

Project Title: IOT based Compressed Air Consumption and Monitoring System  
in Smelter Plant of NALCO

Abstract: Effective management of compressed air reduces the high energy bills for the plant. In the Aluminum Smelter plant the compressed air is an important resource. It is used in pot line for crust baking and alumina feeding, in cast house and carbon area for control of pneumatic equipment. There are many points where it may get leaked in spite of all care and hence there would be wastage of compressed air. The air consumption / demand can be monitored at regular intervals at different nodes like potline header, cast house header and carbon area header then means can be devised to regulate the consumption close to the actual demand and thereby reduce the wastage. This would ultimately save energy in the plant. Besides this the monitored air consumption data can be effectively conveyed to operation personnel that would help effective operation and management of the compressed air network. The air consumption from different delivery locations can be monitored at a central server and a demand pattern analysis can also be carried out at the server locations. This embedded diagnostic system will provide an assessment of leakage on a comprehensive basis and hence can better ensure the operations if used besides some air control equipment.

An IoT based system has been designed and deployed to monitor the air pressures, temperatures at different vital locations and communicate this information to the desired location for subsequent use.