# VENTILATION CALCULATION FOR THE TRANSFORMER ROOM

## 1 ASSUMPTION

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| **- Sub- Station Ref. No.** | | 1 | |
| - Number Of Transformers | | 1 | Nos. |
| - Transformer Rateing | = | 1600 | KVA |
| - Number Of Transformers | = | 1 | Nos. |
| - Transformer Rateing | = | 1250 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

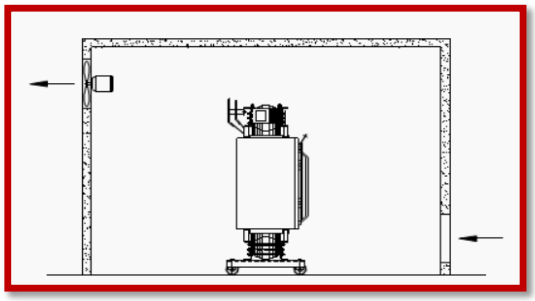
## 2 CALCULATION

**Heat Loss / Transformer**

= ( 1 x 1600 + 1 x 1250 )x 0.8 x ( 1 - 0.98 )

= 45.6 KW

= 45600 Watt



**Total Heat Dissipation**

=

= 45600 x 3.413

= 155632.8 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

**Then :-**

**The Air Quantity = 13,343 CFM**

## 3 VENTILATION SYSTEM DISCRIPTION

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 2 | | |
| Fan Capacity / Each | = | 6,672 | = | CFM |
| Fan rating KW/Each | = | 1.37 | KW | |
| Fan st. Pressure | = | 1 | IN.WG | |

**VEVTILATION CALCULATION FOR THE TRANSFORMER ROOM**

1- **ASSUMPTION**

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| **- Sub- Station Ref. No.** | | 2 | |
| - Number Of Transformers | = | 0 | Nos. |
| - Transformer Rateing | = | 0 | KVA |
| - Number Of Transformers | = | 3 | Nos. |
| - Transformer Rateing | = | 1250 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

2- **CALCULATION**

**Heat Loss / Transformer**

= ( 0 x 0 + 3 x 1250 )x 0.8 x ( 1 - 0.98 )

= 60 KW

= 60000 Watt

Total Heat Dissipation

=

= 60000 x 3.413

= 204780 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

Then :-

The Air Quantity = 17,557 CFM

**VENTILATION SYSTEM DISCRIPTION**

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 2 | | |
| Fan Capacity / Each | = | 8,778 | = | CFM |
| Fan rating KW/Each | = | 1.07 | KW | |
| Fan st. Pressure | = | 0.5 | IN.WG | |

**VEVTILATION CALCULATION FOR THE TRANSFORMER ROOM**

PROJECT :

1- **ASSUMPTION**

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| **- Sub- Station Ref. No.** | | 1 | |
| - Number Of Transformers | = | 1 | Nos. |
| - Transformer Rateing | = | 1000 | KVA |
| - Number Of Transformers | = | 0 | Nos. |
| - Transformer Rateing | = | 1000 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

2- **CALCULATION**

**Heat Loss / Transformer**

= ( 1 x 1000 + 0 x 1000 )x 0.8 x ( 1 - 0.98 )

= 16 KW

= 16000 Watt

Total Heat Dissipation

=

= 16000 x 3.413

= 54608 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

Then :-

The Air Quantity = 4,682 CFM

**VENTILATION SYSTEM DISCRIPTION**

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 1 | | |
| Fan Capacity / Each | = | 4,682 | = | CFM |
| Fan rating KW/Each | = | 1.11 | KW | |
| Fan st. Pressure | = | 1 | IN.WG | |

**VENTILATION CALCULATION FOR THE TRANSFORMER ROOM**

1- **ASSUMPTION**

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| **- Sub- Station Ref. No.** | | 4 | |
| - Number Of Transformers | = | 6 | Nos. |
| - Transformer Rateing | = | 1600 | KVA |
| - Number Of Transformers | = | 4 | Nos. |
| - Transformer Rateing | = | 0 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

2- **CALCULATION**

**Heat Loss / Transformer**

= ( 6 x 1600 + 4 x 0 )x 0.8 x ( 1 - 0.98 )

= 154 KW

= 153600 Watt

Total Heat Dissipation

=

= 153600 x 3.413

= 524236.8 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

Then :-

The Air Quantity = 44,945 CFM

**VENTILATION SYSTEM DISCRIPTION**

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 3 | | |
| Fan Capacity / Each | = | 14,982 | = | CFM |
| Fan rating KW/Each | = | 2.45 | KW | |
| Fan st. Pressure | = | 1 | IN.WG | |

**VEVTILATION CALCULATION FOR THE TRANSFORMER ROOM**

1- **ASSUMPTION**

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| **- Sub- Station Ref. No.** | | 5 | |
| - Number Of Transformers | = | 2 | Nos. |
| - Transformer Rateing | = | 1600 | KVA |
| - Number Of Transformers | = | 0 | Nos. |
| - Transformer Rateing | = | 0 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

2- **CALCULATION**

**Heat Loss / Transformer**

= ( 2 x 1600 + 0 x 0 )x 0.8 x ( 1 - 0.98 )

= 51.2 KW

= 51200 Watt

Total Heat Dissipation

=

= 51200 x 3.413

= 174745.6 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

Then :-

The Air Quantity = 14,982 CFM

**VENTILATION SYSTEM DISCRIPTION**

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 2 | | |
| Fan Capacity / Each | = | 7,491 | = 6000 | CFM |
| Fan rating KW/Each | = | 0.99 | KW | |
| Fan st. Pressure | = | 0.5 | IN.WG | |

**VEVTILATION CALCULATION FOR THE TRANSFORMER ROOM**

1- **ASSUMPTION**

| | | | |
|---|---|---|---|
| - Ambient Temperature | = | 115 | F |
| - Max. Allowed Temp. Rise | = | 10.8 | F |
| - Sub- Station Ref. No. | | 6 | |
| **- Number Of Transformers** | = | 2 | Nos. |
| - Transformer Rateing | = | 1250 | KVA |
| - Number Of Transformers | = | 0 | Nos. |
| - Transformer Rateing | = | 0 | KVA |
| - Power Factor | = | 0.8 | |
| - Transformer Eff. | = | 0.98 | |

2- **CALCULATION**

**Heat Loss / Transformer**

= ( 2 x 1250 + 0 x 0 )x 0.8 x ( 1 - 0.98

= 40 KW

= 40000 Watt

Total Heat Dissipation

=

= 40000 x 3.413

= 136520 Btu/hr

= 1.08 x CFM x Temp. Rise

= 1.08 x CFM x 10.8

Air Quantity Required for ventilation

Then :-

The Air Quantity = 11,704 CFM

**VENTILATION SYSTEM DISCRIPTION**

| | | | | |
|---|---|---|---|---|
| Number of fans | = | 2 | | |
| Fan Capacity / Each | = | 5,852 | = 6000 | CFM |
| Fan rating KW/Each | = | 0.88 | KW | |
| Fan st. Pressure | = | 0.5 | IN.WG | |

FAN (HP) = St. Pr.(INCH) X Flow (CFM) /( 0.9 X6356)

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