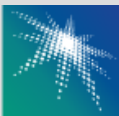


The  
AutoLog<sup>®</sup>  
Family  
presents



We've got it under control  
Sophisticated Control Technology

ارامكو السعودية  
Saudi Aramco



AutoLog<sup>®</sup> Cathodic Protection Monitoring  
System for SAUDI ARAMCO



FF-AUTOMATION



# AutoLog® Cathodic Protection Monitoring System

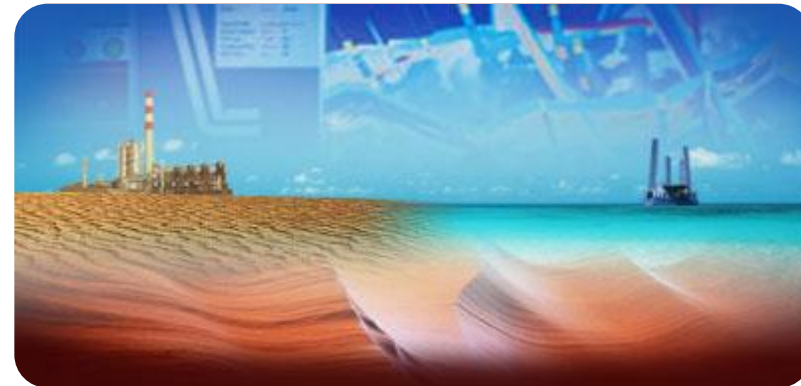
## CUSTOMER

### Saudi Aramco

Saudi Aramco is the largest oil corporation in the world with the largest proven crude oil reserves and production.

Saudi Aramco manages oil reserves that exceed 264 billion barrels, about a quarter of the world's total oil reserves. Its yearly production of only crude oil is neared 3.4 billion barrels. It manages over 100 oil and gas fields in Saudi Arabia.

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Saudi Aramco



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## PROTECTED PIPELINES

### East West Pipeline

East West pipeline runs from east to west across the Kingdom to transport oil and gas from Jubail (A) to Yanbu (B) in order to supply energy for the many industrial projects which Yanbu undertook and to facilitate the export of these energy products from the Red Sea coast. The pipeline which runs for 730 miles (1,170 km) was completed in 1982.

### North to South pipeline

In the eastern coast runs the pipeline from North part (C) to the south part (D) of the Kingdom.



AutoLog CP monitoring system covers the Kingdom from east to west coast and from north to south.



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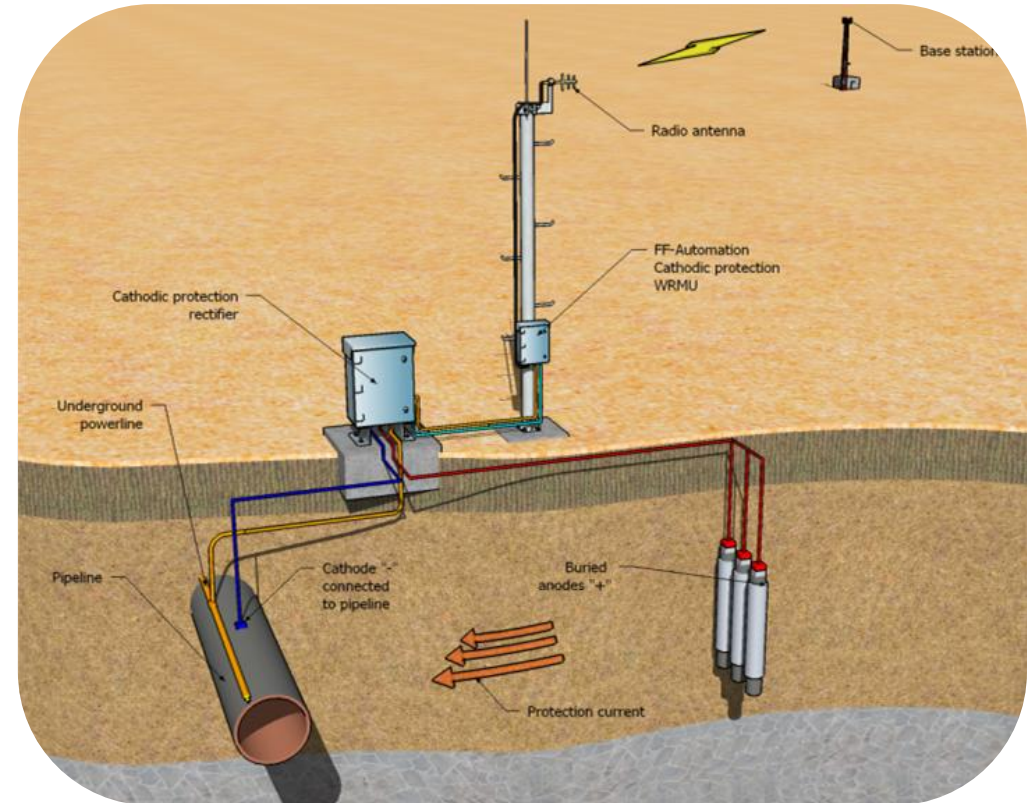


## CATHODIC PROTECTION

Cathodic Protection (CP) system protects metal pipelines against corrosion. Impressed CP system relies that Transformer Rectifiers (TR) are supplying consistent DC current to underground anode beds. Too low TR current leads to corrosion but too high current can lead to disbonding of the pipe coating and hydrogen embrittlement.

## CP MONITORING SYSTEM

AutoLog Cathodic Protection (CP) monitoring system monitors CP Transformer Rectifier's impressed current, -voltage and optionally pipe-to-soil potential measurements.



System consists thousands of this kind of CP sites. FF-Automation delivered AutoLog CP WRMUs.



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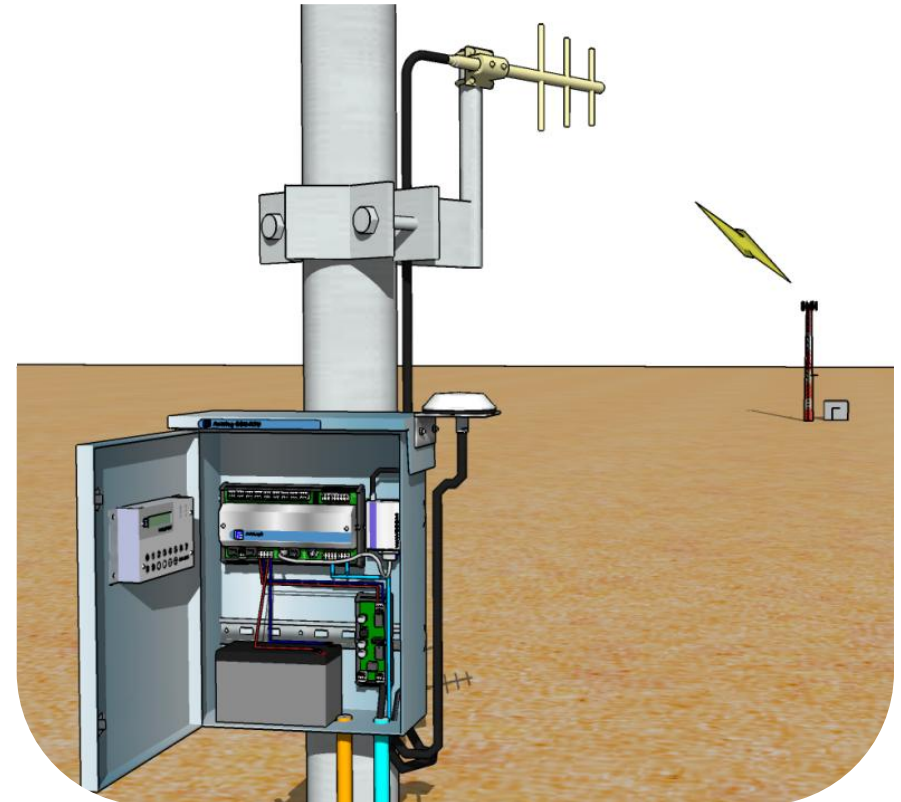
## CP COMMUNICATION

Cathodic Protection (CP) system sends measurement data wirelessly to nearest base station.

AutoLog Cathodic Protection system can send measurement data using the following networks:

- Conventional Radio Network
- TETRA Network
- GSM Network
- RS-485 Network
- TCP/IP Network

Base stations are connected together to form one huge communication network which covers the whole East West- and South to North pipeline areas.



FF-Automation delivered AutoLog CP radio links.



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## CP SCADA SYSTEM

SCADA system for Cathodic Protection (CP) was designed and delivered by FF-Automation. It is based on Indusoft Web Studio SCADA software.

From SCADA application users can see rectifier locations on map, alarms from abnormal situations and all measurements in trend lines. Measurements and alarms are stored in SCADA server's SQL database.

Authorized users can see SCADA application views using normal web browser anywhere within the company's LAN network.



FF-Automation delivered CP SCADA system



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## COMPLETE SOLUTION

FF-Automation supplies life-long turnkey solutions for remote monitoring and control.

- System specifications are decided with customer
- FAT tests, SAT tests
- Quality checkings
- Documentation
- Commissioning supervision
- Personnel training
- Guaranteed maintenance time
- Spare part service
- Etc.



FF-Automation delivered complete CP monitoring system solution to Saudi Aramco



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## MANUFACTURING

AutoLog WRMUs are designed and manufactured in Finland by FF-Automation since 1976.



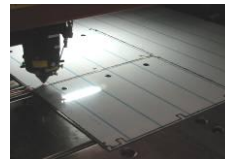
AutoLog CP WRMU



Stainless Steel enclosure's protection class is IP54



RTU's in Saudi Aramco project are manufactured as serial production



Enclosure dimensions are checked using LASER-treatment



Hundreds of RTU substations ready for supply



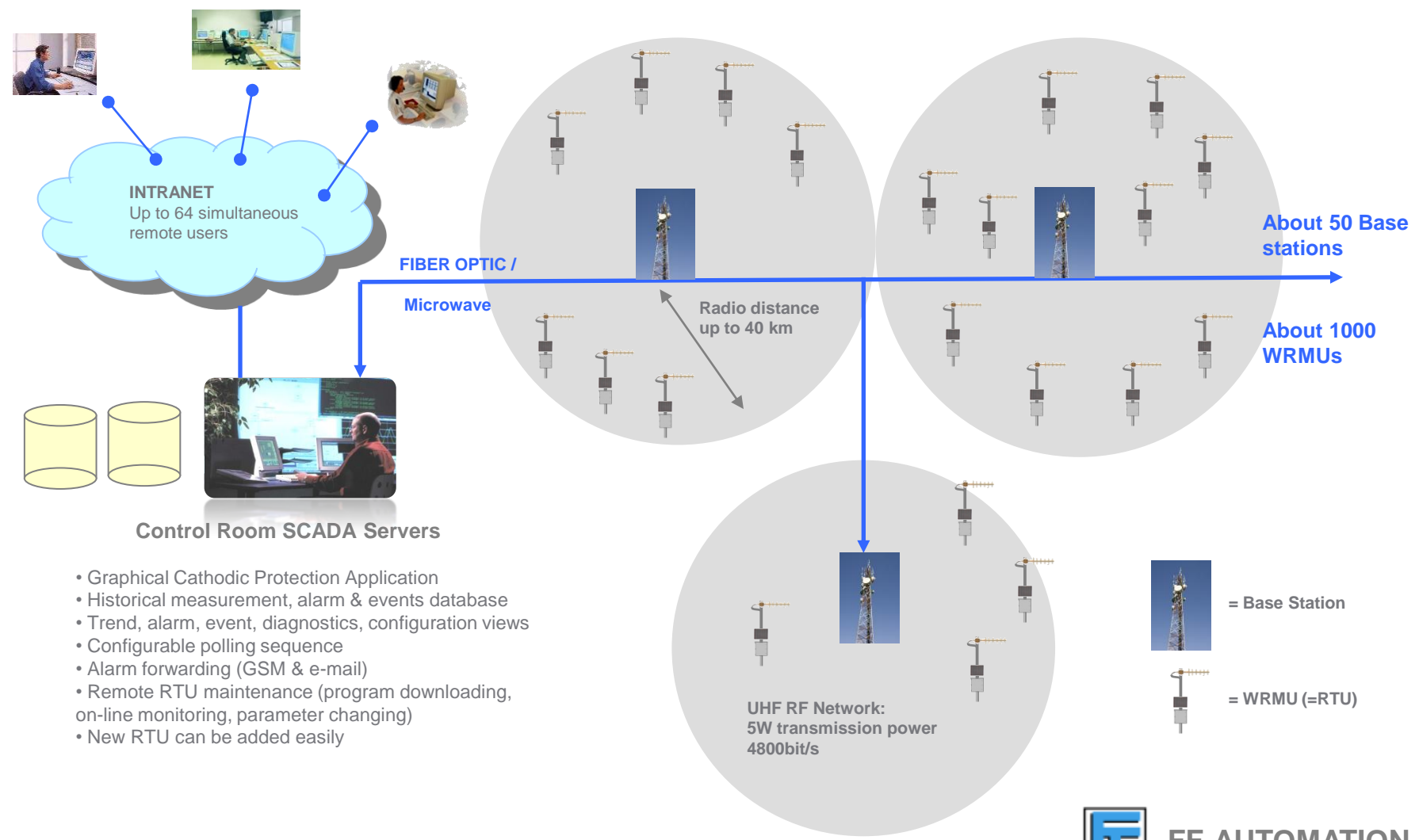
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# AutoLog® Cathodic Protection Monitoring System

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- Graphical Cathodic Protection Application
- Historical measurement, alarm & events database
- Trend, alarm, event, diagnostics, configuration views
- Configurable polling sequence
- Alarm forwarding (GSM & e-mail)
- Remote RTU maintenance (program downloading, on-line monitoring, parameter changing)
- New RTU can be added easily



[www.indusoft.com](http://www.indusoft.com)



For more information about FF-Automation and the AutoLog<sup>®</sup> range of control products and automation solutions, please open [www.ff-automation.com](http://www.ff-automation.com)



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