

# Case Study

Major Middle East Utility Pilots use of IRISS Maintenance Inspection Systems



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### Overview:

With more than four months per year where the maximum daily temperature exceeds 101°F (38°C), Dammam, Saudi Arabia is one of the hottest places on earth. In fact, Saudi Arabia is ranked the third hottest country in the world after only Libya and Qatar. Due to its proximity to the Persian Gulf, Dammam's temperature is moderated slightly but humidity levels can become a secondary issue for more than half the year with levels being described as oppressive to miserable at least one day per week. Dust storms that can last days can also be an issue in the region with fine sand particles becoming airborne and permeating everything they encounter.



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Into this environment, insert the utility electrical distribution equipment that must operate reliably to ensure power service is uninterrupted for homes and businesses. In addition, much of this utility infrastructure, like in many places around the world, is more than 40 years old. Transformers and Medium Voltage switchgear in this environment require regular condition based monitoring to reduce both risk of failure and Arc Flash – especially as they age.

To facilitate safer and more efficient condition based maintenance inspections using both Infrared and Ultrasound technology, IRISS' local partner in the region, EEIC, recently completed the pilot installation of Electrical Maintenance Safety Devices (EMSD). Ten (10) CAP-ENV-12-PD rectangular combination infrared / ultrasound inspection systems were installed on older Saudi Electricity Company (SEC) 13.8KV utility equipment with a history of unscheduled downtime. Regular Infrared inspections can detect overloaded or loose electrical connections while Ultrasound can be used to find signs of Partial Discharge (PD) including arcing, tracking and corona.

The CAP-ENV-PD units deployed were custom designed to meet the specific requirements of SEC which included stainless steel IP67 (NEMA 6) ingress protection and the ability to field replace the polymer optic from the front of the window. In addition, the units were equipped with E-Sentry intelligent asset tags which allow data collection to be conducted with a smartphone APP and all data to be pushed to a Cloud database.

Paul Goodbody, of IRISS' UK offices, travelled to Dammam to assist with installation of the pilot units and to train both EEIC and SEC personnel how to utilize the inspection systems to maximum benefit. Ahmad Mohammad Mosaad, Distribution Engineer at Saudi Electric Company, has described the pilot installation as, "A total success that we intend to duplicate across our fleet of assets."



Figure 1 Paul Goodbody of IRISS demonstrates how to utilize an IR window template

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Figure 2 SEC Engineer performs an infrared inspection on a transformer cable compartment using a CAT S60 Phone with built in IR camera and a CAP-ENV-12-PD Inspection Window



Figure 2 Paul Goodbody of IRISS listens to the Airborne Ultrasound signature on the MV side of a transformer using a SONUS PD handheld Partial Discharge detector