



SCADA, Smart Grid and Telemetry

Who is using TETRA for SST?

TETRA + Critical Communications Association



Introduction

- The TCCA SCADA, Smart Grid and Telemetry (SST) Group has been compiling a list of SCADA schemes that use TETRA as the bearer

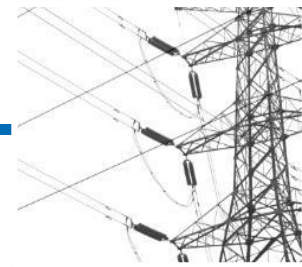


List of schemes

Customer	Sector	Application
Creos	Electricity/ Gas	Remote meter concentrator, electricity/gas, distribution telecontrol
Vattenfal Europe	Electricity	Telecontrol – MV network
Energias de Portugal	Electricity Distributor	Telecontrol – MV network
CLP Power HK	Electricity	Smart Grid
KEPCO	Electricity	Distribution automation
Saudi Aramco	Oil and Gas	Oil reservoir management
Port Authority of Valencia	Maritime	Automated Early Warning System
Ebro River	Maritime	Hydrological control and flood warning siren
Sasol	Oil & Gas	Flow meter management, emergency announcement system (voice, monitoring and control), TETRA high site monitoring and control
South African Police Service		TETRA high site monitoring and control



Creos



Sector:	Electricity/gas
Application:	Remote meter concentrator, electricity/gas, distribution telecontrol
Status:	Roll-out
TETRA network:	Currently leased, but procurement underway to build own system with 56 sites (SEPURA)
TETRA bearer:	PD – metering; SCADA – SDS
RTUs:	Up to 2600 metering concentrators; currently 150 RTU/modems (Piciorgros); future 2600 RTUs
SCADA protocol:	IEC 68070-5-104 IP (PD); IEC 68070-5-101 serial (SDS)
Performance:	Meter concentrator data – typically 33KB every 15 minutes; SCADA 10–15-second scan rate (10bit/s data in SDS)
Comment:	Current trial over commercial TETRA network has been running for about two years; operational by the end of 2014; the network includes critical voice communications for 500 terminals



Vattenfal Europe



Sector:	Electricity
Application:	Telecontrol – MV network
Status:	Operational
TETRA network:	Vattenfall Berlin (Motorola) circa 30 sites
TETRA bearer:	Packet data and SDS
RTUs:	1000 (some line connected?)
SCADA protocol:	IEC 68070-5-104 IP (PD); IEC 68070-5-101 serial (SDS)
Performance:	Circa 50 RTUs per PD plus circa 20 RTUs via SDS
Comment:	Future expansion to 4000 RTUs; custom mapping of IEC to SDS



Energias de Portugal (EDP)



Sector:	Electricity distributor
Application:	Telecontrol – MV network
Status:	Pilot
TETRA network:	SIRESP (Portuguese Government Network) (Motorola), circa 530 sites
TETRA bearer:	Packet data (single slot)
RTUs:	About 30 RTUs with a performance (availability) generally better than the ones supported on public networks (such as GSM); a performance equivalent to the ones supported on private owned analogue VHF networks
SCADA protocol:	IEC 68070-5-104
Performance:	RTU scanned each minute (keep alive); in this pilot there is a maximum of 5 RTUs per base station (PD channel) due to the geographic spread of the RTUs included in the pilot
Comment:	Future evolution being analysed (paradigm (private/public/shared network) and technology)



Saudi Aramco



Sector:	Oil and gas
Application:	Oil reservoir management
Status:	Pilot
TETRA network:	Saudi Aramco (EADS) circa 165 sites
TETRA bearer:	Packet data
RTUs:	Circa 3 RTUs
SCADA protocol:	Unknown
Performance:	Unknown
Comment:	59 RTUs/300 sec poll; 14 RTUs/30 sec poll



Sasol



Sector:	Oil and gas
Application:	Flow meter management; emergency announcement system (voice, monitoring and control); TETRA high site monitoring and control
Status:	Operational
TETRA network:	Sasol 17 sites, still expanding (Hytera)
TETRA bearer:	SDS
RTUs:	95 ESS-RTU-SRB
SCADA protocol:	Modbus OPC
Performance:	Data transmission on change of I/O state, keep alive interval 10 minutes
Comment:	Operational since mid-2013



South African Police Service



Sector:	Public safety
Application:	TETRA high site monitoring and control
Status:	Operational
TETRA network:	SAPS 215 sites (Cassidian)
TETRA bearer:	SDS
RTUs:	210 ESS-RTU-S&A
SCADA protocol:	OPC
Performance:	Data transmission on change of I/O state
Comment:	Operational since 2010