

# **A Laser Photoacoustic System For Detection Of SF6 In Gasinsulated Systems**

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## **Summary**

As switching occurs in power systems under high voltage and critical environmental conditions, high temperatures of gas insulated systems (GIS) are unavoidable. The early determination of such hot spots may help to prevent failure of these GIS due to loss of some insulation properties of the gas used. A novel laser based photoacoustic spectrometer (PA) has been developed for in-situ detection of SF6 leaks in very low concentrations (pptv). 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. The PA system is equipped with a sound alarm system. Whenever SF6 is detected an acoustic signal is generated and no signal appears from ambient air if there is no leakage of SF6. A highly sensitive electret microphone has been used for the detection of these acoustic signals

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