



## GENERAL PRESENTATION



Partner no. 220080024



Partner nº33115299



Partner nº36



Partner



303974 Válido hasta: Enero 2023  
Nº 303974



certificates nº 280048/49/69-2018-AHSO-IBE-ENAC

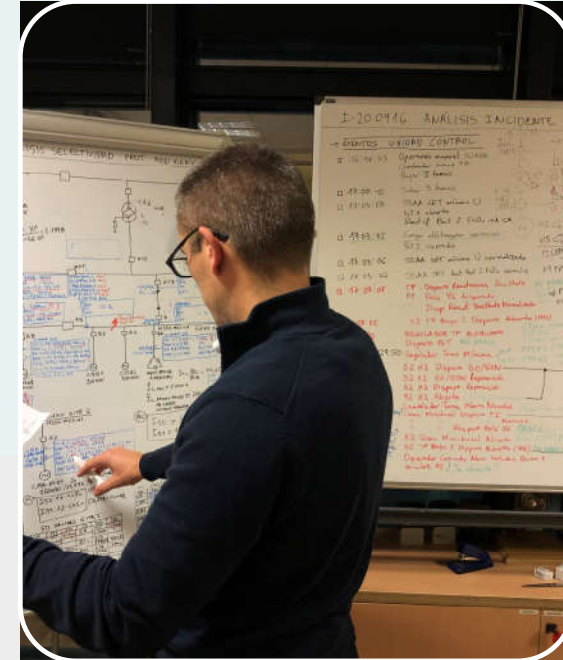
ACTIVITY AREAS,  
TECHNICAL SPECIALIZED SERVICES OF ELECTRICITY AND I&C



**Maintenance**  
(scheduled and preventive)  
**and Test**  
(related to the commissioning of  
third party)



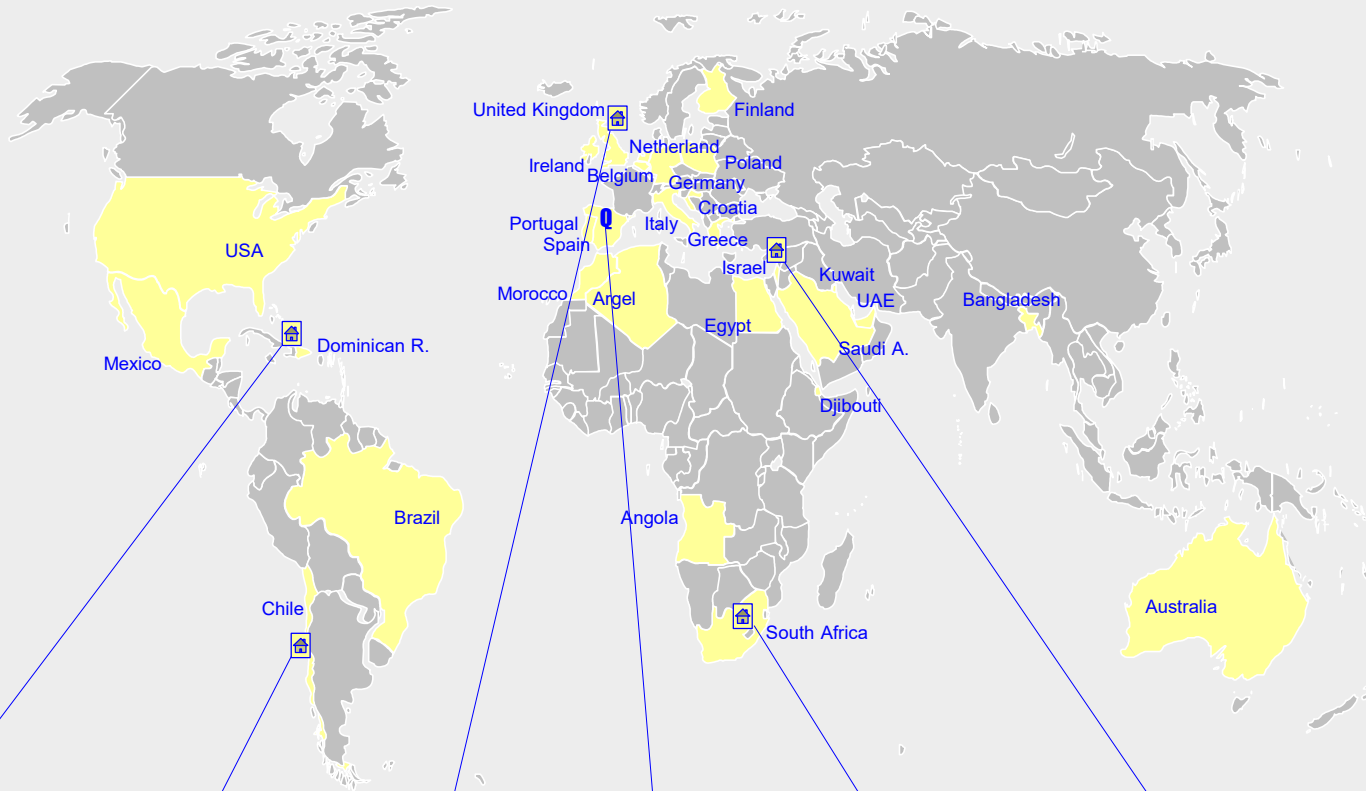
**Commissioning**  
**and Supervision**  
(for construction and  
commissioning)



**Engineering**  
(analysis)  
**and Training**  
(technical and specialized)

*“always committed to the needs of our clients”*

GLOBAL PRESENCE,  
WE STRENGTHEN OUR CAPACITY TO SUPPORT OUR CLIENTS LOCALLY



– QATRO group companies: subsidiary / branch

– Parent company

– countries where we have / are working



*“365 days a year committed to the needs of our clients worldwide”*

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Registration N<sup>o</sup>: 560032575



+ 16 years  
of international  
experience

+ 2,5 M€  
Investment  
in E+I&C test  
equipment and  
software



+ 60  
technicians  
are part of our team  
90%  
permanent contract

+ 74 Power  
plants  
commissioned

+ 4.000  
hours / year  
of engineering analysis  
, under service of  
COMMs and O&Ms



100%  
Fully integrated  
own  
technicians

+ 16 GW  
Energized  
successfully  
and  
+ 3 GW  
per year of  
predictive  
maintenance



# INTERNATIONAL EXPANSION AND MAIN MILESTONES I



2014-15-16



**2007**

- ▶ COMM E CCGT As Pontes 800 MW **Spain**
- UTE Duro Felguera – Técnicas Reunidas

**2006**

**QATRO establishment**

Long professional career in technical departments of Endesa Generacion



**2011**

- ▶ COMM E+I&C CCGT Moerdijk 430 MW **Netherlands**
- T Reunidas



**2012**

- ▶ COMM **CSP** Orellana 50 MW **Spain**
- Acciona Energía

**2014**

- ▶ COMM E+I&C **CSP** Kaxu 100 MW **South Africa**
- Abengoa



**2015**

- ▶ SUP construction E+I&C ▶ COMM E+I&C **Biomass** SP BioEnergy 30 MW **Dominican Republic**
- Cobra / SP BioEnergy



- ▶ COMM **Photovoltaic** Romero Solar 196 MW **Chile**
- Acciona Energía



1<sup>st</sup> international project

Opening QATRO South Africa

Opening QATRO República Dominicana

Opening QATRO Chile

**Certification integrated system:**  
ISO 9001  
ISO 45001  
ISO 14001

**Naturgy approvals:**  
Electrical protections  
Termography  
Power Transformers  
HV Circuit breakers

**Repsol qualification:**  
Maintenance and electrical test

# INTERNATIONAL EXPANSION AND MAIN MILESTONES II



## 2016-17

► COMM E+I&C CCGT Los Mina 180 MW  
**Dominican Republic**  
Tecnicas Reunidas

► COMM E+I&C CCGT 240 MW Dead Sea Works  
**Israel** Abengoa / ICL



Opening QATRO Israel

## 2017

► COMM E+I&C Cogeneration Aconcagua 77 MW  
**Chile** Duro Felguera



► COMM + SUP assembling Photovoltaic 100 MW Atacama I  
**Chile** Abengoa



ENEL Approval: Power Transformers maintenance

## 2018



► Frame Agreement EROM: Electrical test Power Substations  
**Wind farms**  
2018 – today **Spain - Portugal**



Framework agreement Diael: Partial discharges

## 2019

► COMM E+I&C CCGT WAS 1390 MW  
**Saudi Arabia**  
GE / Abengoa

► COMM E+I&C CCGT Hadera 140 MW  
**Israel** Idom



► COMM E+I&C CSP Cerro Dominador  
**Chile**  
Acciona I - Abengoa

► COMM E+I&C Owner's engineering Biomass Curtis 50 MW  
**Spain**  
Acciona I – Imasa / Greenalia

## 2020

► COMM I&C CCGT Beertuvia 450 MW  
**Israel** Siemens



► COMM E Photovoltaic DeWildt 50 MW + Zeerust 75 MW  
**South Africa** Cobra



EDP Renewables Approval: FAT attendance Commissioning

# INTERNATIONAL EXPANSION AND MAIN MILESTONES III



## 2021

► COMM E  
**Photovoltaic**  
Malgarida 238 MW  
**Chile** Acciona E



► COMM E+I&C  
**Biomass** Ghent  
20 MW  
**Bélgica** Elecnor



► O&M E+I&C  
**CSP** 110 MW  
Cerro Dominador  
**Chile**  
Acciona Industrial



► COMMs E PSs **Wind farms**  
EDP Renewables  
**Europe**



## 2022

► COMM E+I&C+M+O  
**WtEnergy** Ness  
150.000 Tm / 15 MWe  
**UK** Acciona I



► COMM E  
**HPP** Villa Toce  
**Italy** ENEL



Opening  
QATRO  
United Kingdom

SIEMENS Approval  
Electrical protection  
and control

Frame Agreement  
ACCIONA Energía  
Commissioning  
**Photovoltaic**

ABB HITACHI  
Approval  
Electrical  
installations

Frame Agreement  
ENEL Green Power  
Retrofit Commissioning  
**Hydroelectric power plants**

- QATRO Chile SpA permanent technical Staff  
**Chile – LATAM**  
PSs + fast response specialised services + ...
- Development on **SPECIALIZED TESTS**  
on **Hydroelectric Power Plants:**  
Dynamic response hydraulic and electrical machines
- Tests and Commissioning  
for **Energy Storage Systems**
- **TECHNICAL AUDIT**  
Fault solving and RCA studies  
**Photovoltaic and Wind Farms**

# **QATRO ACTIVITIES AND SERVICES**

**QATRO**





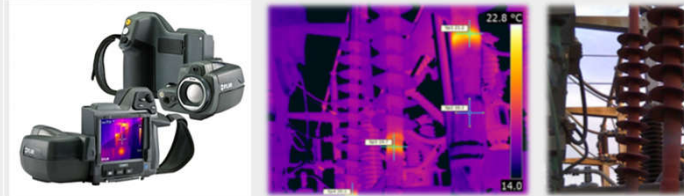
**INDUSTRIAL ELECTRICITY**  
**WE TEST, COMMISSION AND MAINTAIN ANY SWITCHGEAR ELEMENT**

- Power and distribution transformers
- Protection relays
- Instrument and protection transformers
- LV/HV circuit breakers
- LV/HV dry insulation cables,
- LV/HV bus bars, LV/HV cabinets, MCCs...
- Disconnectors and switchgear
- Surge arresters



- ❖ And with the energized installation:
  - **Analysis by infrared thermography**
  - Inspection by qualified technicians ITC level I and II
  - Assessment of fault connections, hot spots, load imbalance, insulation defects, ...
  - Temperature analysis in process lines

**WITH 100% QATRO-OWNED TEST EQUIPMENT**



## INDUSTRIAL ELECTRICITY

(examples of): ELEMENTS WE TEST AND TESTS WE MAKE TO THEM



### Power Transformers

- General and Terminal Dielectrics
- Transformation ratio
- Winding resistance
- Frequency Response Analysis (FRA)
- Frequency Response Analysis of insulation system (FDS)
- Dynamic resistance of OLTC
- ...



### Instrumentation / protection transformers (ITs / VTs)

- Polarity
- Transformation ratio (with / without load)
- Insulation resistance (primary / secondary / ground)
- Winding resistance (secondary), only in ITs
- Saturation curve, only in ITs
- Tan delta



### Protective relays

- Settings verification
- Parameterization of the PR
- Secondary injection



### Surge arresters

- General dielectric testing (Off-line test)
- LCM tests on metal oxide Surge arresters (On-line test)



### HV automatic circuit breakers

- Switch-on (closing) / switch-off (opening) times
- Static and dynamic contact resistance (DRM)
- Synchronism transverse (between poles) and longitudinal (among contacts)
- Coil consumption and spring loading motor consumption
- Energy recovery time (spring charging)
- Pole displacement and speed



### MV Cables

- Dielectric strength (HIPOT: high potential) of the cable sheath, both with direct voltage (DC) and very low frequency (VLF)
- Insulation resistance
- Continuity

*“always committed with our 4 principles:  
Quality in work, Quality in customer relationship, technical analysis in depth, Capacity for innovation”*

► Verification, calibration and commissioning of pasive and active industrial instrumentation :

- Thermometer, thermostats, transmitters, temperature probes as thermocouple or thermoresistive
- Pressure gauges, transducers, pressure switches, differential pressure transmitters
- Communication protocols HART, FOUNDATION™ Fieldbus, PROFIBUS
- Predictive and preventive maintenance
- Registration and analysis of transitory phenomena of process variables

► Verification, calibration and commissioning of control valves:

- Pneumatic, hydraulic and motorized
- Communication protocols HART, FOUNDATION™ Fieldbus, PROFIBUS
- Fisher Emerson, Masoneilan, Samsom, Flowserve Rotork, Auma, Drehmo, etc

► Preparation of *As-built* documentation As-built

► Owned and specialized test equipment :

- Advanced field calibrators
- Field communicators
- Thermostatic ovens



WITH 100% QATRO-OWNED TEST EQUIPMENT



## SUPERVISION, of CONSTRUCTION, of COMM, of OWNER's ENGINEERING

### Supervision Activities from assembly

- ✓ Technical control according to project specifications and applicable regulations and standards (IEC, IEEE, RAT, RCE, REBT,...)
- ✓ Control and update of progress
- ✓ Control of delivery / receipt of contractor documentation
- ✓ Control of the reception of materials, equipment, ..., according to specifications
- ✓ Management of the opening, follow-up and closing of pending points
- ✓ Review of As-built documentation



### Supervision of testing and commissioning

- ✓ Management of the transfer of systems from construction to commissioning (TOPs)
- ✓ Management of the opening, follow-up and closing of pending points
- ✓ Control and update progress
- ✓ Review of the tests carried out
- ✓ Review of the generated protocols
- ✓ Review of As-built documentation
- ✓ FAT assistance



### Owner's Engineering Activities

- ✓ Supervise the development of works under the necessary quality and safety standards.
- ✓ Follow-up and monitoring of the main electrical equipment assembly activities
- ✓ Monitoring of the general planning of the work and control of the progress Editing of the planning / progress reports on the work
- ✓ To monitor compliance with the work programs established by the Contractor, in order to detect possible non-compliance or delays.
- ✓ To maintain periodic meetings with the person in charge of the work on the part of the Contractor to analyze the follow-up of the work, the incidents that have occurred and the actions that are pending.
- ✓ Monitoring and auditing of construction and assembly change orders. Control of the possible claims in cost of the Contractor during the Construction of the Plant.
- ✓ Supervision of pre-commissioning and commissioning activities.
- ✓ Support to conflicts on site by prioritizing negotiation and amicable resolution.
- ✓ Issue and follow up of the list of faults and pending issues to be transferred to the O&M team of the PROPERTY

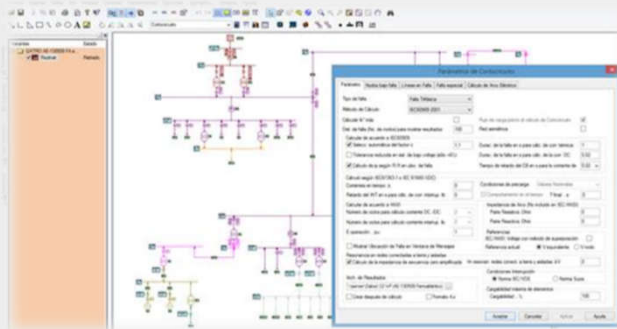
► System and equipment **analysis engineering** (for example):

- Engineering and calculation studies for power system analysis: Network analysis (short circuit, load flow), protection coordination, harmonics, cables
- Root Cause Analysis of Switchgear Incidents (RCA)
- Post-mortem studies of electrical equipment (RCA)
- Response to technical queries (internal or external) of services (RTQ-24H service):

- Resolution of technical queries
- Edition and review of technical documentation
- Innovation and development of specialized tests



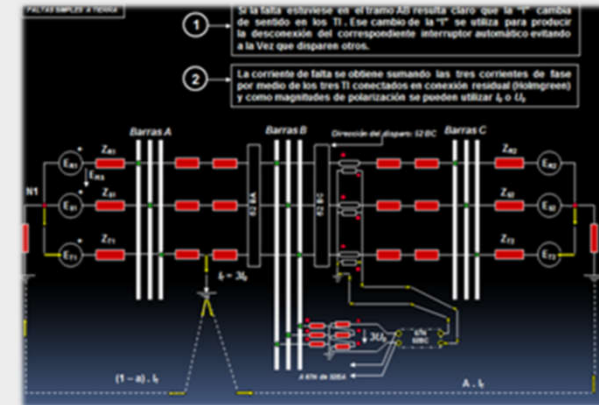
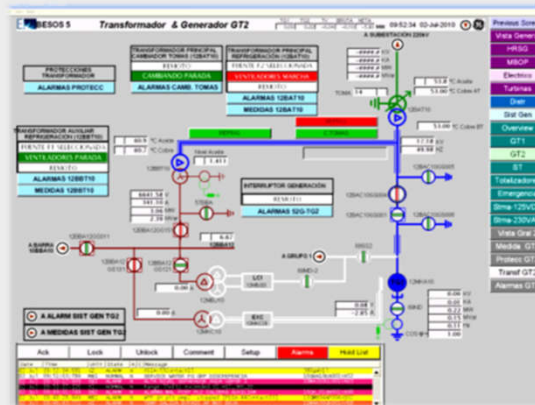
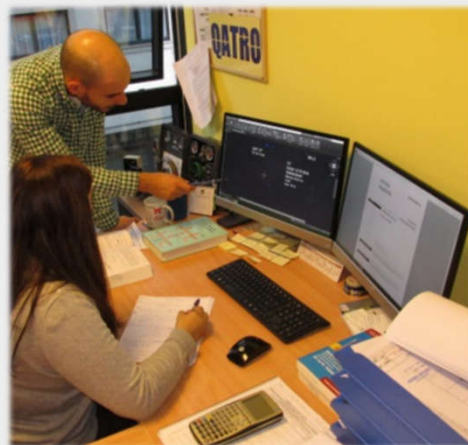
Technician conducting searches on a MV bar connection



Analyzer / recorder of power quality, harmonics and energy



**WITH SOFTWARE and TESTING EQUIPMENT 100 % PROPERTY OF QATRO**



Through  
**FRAMEWORK AGREEMENTS,  
 APPROVALS  
 AND QUALIFICATIONS,**  
 we strengthen our capacity and  
 availability to serve our customers, to  
 ensure the care of their assets

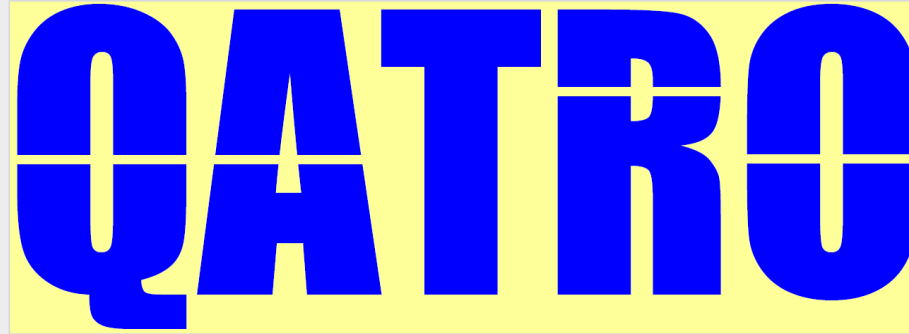


	Homologation for activity 116003012 MAINTENANCE OF ELECTRICAL PROTECTIONS
	Homologation for activity 116003009 FIELD TESTS OF POWER TRANSFORMERS
	Homologation for activity 116003010 FIELD TESTS OF HV AUTOMÁTIC CIRCUIT BREAKERS
	Homologation for activity 116003005 POWER SUBSTATION TERMOGRÁPHY INSPECCIÓN
	Framework agreement 8400136512 MAINTENANCE OF ELECTRICAL PROTECTIONS, IBIZA – FORMENTERA POWER PLANTS
	Framework agreement 8400149607 REVIEW OF I&C FOR PW TURBINES AND MAN MOTORS, IBIZA POWER PLANT
	Calification LEII13 + LEII14 MAINTENANCE OF E+I&C SYSTEMS FOR THERMAL + HYDRAULICS POWER PLANTS
	Calification SPPT36: SUPERVISION OF COMMISSIONING AND OPERATION OF PLANTS DURING THE COMMISSIONING
	Calification METR03 MAINTENANCE OF OIL INMERSED POWER TRANSFORMERS
	Calification TESTS FOR NEW INSTALLATIONS COMMISSIONING
	Calification SUPERVISIÓN OF POWER SUBSTATIONS ASSEMBLING
	Calification OPERATION ON ELECTRICAL PROTECTIONS
	Calification SUPPORT ON CONTROL SYSTEMS
	Framework agreement ENGINEERING, OPERATION AND MAINTENANCE
	Framework agreement INSTALACIÓN AND COMMISSIONING E + I&C
	Supplier Qualification MDV5Q-1888 TESTING AND COMMISSIONING OF CONTROL AND PROTECTION EQUIPMENT
	Supplier 30107586 INSTALLATION AND COMMISSIONING OF SITE EQUIPMENT (Power substations and plants)
	Calification MAINTENANCES, MEASUREMENTS, CALIBRATIONS AND ELECTRICAL TESTS
	Framework training agreement: DIAGNÓISIS OF ISULATION AND PARTIAL DISCHARGES MEASUREMENT

OUR MAIN CLIENTS,



*“properties, utilities, EPCs contractors, and manufacturers that trust QATRO”*



Thank you very much for your interest

► QATRO Group:

- Spain, parent company:  
QATRO-ELEC-ISEI S.L.
- United Kingdom, subsidiary :  
QATRO UK LTD.
- South Africa, subsidiary:  
QATRO South Africa (PTY) LTD
- Chile, subsidiary + branch:  
QATRO CHILE SpA  
QATRO-ELEC-ISEI S.L. Agency Chile
- Israel, branch:  
QATRO-ELEC-ISEI, S.L. Israel Branch
- Dominican Republic, subsidiary:  
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