CASE STUDY

HVAC inside Cable Tunnels

UTILIZATION OF WASTE AIR TO COOL CABLE TUNNELS

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Project Reference: **Ras Al Khair 380/115/13.8kV Substation, RAK, KSA**

PROBLEM

Cable ampacity was worked out at ambient of 40^{0}C as per SEC standards and cables were procured accordingly. However, SWCC consultant insisted to change either temperature of cable sizing or provide HVAC inside cable tunnels to attain 40^{0}C indoor temperature . As per SEC standards, ventilation was considered and a temperature of 45^{0}C only could be attained inside cable tunnels.

CHALLENGE

Design of Package type Air-conditioning units were approved and the equipment were procured by contractor by this time . Hence, up-gradation PACUs were not possible. Addition of any new HVAC equipment will affect Electrical and Civil design. Moreover, huge quantity of cables were already procured by contractor. Challenge here was to convince consultant that existing design would meet the requirements and serve the purpose.

SOLUTION

An innovative idea was brought in such a way that Cable Tunnels will be cooled with out change in any of existing Design. Ventilation will be carried out by forcing waste air of temperature 25^{0}C from the building to tunnels and exhausting the same air from Tunnel. In this way, tunnel will attain an indoor temperature less than 40^{0}C. Calculations proving that sufficient amount of waste air is present inside the building to attain required ventilation and indoor temperature were approved by client.

HOW DOES IT WORK ?