

**AN INTEGRATED STUDY OF SITE CHARACTERIZATION TO MEASURING THE
SOIL CORROSION POTENTIAL USING GEOTECHNICAL AND GEOPHYSICAL
SURVEY FOR THE CONSTRUCTION OF POWER PLANT**

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Abstract

In the present era, advanced technology, latest instrument and software have been playing a vital role in the field of construction. To construct the multi storey building, dam, bridges and foundation, pre quality assurance is an essential part. Sub surface lithology and material identification using geotechnical and geophysical tools are widely used all over the world. Therefore, these facilitations are very useful in engineering site characterization. This work is related to the construction of a 45 MW coal based energy generation plant situated near Jamber Kalan, Tehsil Pattoki, District Kasur, Pakistan. For the execution of the work standard penetration tests was carried out, where 15 boreholes up to 50 meter depth were drilled at site. According to the USCS soil classification system, silty clay (CL-ML) was interpreted as a dominant material in all the boreholes at shallow depth. Poorly graded sand (SP) and silty sand (SM) was found having variable depth in almost every borehole. According to the laboratory analysis A-6 silty clayey, as specified in AASHTO soil classification system was encountered. Water table was found at 4.5 meters depth. These results were correlated with the geophysical measurements, by electrical resistivity survey using Wenner configuration. Vertical electrical sounding technique was used at three points namely VES1, VES2 and VES3 to find out the soil corrosion potential. The true resistivity of the subsurface material up to 20 meters depth is in the range of 20 to 59.5 Ω m. However, in near subsurface at depth interval 1.8 to 4.1 meters the resistivity is ranging from 19.9 to 23.4 Ω m, which is very favorable for the design of earthing system for power plant installations. Based on the resistivity values of the near-surface material, moderate soil corrosion potential at all three observation points is interpreted, which require nominal corrosion protection measures.