

Operations and Maintenance of CSIR Photovoltaic Plants

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Abstract

The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) was developed to encourage private investment to assist the development of the renewable energy sector in South Africa. Technologies that fall under the IPP Procurement project include onshore wind, biogas, biomass, solar photovoltaic and the landfill gas project. Different Photovoltaic (PV) systems such as ground mounted, rooftop and carport systems have shown a significant growth in South Africa and this growth is expected to continue over the coming years. In line with the vision of the REIPPPP, the Council for Scientific and Industrial Research (CSIR) has introduced a programme aimed at making the Pretoria campus energy autonomous over the next 5 to 8 years. As a part of this initiative, and to promote the use of green energy, the CSIR has installed three PV Systems: 558kWp Single Axis Tracker (ground-mounted), 203kWp Dual Axis Tracker (ground-mounted) and a Fixed-Tilt Rooftop system of 250kWp which is to be integrated onto the campus' electrical grid. This paper concentrates on the operations and maintenance of these three CSIR PV plants in order to maximize the plant performance and optimize energy production. The paper will also analyse the operations and maintenance costs associated with the plants.

Keywords

Photovoltaic, Operations, Maintenance, Plant performance

Biographies

Mudau Unarine Bridget is an Electrical Technician at the Council for Scientific and Industrial Research under Energy Centre Unit. Bridget obtained her National Diploma at the Tshwane University of Technology and currently studying towards her B-Tech in Electrical engineering. Bridget is also a registered ECSA candidate Technician.

Nithin Isaac is a senior engineer and holds a B. Eng. (Honours) in Electrical Engineering from the University of Pretoria, and is a Certified Energy Manager. He has also completed his Masters of Business Administration (MBA) from the Gordon Institute of Business Science. He has a project management background and has worked as a trainee, manager and on board level. He has been involved in projects within the renewable energy industry with experience in consulting projects within the African continent. He has worked on projects such as the residential mass roll out and demand side management projects from Eskom focusing on energy efficiency, energy economics, due diligence work, as well as concept study, feasibility and bankable feasibility work. He has also operational and advisory experience from concept to commissioning including operations.