



Digital Telemetry and Automation solutions for TETRA

General Presentation



- Remote Monitoring and Controlling Solutions for TETRA
- FF-Automation is the manufacturer of AutoLog TETRA-RTU

1 TETRA – for remote target supervision

1.1 FF-Automation Oy

FF-Automation Oy has over 35 years of design and manufacturing experience in the field of automation. Our trademark is AutoLog®. Tens of thousands of AutoLog® RTUs (Remote Terminal Unit) are successfully working for decades in remote target supervision applications all over the world.

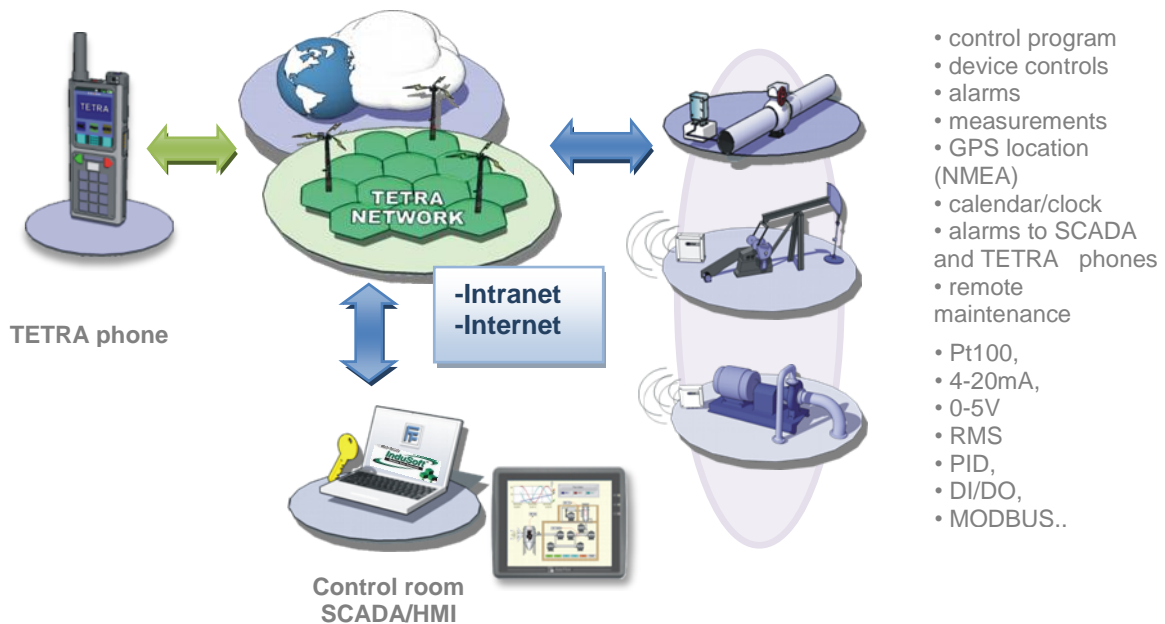
1.2 Introduction to AutoLog® TETRA RTU

Imagine what to do if you operate 2,500km long gas distribution pipeline system and want to know that everything is working well and under control? Or if you need to read temperatures, voltages and power consumptions from the geographically widely distributed transformer stations and there is no communication line available. How to collect the data in the same database and how to analyze the data effectively?

The wireless data communication is becoming the mainstream technology in remote target supervision applications and in many cases it is the only reasonable solution.

The wireless TETRA (*TERrestrial TRunked RADio*) network has safety and reliable data services with its unique voice services. Finnish company FF-Automation Oy has developed AutoLog® TETRA RTU (*Remote Terminal Unit*) which can be used in remote target supervision via TETRA network.

Typical customers which would benefit from the AutoLog® TETRA RTU are electricity companies, oil and gas companies, wastewater and water treatment companies, vehicle location companies, remote machine and device users etc.



Maximum TETRA network performance with TETRA SDS messages without overloading the TETRA networks voice channels. SDS messages doesn't use voice channels for data transfer it uses signaling channels.



SDS text message to TETRA phone: It's time to maintain the equipment!

Remote target supervision means communication between customer targets and control room application. Measurement data from the widely distributed targets can be viewed from the control room's graphical interface and alarms, maintenance info etc. can be automatically forwarded to service men TETRA phones. Remote targets can be controlled (e.g. valves, pumps, motors etc.) from the control room or from the TETRA phone.

AutoLog® TETRA RTU has all the PLC (Programmable Logic Controller) features so it can be easily programmed to control targets automatically. Needed data from the targets can be send to control room for supervision, reporting, analyzing, maintenance etc. purposes. TETRA RTU has all the needed digital and analog I/O connections to interface with customer targets and also the GPS location as an option.

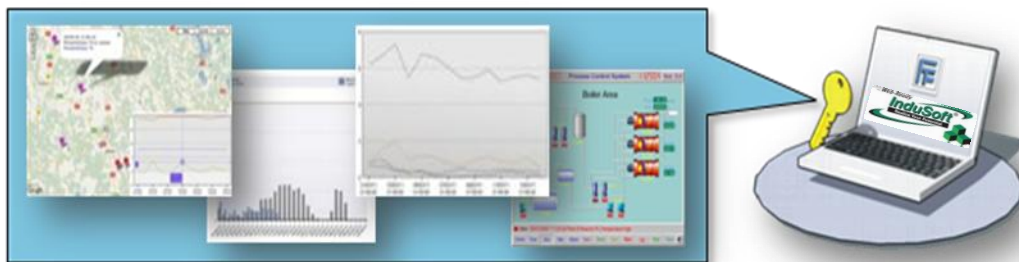
FF- Automation Oy released AutoLog® TETRA RTU in the year 2002 and it is the first available RTU device with TETRA communication in the market. FF-Automation Oy has numerous customers using AutoLog® RTUs in many applications like oil & gas cathodic protection, valve stations and wellheads, city gas systems, wastewater systems, electrical substation, street light systems, vehicle location systems etc. AutoLog® TETRA RTUs are used in pilot project for collecting data from electrical transformer, weather and solar panel system.

1.3 Control room solution

FF-Automation has also the control room solution for TETRA RTUs. Control room server communicates securely with TETRA RTUs using the TETRA network. Data from the TETRA RTUs can be viewed from the company's INTRANET PCs. Different users can have different user rights to the control room views.

Customer can have graphical and animated control room views for effective supervision, analyzing, maintenance and controlling their remote distributed targets. Control room solution is based on the sophisticated Indusoft Web Studio automation SCADA (Supervision Control And Data Acquisition) software. It has all the needed RTU supervision features integrated in the same software (alarms, trends, graphical process views, reports, recipes, automatic language translator, database connections, web browser compatibility etc.)

FF-Automation has developed also tool for remote maintenance of the TETRA RTUs. This tool allows remote downloading the complete target control application wirelessly via TETRA network.



Control Room SCADA application connects with the TETRA RTU targets using the TETRA Connectivity Server (TCS) API. TETRA SDS communication between SCADA and TETRA RTUs allow for example: measurement collection, output controls, alarm messages, application program changes, status values, GPS information etc.

2 TETRA application examples

2.1 Oil & gas industry

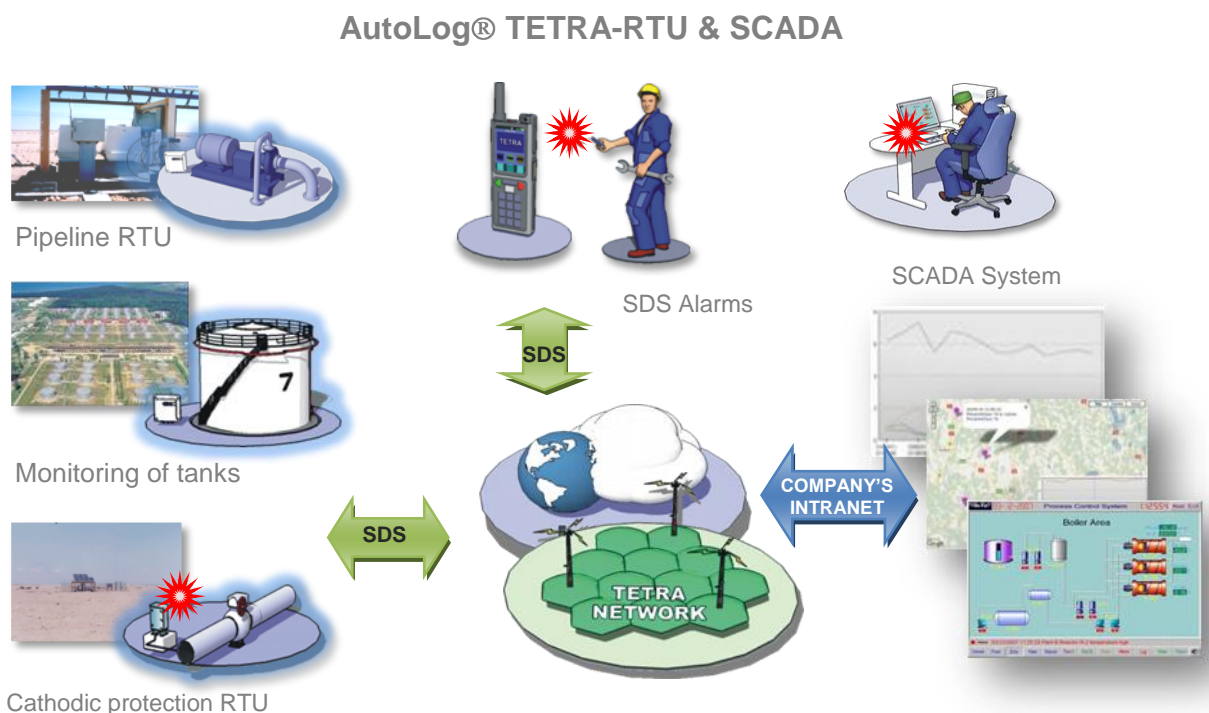
- Remote monitoring system for pipeline cathodic protection
- Remote monitoring and controlling of water injection wells
- Remote monitoring and controlling of line pipeline break valve stations and wellheads
- Remote monitoring of tank levels
- Remote monitoring and controlling of any oil & gas facility

There are many targets that need to be supervised in the oil and gas industry. It is important to know e.g. raw material volumes in the tank areas, pressures, flows and temperatures in distribution systems, valves and pumps should be controlled remotely, long pipeline should be protected against corrosion etc.

In oil and gas industry only the most reliable communication between service personnel and several automated targets is accepted. That is why many this sector companies have chosen TETRA technology.

AutoLog® TETRA RTU is ideal solution for oil and gas companies for remote supervision and control applications.

FF-Automation has many years of automation experience in oil and gas industry applications.



Remote monitoring and controlling of Oil and Gas systems; measurement collection, control, alarms, status inquiries, temperature, pressure, flow rates, levels, cathode protection, tank farm supervision etc.

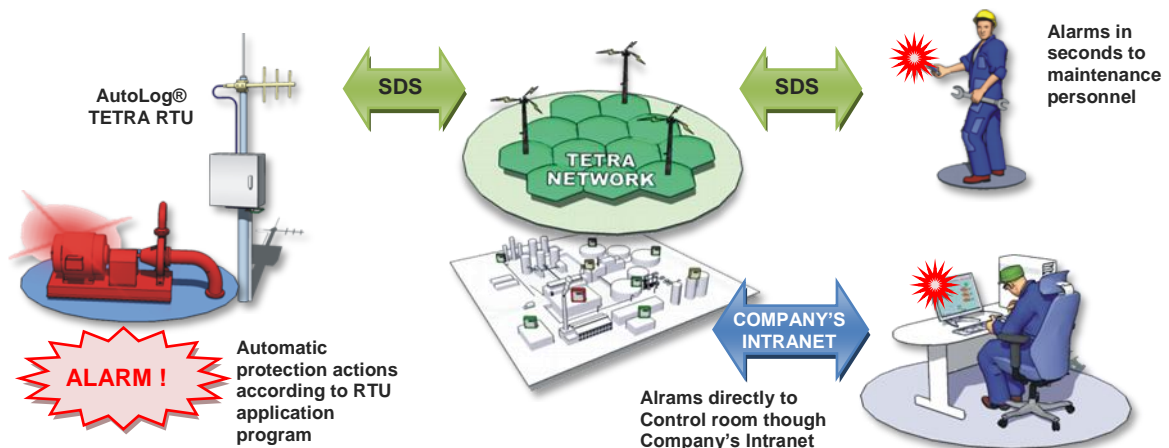
2.2 Remote supervision of oil production

FF-Automation has developed AutoLog® TETRA RTU so that oil producing companies can use it in their remote supervision and automation applications.

TETRA RTU can collect the data from pipeline valves and sensors, cathodic protection rectifiers, tanks and pumps. Graphs, trends and alarms are visible on the monitor and SDS messages containing alarms and reports are possible to send directly to mobile units. Controls may be applied remotely to the valves and pumps, ON/OFF and analogue signals may be sent from customer's computer or mobile handheld device.

AutoLog® TETRA RTU can be used to:

- Increase the reliability pipeline and distribution networks
- Automatic and manual network failure detection and protection. (RTUs can communicate with each other.)
- Condition monitoring for longer lifespan for expensive equipments e.g. in pumping stations.
- Sensors reading, valve controls, cathodic protection readings (RMS values etc.)
- Usage reports, trends, network performance optimizations.



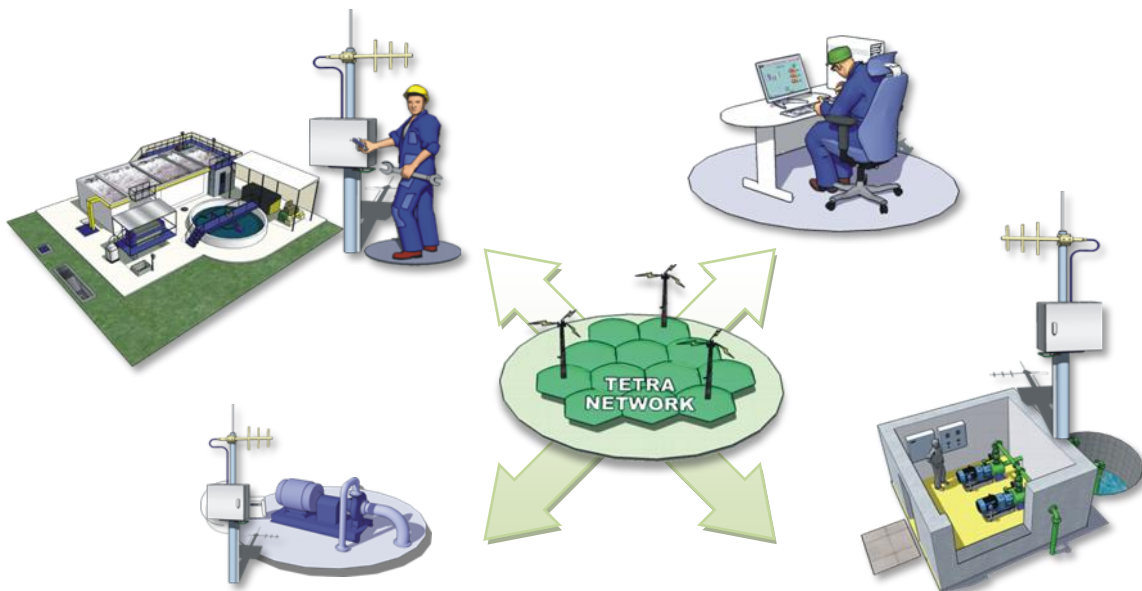
AutoLog® TETRA RTU can make automatic controls locally and it can be used to collect and send data to control room. The maintenance person can immediately respond to any network failure. Alarms can be forwarded also to right service men TETRA phones within 1-2 seconds. Automatic failure protection actions can be programmed to TETRA RTU to be made within milliseconds.

2.3 Water treatment and distribution

Clear water is one of the key elements in welfare society. Water treatment system needs 24/7 supervision and reliable communication between automation devices and maintenance personnel.

TETRA communication gives savings in communication costs in city and suburban areas where the same wireless network can be used for voice and data communication. Supervised targets like pumping stations, water treatment plants, distribution pipeline etc. are normally located in geographically wide area so wireless TETRA is flexible and cost efficient solution for this kind of communication.

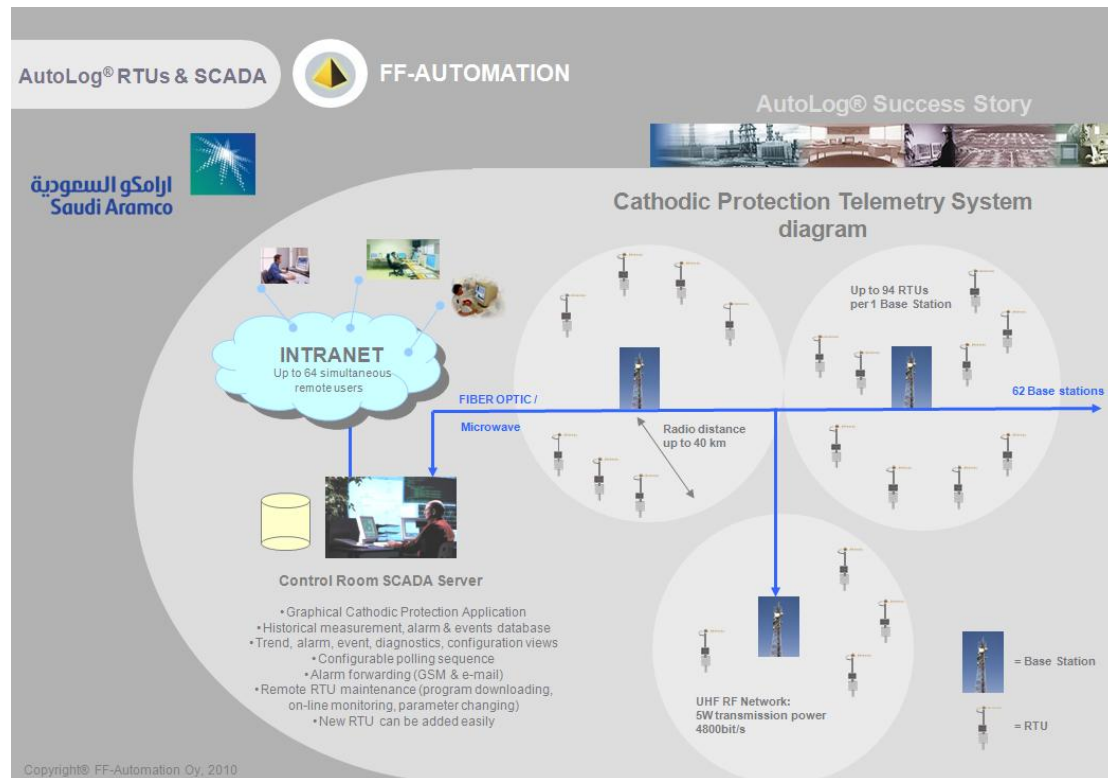
FF-Automation Oy has many years of automation experience in water treatment projects.



Data from all the targets is collected to central control room's database. Alarms are forwarded automatically to on duty service man's TETRA phone. Reports and trends etc. can be viewed in the company Intranet.

- measurement of incoming water flow, quantities, temperature
- level of dissolved oxygen in water, sludge consistent, Ph etc.
- alarms of abnormal process values / functions
- control tasks according to the application program (alarms, trends, history, databases, reports, control commands etc.),
- update via TETRA network or via company's Intranet,
- alarms forwarding directly to personnel's mobile phones, control room or e-mail,
- control commands from mobile phone, central control room or via local server
- cost effective and quick to install.

3 Reference #1



FF-Automation

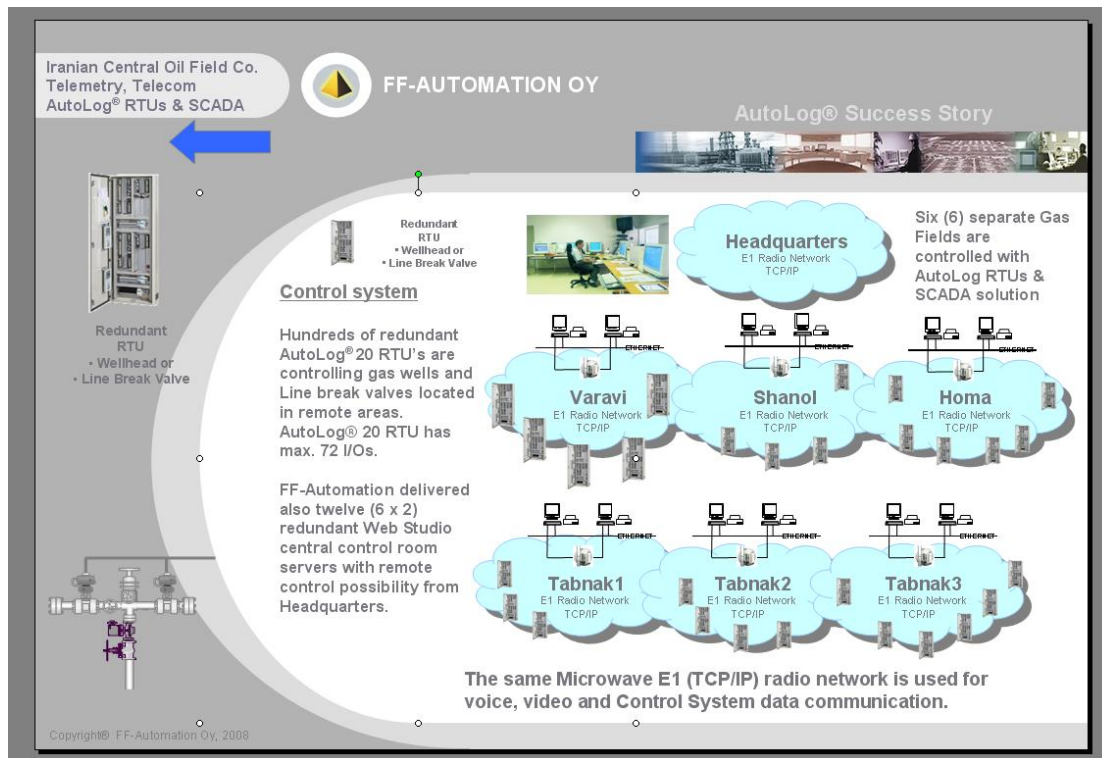
(www.ff-automation.com)

FF-Automation supplied RTU and SCADA system to the world biggest oil supplier, Saudi Aramco

The project consists of nation wide oil & gas pipeline's Cathodic protection monitoring system. Pipeline from east to west coast of Saudi Arabia and pipeline from south to north borders of Saudi Arabia is monitored using AutoLog Cathodic Protection RTUs, AutoLog radio communication equipments and Indusoft Web Studio SCADA system. Project application, training and commissioning supervision was made by FF-Automation.

For more information about FF-Automation and the AutoLog® range of TETRA products please do not hesitate to contact us !

4 Reference #2



FF-Automation

(www.ff-automation.com)

FF-Automation supplied RTU and SCADA system to the biggest Iranian oil supplier, Iranian Central Oil Field Company (ICOFC).

The project consists of a number of gas wells, Line Break Valves, gathering and trunk pipelines, treating facilities and residential area.

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