



Company Profile



CORROSION TECHNOLOGY SERVICES





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Introduction

Corrosion Technology Services (CTS) is a market leader in the provision of corrosion prevention solutions, particularly cathodic protection, within the Oil & Gas, Utilities and Construction industries.

CTS' strength lies in its engineering and production facilities. CTS employ approximately 200 staff across Europe, Asia, the Middle and Far East These include civil, electrical, chemical engineers and metallurgists specialising in all aspects of cathodic protection. In line with our corporate philosophy of providing local service, many geographic regions are served by local group companies and where these do not exist we have networks of representatives and agents.

CTS provide consultancy services, pre-design surveys, specialized site / field surveys, material supply, design services, installation supervision, interaction testing and commissioning, monitoring and fault finding activities for cathodic protection systems. CTS also manufacture a wide range of equipment in-house including power supplies and remote monitoring and control systems. For items we do not manufacture, we often have relationships with leading producers enabling us due to economies of scale to be focused and competitive.

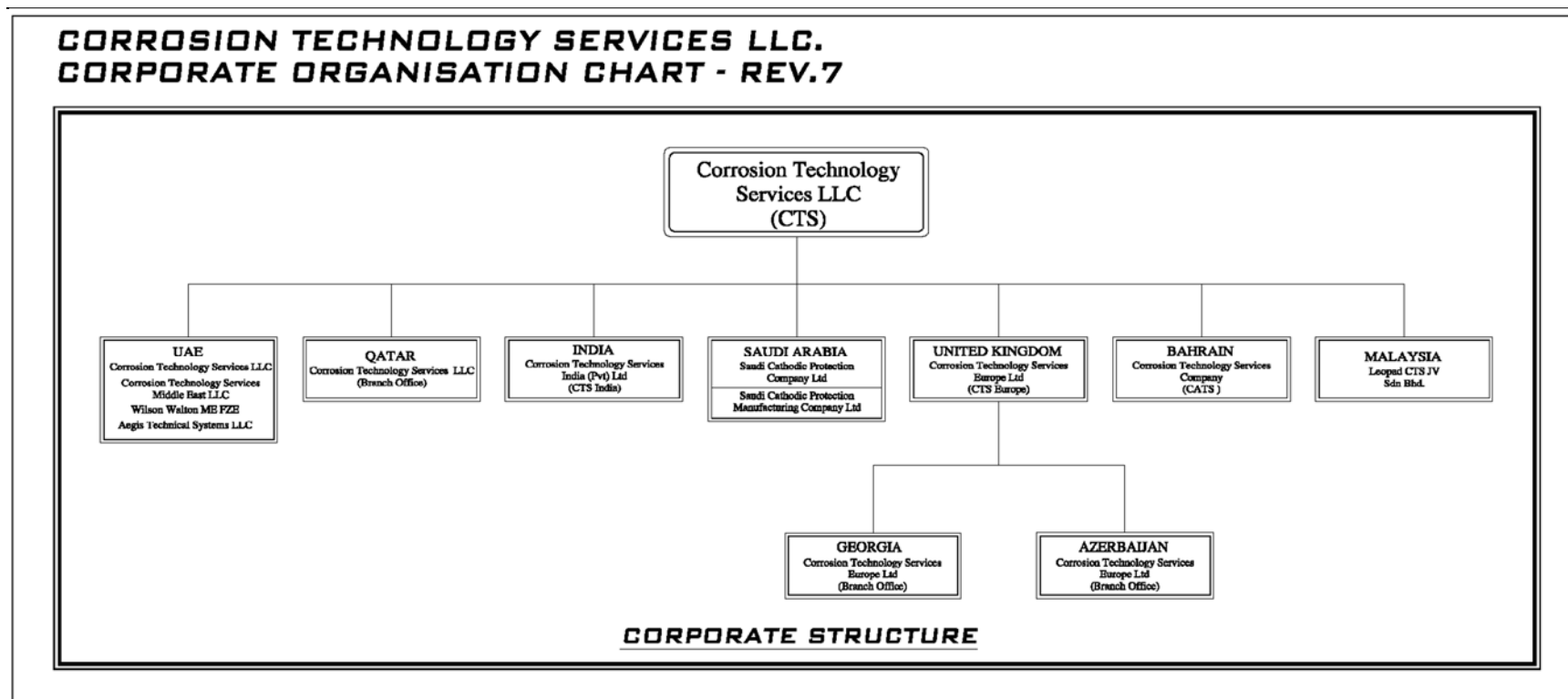
All activities within the CTS Group are constantly monitored in accordance with our quality assurance procedures certified to ISO 9001:2008 in order to ensure that the highest standards are maintained throughout every stage of manufacture and project execution. In addition the CTS Group also holds ISO 14001:2004 and OHSAS 18001:2007.



CTS Group

The CTS group consists of thirteen companies spread over nine countries and four geographic regions – Europe, Asia, The Middle East and the Far East. With over 40 years of experience in some of the world’s most aggressive environments CTS has a reputation for delivering high profile projects within budget and on time in the global arena.

Company Structure





(i) Corrosion Technology Services LLC (CTS)

(ii) Corrosion Technology Services Middle East LLC (CTSME)

Corrosion Technology Services LLC and Corrosion Technology Services Middle East LLC form the focus of CTS operations in the Middle East and Africa.

The primary business of the UAE office is the protection of oil, gas and water assets including pipelines, tanks and well casings. In addition, the company also has extensive experience in the protection of reinforced concrete structures and jetties. CTSME has a production workshop in Sharjah and sources materials from local suppliers and other group companies globally.

The companies are approved by all major regional operating companies and regularly undertake projects with value in excess of \$1 million and have directly handled projects values in excess of \$5 million.

CTS have a branch office in Qatar which enables local companies to place orders within the country. CTS Qatar has executed significant contracts for RasGas and Qatar Petroleum.

(iii) Corrosion Technology Services Europe Ltd (CTS Europe)

CTS Europe (formerly known as Pipeline Maintenance Ltd – PML) is the regional headquarters for CTS operations in Europe, the Caspian and North Africa. With a track record spanning over four decades. CTS Europe provide cathodic protection design and engineering services, plus the supply of cathodic protection materials and equipment. The company specializes in the provision of Close Interval Potential Surveys (CIPS) and DC Voltage Gradient (DCVG) buried pipeline surveys. The PML brand is recognized as a leading manufacturer of transformer rectifiers worldwide.

CTS Europe has successfully executed projects as far apart as Chile and Australia. CTS Europe has branch offices in Azerbaijan and Georgia to service markets in the Caspian region.

(iv) Saudi Cathodic Protection Company Ltd (SCPC)

SCCP alongside SCPMC are the leading cathodic protection companies in Saudi Arabia. SCPC undertakes work on a wide range of industrial, oil and gas related projects and specializes in the design, consultancy and engineering of the protection of steel in concrete. Having undertaken several multi-million dollar contracts in this field over the past decade has led SCPC to have an unrivalled reputation in the region.

(v) Saudi Cathodic Protection Manufacturing Company Ltd (SCPMC)

SCPMC specializes in the manufacture of materials and equipment for the cathodic protection industry. The company supplies magnesium and silicon iron anodes, junction boxes and transformer rectifier units. These are all assembled in the purpose built facility in Dammam where a QMS system to ISO 9001 is operational. The company represents Rohrback Cosasco, leading suppliers of internal corrosion monitoring equipment.



(vi) Corrosion & Technical Services . WLL (CATS)

CATS are a long-established company in Bahrain specializing in cathodic protection. CATS maintain a permanent engineering and support staff in the office which also includes a workshop where cathodic protection materials are assembled and maintained.

CATS has carried out many of the major cathodic protection related contracts in Bahrain including pipelines, plant, jetties and wharves, as well as steel reinforcement in concrete in many bridges and sea water intakes.

(vii) Corrosion Technology Services India (PVT) Ltd (CTS India)

CTS India has full design capability providing CTS products and services for the Indian subcontinent. Engineering design work is carried out in-house. CTS India has been responsible for completion of major projects including jetties and pipelines and consultancy for cathodic protection systems in plant / terminal environments.

(viii) Wilson Walton Middle East FZE (WWME)

Wilson Walton ME specializes in the protection and servicing of ICCP and antifouling systems for ships and design of sacrificial anode protection for ballast tanks etc. Wilson Walton ME and CTS have also supplied sacrificial anodes for a number of major subsea pipeline and offshore jackets.

ix) Leopad-CTS Joint Venture

The Leopad-CTS Joint venture was formed in 2016 in order to help manage the increasing number of contracts being handled by CTS in the Far East. The company is approved by Petronas and has in-house engineering and survey capabilities.

x) Aegis Technical Systems LLC (Aegis)

Aegis has developed a reputation for supply of high quality switch mode power supplies and robust remote monitoring systems. Originally developed for the protection of steel in concrete where multiple zones are a common feature, the output capability of the units has been increased over recent years and monitoring systems have successfully been supplied to many pipeline and petrochemical plant projects.



Capabilities

CTS specializes in the field of corrosion control and is uniquely qualified to perform high quality state of the art work on virtually all types of corrosion related projects.

Engineering Expertise

The backbone to any business is its staff and capabilities, CTS is proud to have approximately 200 staff working together to serve our global client base. CTS have over 50 ICorr and NACE qualified staff, comprising engineers and technicians from various disciplines such as:

- Civil
- Mechanical
- Corrosion
- Electrical
- Materials
- Chemical
- Computerized Data Management

Industry Experience

Some of the industrial sectors and structures to which CTS have successfully provided services and products include:

- **Industrial Complexes:** Underground Process Facilities, Product Piping, Storage Tanks, Condensers, Water Treatment Equipment
- **Oil & Gas Pipelines:** Transmission Facilities, Tank Farms, Distribution & Gathering Facilities
- **Oil & Gas Production:** Refineries, Bulk Handling Plants, Oil Well Casings
- **Power Plants:** Underground Piping Networks, Ground Grids, Pipeline Corridors, Condensers, Cooling Water & Treatment Facilities, Underground Structures, Tanks
- **Offshore:** Drilling Rigs, Offshore Pipelines, Marine Terminals, Sheet & Tubular Piles, Loading-Unloading Terminals, Dock Structures, Jetties
- **Ship Repair Industry:** Tanker Hulls, Ballast Tanks
- **Infrastructure Concrete Industry Projects:** Bridges, Docks,, Cooling Towers, Parking Garages, Desalination Plants, Underground Ducts, Buildings, Foundations, Swimming Pools, Aquariums
- **Integrity Management:** Survey and Evaluation of Pipeline and Plant Facilities

Services

Industrial Cathodic Protection

CTS has been actively engaged in pre-design surveys, specialized surveys, supply of materials, design, installation, interaction testing and commissioning, monitoring and trouble shooting of a wide range of cathodic protection projects.

Typically, industrial cathodic protection involves structures such as underground and aboveground storage tanks, buried pipelines, oil well casings and structures associated with refineries, power plants, water treatment and desalination plants, etc.

CTS has wide-ranging experience of the following types of protection:

- Temporary Cathodic Protection
- Permanent Cathodic Protection
- Sacrificial Cathodic Protection
- Impressed Current Cathodic Protection
- Computer Modelling of AC interference on pipelines

Cathodic Protection of Steel in Concrete

The CTS Concrete Integrity Group is responsible for carrying out some of the largest and most complex projects of this type in the world. The CTS corrosion engineers are amongst the world's leading experts in the field of deterioration and repair of reinforced concrete structures of all types.

CTS possesses unrivalled expertise in the field of corrosion surveys, potential mapping, corrosion rate surveys, design and specification services, materials supply, installation, commissioning and maintenance of cathodic protection systems for steel reinforced concrete structures.

These services have been successfully implemented on a wide range of structures such as power plants, seawater cooling systems, bridges, docks, etc.

In addition to providing such services to existing deteriorated structures, CTS also provides a similar service for construction of new concrete structures that will prevent the onset of reinforcement corrosion in an economic way.

Offshore Cathodic Protection

CTS has successfully completed various offshore projects such as surveys, design, testing and commissioning, research and development on a project basis and supply of materials. Our engineers have experience in ROV surveys, design of monitoring systems and retrofits for ageing offshore structures and pipelines. Some of the typical offshore structures for corrosion protection have been:

- Submerged pipelines
- Dry Docks
- Jetties
- Fixed and floating Offshore Jackets
- Single Buoy Moorings
- Various other facilities

CTS has been actively involved in various activities for offshore structures including surveys, design, testing and commissioning, research and development on a project basis, supply of materials (bracelets and other type of anodes).

Integrity Assessments and Surveys

CTS engineers can provide detailed audits of cathodic protection systems, interference investigation and pipeline integrity assessment surveys. CTS has also completed complex evaluations of defective cathodic protection systems in plant and on pipelines.

Specialist services CTS perform include:

- AC Mitigation Studies (ACIM)
- Close Interval Potential Survey (CIPS),
- Direct Current Voltage Gradient Survey (DCVGS)
- Pipeline Current Mapper (PCM) survey
- External Corrosion Direct Assessment (ECDA)
- Pearson Survey
- E log I Survey

CTS work closely with Speir Hunter and are able to offer Stress Concentration Tomography (SCT) for the detection of faults and stresses on pipelines.



Marine Services

Through its subsidiary company Wilson Walton Middle East, CTS provide inspection and maintenance services to vessels docking in the major ports and repair yards. In addition, we also provide spare parts for all types of impressed current and anti-fouling systems and design and supply sacrificial anodes for vessels ranging from tugs to tankers.

Wilson Walton Middle East has also supplied complete cathodic protection systems for new vessels including Floating Production Storage and Offloading (FPSO's). A case study for supply of an impressed current system including computer modelling of an FPSO is included in our Case Study section.

Power Supplies

CTS has designed and built their own high quality Transformer Rectifier Units (TRU's) in the Middle East and United Kingdom for over 20 years. Both locations are ISO 9001 accredited and have supplied bespoke systems for clients across the globe from South America to Australia. Oil or air-cooled units can be supplied with:

- Constant voltage, potential controlled or constant current
- Single or multi-channel outputs
- Thyristor, variac or tap-set DC output control

CTS also manufacture and supply Switch Mode Power Supplies (SMPS) in our Aegis division. SMPS can provide an economic alternative to traditional transformer rectifier units in a variety of applications.

Enclosures can be supplied in carbon steel, stainless steel or aluminium with a variety of paint finishes. Enclosures can be built to NEMA or IP requirements and ATEX certified units can be provided for hazardous area locations.

Remote Monitoring

CTS provide remote monitoring electronics and software for corrosion related applications. Remote monitoring provides companies with a cost-effective way to monitor the operational status of their corrosion protection systems. Data is collected by the remote monitoring unit and then transmitted utilizing various communications channels, including fibre optic cables, cellular phones and low earth orbiting satellites. Remote monitoring reduces or eliminates the need for companies to send personnel on-site in order to monitor corrosion protection systems on a variety of structures, including pipelines, storage tanks and reinforced concrete structures. Data collected via the remote monitoring units can also be utilized by risk assessment and management software in order to provide customers with a comprehensive corrosion monitoring program. A remote control option is also available which enables the operator to adjust power supply output and operating parameters from a central location.

The product range includes:

- Remote Monitoring Units (RMU)
- Remotely Controlled Units



- Data Loggers
- GPS Interrupters and Locators
- Associated Software for Data Management

Materials Supply & Manufacturing Facilities

CTS can supply the full range of cathodic protection materials and equipment, regularly supplying clients across the world and has manufacturing or procurement facilities at the following locations:

- UK
- UAE
- Saudi Arabia
- Bahrain
- India

Materials not manufactured directly by CTS are sourced from reliable partners.

Training

Through existing relationships with NACE and ICorr, CTS can facilitate accredited training programs or provide guidance and tuition on Power Supplies, Remote Monitoring Systems or general corrosion initiatives and topics. CTS can conduct training at their offices, we also have a track record delivering field and classroom based training on client premises at their request.

Preferred Partners

CTS act as the agent or has license agreements with the following companies:

Abriox Ltd

- Remote Monitoring Systems
www.Abriox.com

De Nora Permalec

- MMO anodes for protection of Steel in Concrete
www.DeNora.it

Rohrback Cosasco Systems Inc.

- Internal corrosion monitoring equipment and services
www.cosasco.com

SES Technologies Ltd

- AC Interference Analysis Software
www.SESTech.com

Speir Hunter Ltd

- Non-Contract Stress Concentration Tomography (SCT) for pipeline inspection
www.speirhunter.com

Memberships and Accreditations

ISO Accreditations

The Integrated Management System (IMS) framework adopted by CTS is designed to meet and wherever possible exceed the requirement of ISO 9001:2008, ISO 14001:2004 and ISO 18001:2007. HSE is a value all customers seek when selecting a product or service. CTS, through its continuous improvement program aims at providing innovative, state of the art, cost effective solutions to its customers.

CTS has achieved its leading market position by putting the customer requirements first, ensuring its needs are always understood, and met.

All the projects (products or services) begin with execution, quality, test and inspection plans with special emphasis on the specific requirements of the customers thus ensuring the effectiveness, constructability, reliability and efficiency of the products or services rendered. The QHSE department then ensures the strict compliance of the above plans and procedures throughout the production or execution of the project.

We have established, documented and implemented our QHSE Management System in order to continually improve the effectiveness of the system and to continually improve our services to our customers both internal and external.



* Copies of local ISO certification can be provided for prequalification if required.

Professional Membership

Corrosion Technology Services are proud to be members of and support the following professional organizations:

- NACE National Association of Corrosion Engineers
- I Corr Institute of Corrosion
- CPA Corrosion Prevention Association



Accreditations

CTS is registered and audited by several external procurement portals, demonstrating compliance to a high standard of health, safety, environment and quality requirements:

- Achilles
- Ariba
- Tejari
- ISNetworld





Key Personnel

Roderick M. Callon (Rod), has over 20 years of experience in the corrosion control field. He is a Fellow of the Institute of Corrosion (FICorr), NACE Corrosion Specialist and is a BSc (Hons) in Applied Chemistry from the University of Portsmouth. Rod is responsible for all aspects of our business in Bahrain and Saudi he also specializes in the protection of reinforced concrete structures. His ability in this field has led CTS to carry out many of the largest Cathodic protection schemes for reinforced concrete structures worldwide. Rod is currently the Managing Director-Technical for the CTS Group worldwide and also General Manager for CTS Bahrain and Saudi Arabia operations.

P.V. Ramanathan (Ram), is qualified as a Chartered Accountant (India) and Chartered Certified Accountant from UK. Ram has over thirty four years of international, post qualification experience mainly in the oilfield service industry. His previous experience includes long periods at Ernst & Young, Schlumberger and other large international trading companies. He has been with CTS and its predecessors since 2001 and was part of the management buyout team which acquired the Middle East operations of Corpro Companies in 2003. Ram is currently Managing Director – Commercial for the CTS Group.

Steve Wroe, has a BSc in Metallurgy and Materials and is a Fellow of the Institute of Corrosion, UK (FICorr) and NACE Corrosion Specialist. He has more than 30 years' experience in corrosion/cathodic protection engineering and management positions. Steve's technical background combined with his management experience has significantly enhanced CTS ability to secure and successfully complete projects. He is currently a Director of the CTS group of companies.

Paul Brooks, has over 10 years' experience in the Cathodic Protection industry, he has a degree in Industry Related Science from Durham University and worked as UK Services Manager at CCEL where he developed the field service work and managed several major projects. Paul joined PML in 2007 as Field Operations Manager setting up and growing a department which has become a major pipeline survey provider in UK. In December 2011 Paul was appointed General Manager. In addition to being in charge of the administration of the company Paul is responsible for Business Development in Europe, Paul holds MICorr and NACE Senior Corrosion Technologist certifications.

Subramanian Narayan (Raju), has a Degree in Chemical Engineering and more than 25 years of experience in the field of cathodic protection, insulation, fireproofing, coating and allied corrosion activities. He is an active member of NACE and ICorr UK, is a certified NACE Corrosion and Cathodic Protection Specialist and Fellow of the Institute of Corrosion (FICorr). Raju is a consultant to CTS Europe.

Dr. John Norris, has a PhD in Cathodic Protection and has over 17 years' experience in the field of corrosion control. He has been involved in feasibility studies and inspection of many concrete structures in the Gulf and has extensive design, installation and commissioning experience of cathodic protection systems for new and existing concrete structures. He is also experienced in design and commissioning of cathodic protection systems for structures such as submerged screens/pumps, tanks, buried pipelines and LPG bullets. John is also experienced in the application of remote monitoring and control of power supply systems. John is a professional Member of the Institute of Corrosion (UK) (MICorr) and is currently working as Projects Manager for the CTS Group.



Steve Bradley, has an MSc in Offshore Engineering and is a Chartered Engineer and NACE Corrosion Specialist with over 30 years of experience in the corrosion/cathodic protection engineering and management positions. He has worked both with cathodic protection contracting companies and major oil companies and has been stationed in the Middle East/N. Africa for over 20 years. Steve has a thorough technical understanding of CP/Corrosion issues in this region and is fully conversant with the operating requirements of the large EPC Contractors and local Oil Companies. He is currently the Operations Manager of CTS Middle East.

Vikram Prabhakaran, has over 18 years of experience in the corrosion control field. He is an active member of the Institute of Corrosion (UK) (MICorr) and certified NACE CP Specialist. He has worked in the capacity of Corrosion Engineer and Project Manager on various projects in the Middle East and Indian subcontinent. His expertise is in the field of CP surveys, design and commissioning of Industrial and Offshore cathodic protection systems. He is currently Technical Manager for CTS Middle East.

Clive Hawkins, has a BSc in Chemistry and a BEng in Civil Engineering. He has 25 years of experience in the fields of cathodic protection and civil engineering as a contractor and consultant. He is a NACE certified CP Specialist and chartered civil engineer. For the last 8 years Clive has worked for CTS in Saudi Arabia managing the Industrial Projects Department. In addition to project work Clive is actively involved in promoting technical awareness in the cathodic protection industry, having made presentations at several conferences and seminars in the Middle East.



Office Locations and Contact Details

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