National Grid DFR & PMU Tender

SATEC wins tender for Fault Recorder and PMU with **PM180 analyzer** and **Expertpower** software

In January 2020 The Israeli Electric Company (IEC) published a tender calling for the implementation of "Transient Fault Recorders" in relay/control rooms of substations for disturbance recording, distance to fault calculating and a software platform for collection and analysis of data.

This came with a requirement of Phasor Monitoring Unit functionality, complying with IEEE C37.118.





The SATEC Offer

The <u>PM180 Power Analyzer</u> was offered with the following functional modules/ configuration:

- Fault recording current inputs: recording waveforms up to 40×In
- Digital I/O module: external trigger waveform recording
- IEC61850 ed.2 support includes Goose Messages
- Phasor Measurement Unit module, designed to meet IEEE C37.118

Alongside the PM180 analyzer, SATEC offered Expertpower software suite for the needed analysis and HMI for the system.

Distance to Fault

The PM180 is an advanced analyzer, featuring a fault locating functionality for overhead power lines, using impedance based calculations. This allows utilities to pinpoint the fault location and direct maintenance teams to the site in an extremely accurate manner, considerably saving resources and mitigating downtime.





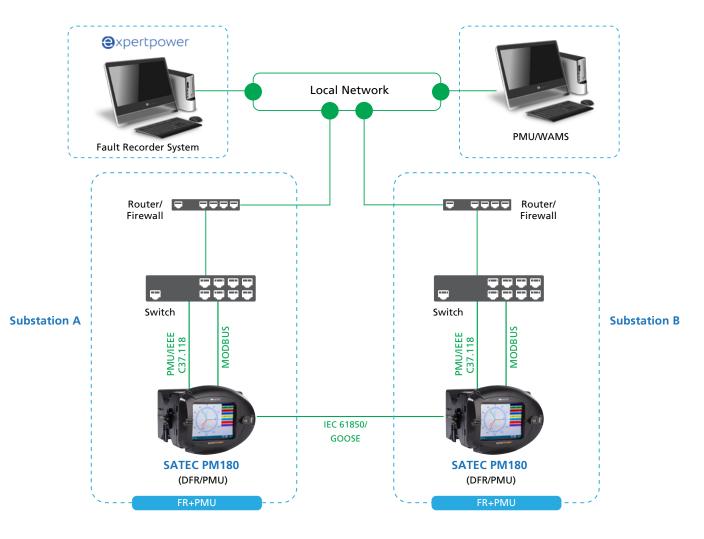


Figure 2 – Block-scheme for implementation of PM180 as DFR and PMU

The Expertpower software generates reports, specifying fault details, such as line, substation, Distance to Fault and fault type. This way, a full solution is provided, from substation analyzer through diagnostics and actual instructions for field teams.



Report View								
Report Type: Report Dates: ilte:	Distance to fault with waveform 8/10/2020 - 8/11/2020			Report Name: Report generation date: Device:		DFR 5/31/2021 PM180_DFR		
Breakdown Device/Station name	Line name	Line length	Date	Fault Time	Fault Type	Trigger Source	Distance to fault, km	Digital Input #
M180_DFR	Line 1	30.90	2020-08-10	18:56:19.167	phase B to phase C	Overcurrent	23.98	Cogital Input #
M180_DFR	Line 1	30.90	2020-08-10	18:54:32.033	phase B to phase C	Overcurrent	23.98	
M180_DFR	Line 1	30.90	2020-08-10	17:41:00.283	phase B to phase C	Overcurrent	24.01	
M180_DFR	Line 1	30.90	2020-08-10	17:39:20.210	phase B to phase C	Overcurrent	24.01	
M180_DFR	Line 1	30.90	2020-08-10	17:15:22.687	phase B to phase C	Overcurrent	24.01	
M180_DFR	Line 1	30.90	2020-08-10	17:15:13.067	phase B to phase C	Overcurrent	24.02	
M180_DFR	Line 1	30.90	2020-08-10	14:12:07.970	phase B to phase C	Overcurrent	24.03	
ime : 18:56			1. 08/10/2020 1	8:56:19.067 Tri	iggered. 08/10/2020 18:	56:19.167 Record	ed. 08/10/2020 18:56:20.60	T A C RMS V1 5.57 kV
ime : 18:56			1. 08/10/2020 1	8:56:19.067 Tri		Lini ~	ed. 08/10/2020 18:56:20.60	T A G RMS V1
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Time : 18:56				8:56:19.067 Tri			ed. 08/10/2020 18:56:20.60	T ⊖ © RMS V1 5.57 kV V2 6.53 kV
ime : 18:56							ed. 08/10/2020 18:56:20.60	T A C RMS V1 5.57 kV V2 6.53 kV
ime : 18:56								T A C RMS V1 5.57 kV V2 6.53 kV V3 5.48 kV V4 0.81 kV
Time : 18:56								T A C RMS V1 5.57 kV V2 6.53 kV V3 5.48 kV V4
Time : 18:56								T A C RMS V1 5.57 kV C 6.53 kV V3 5.48 kV V4 0.81 kV I1x 0.04 kA
ANTA -15 15 -15 15 -15 15 -15 15 -15 15 -15 -								T A C RMS V1 5.57 kV C 6.53 kV V3 5.48 kV V4 0.81 kV I1x 0.04 kA I2x
Time : 18:56								T A C RMS V1 5.57 kV C 6.53 kV V3 5.48 kV V4 0.81 kV I1x 0.04 kA



Award

Following the offer, SATEC's solution was admitted for rigorous POC testing, which entailed several months and countless sessions, demonstrating fault recording and analysis.

Running up as one of the 3 most advanced solutions, SATEC's offer was finally announced during February 2021 as the offer to have won the bid, presenting not only cutting-edge technology but also offering it at extremely competitive terms.