

Laser Sensor For Detection Of SF6 Leaks In High Powerinsulated Switchgear Systems

Gondal, M.A. Baig, M.A. Shwehdi, M.H.;Center for Appl. Phys. Sci., King Fahd Univ. of Pet.Miner., Dhahran;

Dielectrics and Electrical Insulation, IEEE Transactions on [see also Electrical Insulation, IEEE Transactions on];Publication Date: Jun 2002;Vol: 9,Issue: 3

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

A novel photoacoustic spectrometer (PA) has been developed for in-situ detection of SF6 leaks in low concentrations. The developed system is equipped with a sound alarm system and has been tested in the laboratory for very minute SF6 leaks. This newly developed SF6 detection device utilizes a high quality factor resonant photoacoustic cell and continuous wave (CW) line tunable CO2 laser at 10.55 m wavelength. Whenever SF6 is detected an acoustic signal is generated and no signal appears from ambient air if there is no leakage of SF6. An electret microphone is used for the detection of these acoustic signals. The system is capable of detecting leaks of the order of 3.5 ppbv (parts per billion by volume) concentration. This device has been proved to have significant applications to industrial organizations that have electric power gas insulated systems (GIS). It could be also applied for other applications such as monitoring of environmental pollutants with minimal adjustments

For pre-prints please write to:abstracts@kfupm.edu.sa