMER : (HV SIDE):** 
  + Transformer Rating = 2000KVA
  + Full Load Current = 𝐾𝑉𝐴



* + Substituting the values, we get the following:
  + **Full load Current =** 𝟐𝟎𝟎𝟎 **= 105A**

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* + With 20% spare capacity, we arrive at the rating of CB as follows:
  + Rating of the CB = 105\*1.2 ≈126A
    - **Approx CB Size (Nearest Std Size) is 125A**
* **CIRCUIT BREAKER SIZING FOR TRANSFORMER : (LV SIDE):** 
  + Transformer Rating = 2000KVA▪ Full Load Current = 𝐾𝑉𝐴

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* + Substituting the values, we get the following:
  + **Full load Current =** 𝟐𝟎𝟎𝟎 **= 2782.41A**

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* + With 20% spare capacity, we arrive at the rating of CB as follows:
  + Rating of the CB = 2782.41\*1.2 ≈ 3338.89A
    - **Approx CB Size (Nearest Std Size) is 4000A**

* **CIRCUIT BREAKER SIZING FOR HVAC PANEL:** 
  + Load in KVA = 2361.11KVA▪ Full Load Current = 𝐾𝑉𝐴

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* + Substituting the values, we get the following:
  + **Full load Current =** 𝟐𝟑𝟔𝟏.𝟏𝟏 **= 3284A**
  + With 20% spare capacity, we arrive at the rating of CB as follows:
  + Rating of the CB = 3284\*1.2 ≈ 3940.8A
    - **Approx CB Size (Nearest Std Size) is 4000A**

* **CIRCUIT BREAKER SIZING FOR HV PANEL:**

* + Load in KVA = 122.78KVA
  + Full Load Current = 𝐾𝑉𝐴



* + Substituting the values, we get the following:▪ **Full load Current =** 𝟏𝟐𝟐 .𝟕𝟖 **= 170.81A**

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* + With 20% spare capacity, we arrive at the rating of CB as follows:▪ Rating of the CB = 170.81\*1.2 ≈ 204.9 A
    - **Approx CB Size (Nearest Std Size) is 250A**

* **CIRCUIT BREAKER SIZING FOR LV PANEL:**

* + Load in KVA = 116.67KVA
  + Full Load Current =  𝐾𝑉𝐴
  + Substituting the values, we get the following:▪ **Full load Current =** 𝟏𝟏𝟔 .𝟔𝟕 **= 167.31A**

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* + With 20% spare capacity, we arrive at the rating of CB as follows:▪ Rating of the CB = 167.31\*1.2 ≈ 200A
    - **Approx CB Size (Nearest Std Size) is 200A**