

# Paris Session 2022



## Benefits & Challenges with Acceptance of Intelligent IoT (AI/ML) in Power Substation Environment

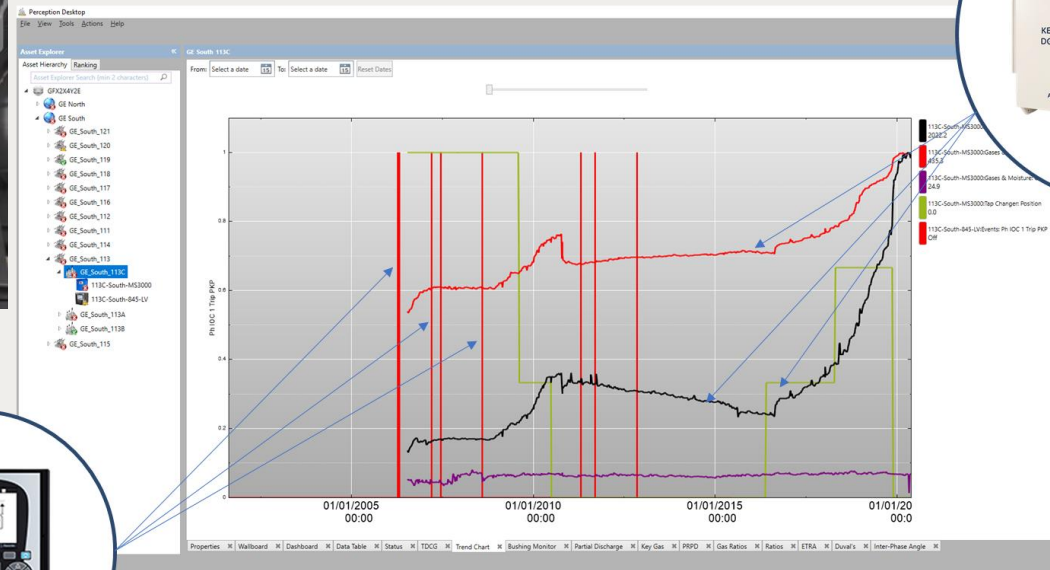
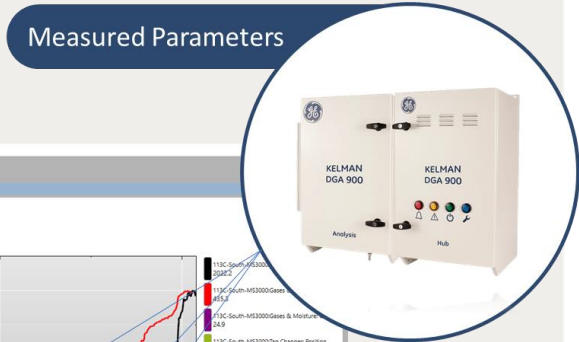
### Study Committee B5, PS 3

Q3.1 What are the benefits of digital solutions like IoT-sensors, machine learning, artificial intelligence, drones, robots etc. for substation life cycle from planning to maintenance? Which measures are necessary to increase the acceptance of intelligent IoT-based power equipment in substations?

Dr. Mital Kanabar (CA)



# Integrated Transformer Monitoring - Chemical, Electrical and Thermal

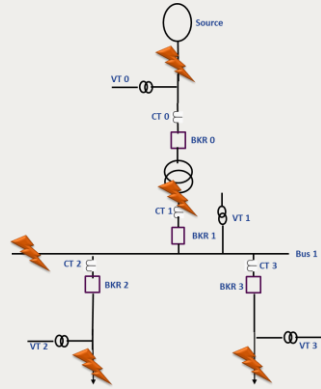


Group Discussion Meeting

Reference: CIGRE 2020 paper – “An innovative solution to assess the Reliability of Transformers by Integrated Transformer Health Monitoring”

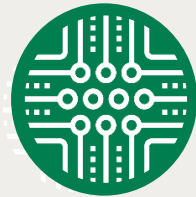
# AI/ML + Physical for Cyber-physical Digital Ghost (DG)

DG Lite



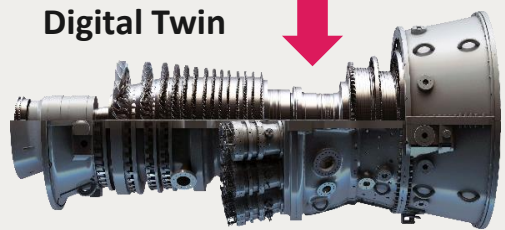
One-class

LABELLED DATA



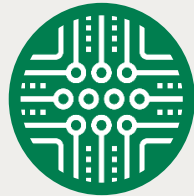
DG Full Scale

NORMAL OPERATING CONDITIONS



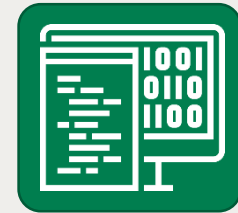
Two-class

LABELLED DATA



Group Discussion Meeting

ATTACK SCENARIOS



FEATURE CALCULATION & BOUNDARY CONSTRUCTION

NORMAL (BLUE) VS. ABNORMAL (RED)

