

Power protection solutions for Oil and Gas



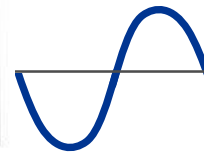
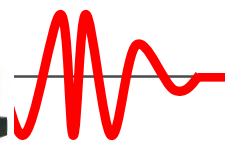
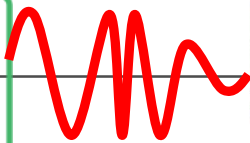
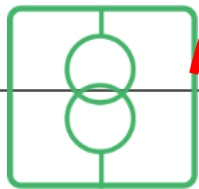
Solution with Local Content

...secure power is essential for:

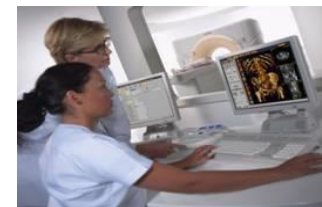
Safety Devices

Process Devices

Power Devices



Mission Critical Applications



We design power protection solutions from the complete oil and gas value chain ;

Upstream



Midstream



Downstream



AC UPS

VERITAS approved
for ship-embedded
systems

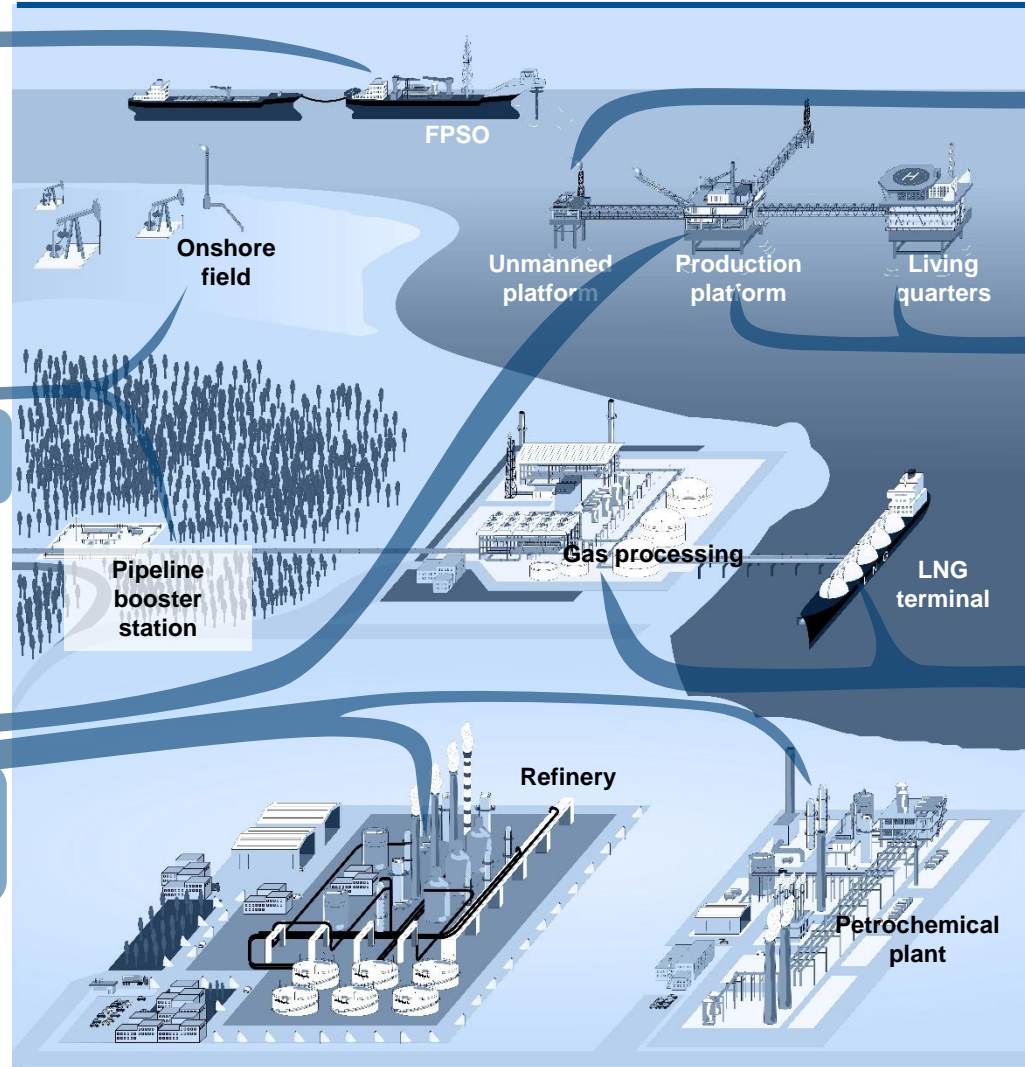


DC UPS

Explosion proof
ATEX approved
UPS cabinet



Each of your specific requirement for Oil & Gas finds its own QUWATT solution



AC UPS
IP20-42 in electrical
rooms
Black start



AC UPS
up to IP54 for
saline/dust areas



PUMPS
Submersible Pumps
Water supply

POWER GENSETS
up to 4200kVA with
vary kind of canopy



AC UPS with
integrated DC/DC
converter



DC UPS for power
devices
AC UPS for process
& safety devices

Rectifiers and
Invertors
DC&AC Power
Supply Systems



...secure power is essential for:

Safety Devices

- Fire & Gas Detection Devices
- Emergency Shutdown Devices(ESD)
- Emergency lighting
- Helideck signalling
- Telecommunication systems
(aeronautical radio, telephone, hot line, PABX, LAN...)
- Navigational instruments
- Onboard weather stations

...secure power is essential for:

Process Devices

- Process control systems
- Instrumentation
- Motor Starting
- Lube oil pump power supply
- Data processing (control rooms, SCADA systems)

...secure power is essential for:

Power Devices

- Power generation turbine process control systems
- High voltage switchgears.

Project Schedule

UPS System design

Project Management

Project services

Life cycle services



Project Schedule

UPS System design

- Analysis of your project data
- Set-up clarification meeting
- Submit both technical and commercial proposal



Project Schedule

Project Management

- Key Procurement
- Drawings
- Procurement
- Manufacturing
- Testing
- Witness Testing
- Packing
- Packing Inspection
- Delivery
- Documentation



Project Schedule

Life cycle services

- Maintenance schedule
- Spare parts kits
- Upgrade
- Recycling



Products

AC Solutions (Electronic components ABB, Borri, Chloride)

1-ph output AC UPS systems

| | | | | | | |
|----------------------------|----------------------------|----------|----------|----------|----------|----------|
| Input voltage (VAC) | 3 x 400 (3 x 380, 3 x 415) | | | | | |
| Intermediate voltage (VDC) | 110 | 110 | 220 | 220 | 400 | 400 |
| Output voltage (VAC) | 1 x 110 | 1 x 230 | 1 x 110 | 1 x 230 | 1 x 110 | 1 x 230 |
| Range of ratings (kVA) | 2.5 → 60 | 2.5 → 60 | 10 → 100 | 10 → 120 | 40 → 120 | 40 → 120 |

3-ph output AC UPS systems

| | | | | | | |
|----------------------------|----------------------------|---------|----------|----------|----------|----------|
| Input voltage (VAC) | 3 x 400 (3 x 380, 3 x 415) | | | | | |
| Intermediate voltage (VDC) | 110 | 110 | 220 | 220 | 400 | 400 |
| Output voltage (VAC) | 3 x 220 | 3 x 400 | 3 x 220 | 3 x 400 | 3 x 220 | 3 x 400 |
| Range of ratings (kVA) | 5 → 50 | 5 → 50 | 15 → 100 | 15 → 120 | 40 → 120 | 40 → 120 |



Key options for Oil & Gas

- 12-pulse rectifier to **Reduce THDi**
- Extended charger rating to **Reduce recharge time**
- By-pass transformer to **Fully isolate out- from input**
- By-pass stabiliser to **Control reserve voltage**
- Parallel configurations to **Increase availability**
- AC distribution to **Protect & segregate load**
- Analogue meters to **Enhance local monitoring**
- Up to IP54 to **Operate in harsh conditions**
- H2S treatment to **Meet H2S atmosphere**
- Halogen-free wiring to **Prevent from fire**
- Specific frame colour to **Identify equipment**

Local Content Product 53 %

- Panel installation executed with screw and nut, without welding process
- Epoxy and polyester powder painted panel
- Panel designed for easy maintenance
- Lockable doors on both sides of panel
- Transparent panel inspection window

Products

DC Solutions (Electronic components ABB, Borri, Chloride)

1-ph input DC UPS systems

| | | | | |
|----------------------|--------------------|----------|----------|----------|
| Input voltage (VAC) | 1 x 230 (220, 240) | | | |
| Output voltage (VDC) | 24 | 48 | 110 | 220 |
| Range of ratings (A) | 25 → 250 | 25 → 250 | 25 → 250 | 25 → 250 |

3-ph input DC UPS systems

| | | | | |
|----------------------|----------------------------|-----------|-----------|-----------|
| Input voltage (VAC) | 3 x 400 (3 x 380, 3 x 415) | | | |
| Output voltage (VDC) | 24 | 48 | 110 | 220 |
| Range of ratings (A) | 25 → 2500 | 25 → 1200 | 16 → 1200 | 16 → 1000 |

Key options for Oil & Gas

- 12-pulse rectifier to
- Dropping diodes to
- Parallel configurations to
- DC distribution to
- Analogue meters to
- Up to IP65 to
- H2S treatment to
- Halogen-free wiring to
- Specific frame colour to

Reduce THDi

Control output voltage

Increase availability

Protect & segregate load

Enhance local monitoring

Operate in harsh conditions

Meet H2S atmosphere

Prevent from fire

Identify equipment

Local Content Product 53 %

- Panel installation executed with screw and nut, without welding process
- Epoxy and polyester powder painted panel
- Panel designed for easy maintenance
- Lockable doors on both sides of panel
- Transparent panel inspection window



Products

Distribution Solution (LV AC and/or DC Distribution Panel)

Technical characteristics

| | |
|-------------------------------|---|
| Rated operational voltage | 690 V AC / DC (50 / 60 Hz) |
| Rated insulation voltage (UI) | 1000 V |
| Compartmentalisation | Form 1, 2a, 2b, 3a, 3b, 4a, 4b |
| Type of feeder | Circuit breaker (2, 3 or 4 poles) Fuse |
| Electrical options | Volt-free contact Lockable feeder Earth fault leakage monitor per outgoing feeder |
| Mechanical options | Up to IP 54 Top cable entry |



Key options for Oil & Gas

- Volt-free contact to **Report load status**
- Lockable feeder to **Prevent from unexpected manipulation**
- Earth fault leakage monitor to **Check circulation currents**
- Up to IP 54 to **Operate in harsh conditions**
- Top cable entry to **Meet on-site top cable trays**

Local Content Product 53 %

- Panel installation executed with screw and nut, without welding process
- Epoxy and polyester powder painted panel
- Panel designed for easy maintenance
- Lockable doors on both sides of panel
- Transparent panel inspection window

Products

POWER GENERATION (Engines: Perkins, Volvo, Deutz etc.)

GENSETS (Alternators: Stamford, Leroy Somer, etc)

| | | | | |
|------------------------|--|--------------|-----|-----|
| Output voltage (VAC) | | 380 | 400 | 415 |
| Range of ratings (kVA) | | 22 → 2500kVA | | |



Key options

- All season canopy to
- Special coating to
- Marine type painting to
- Marine type engines Baudouin to
- Alternator up to IP 54 to
- Analogue meters to
- Halogen-free wiring to
- Specific frame colour to
- Special consumables to

protect environmental damage
protect against hydrogen sulphide H₂S
protect from offshore environment
operate in heavy conditions
operate in harsh conditions
enhance local monitoring
prevent from fire
identify equipment
reduce frequent maintenance

Local Content Product 62,5 %

- Modular type sound-proof panel
- Panel installation executed with screw and nut, without welding process
- Epoxy and polyester powder painted panel
- Panel designed for easy maintenance
- Lockable doors on both sides of panel
- Transparent panel inspection window

Products

Battery Solution: ALCAD, HOPPECKE, SONNENSCHIN

Lead Acid

| Type | Recombination | |
|--|----------------|-----|
| Design life | 12 to 20 years | |
| Recommended number of cells (according to DC voltage for AC UPS) | 110 VDC | 60 |
| | 220 VDC | 114 |
| | 400 VDC | 192 |

Nickel Cadmium

| Type | Recombination or vented | |
|--|-------------------------|-----|
| Design life | 20 to 25 years | |
| Recommended number of cells (according to DC voltage for AC UPS) | 110 VDC | 90 |
| | 220 VDC | 170 |
| | 400 VDC | 293 |



Key options for Oil & Gas

- Flame retardant container to
- Shock-proof rack to
- Battery cabinet to
- Battery MCCB to
- Wall-mounted box to
- EEx"d" wall-mounted box to

Wide choice of batteries from the world's leading battery manufacturers

Prevent from fire

Avoid cell falls (offshore)

Reduce spacing

Protect & remotely shutdown battery circuit

Open DC circuit from outside battery room

Open DC circuit from Ex area.

Products

Battery monitoring system overview

System architecture, Monitoring & Software

CCB (Cell Conditioning Board) unit to interface with system sensors and pick-ups

Data logger to coordinate multiple CCB units and to store and relay systems data

Software for user interface

Local or remote via PC, permanently or temporarily connected

View & storage of real time data

Review system events and historical files

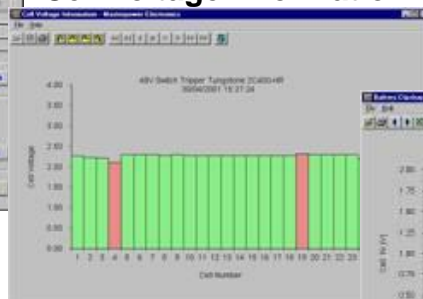
Production of hard copy reports

Setting of alarm threshold and event-driven output actions

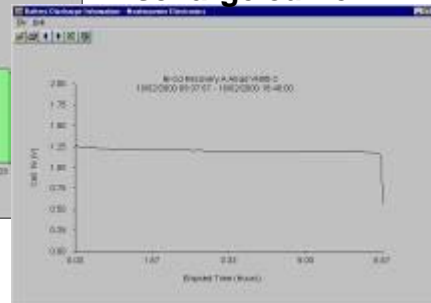
System status



Cell voltage information



Discharge curve



SERVICE

SERVICE MAINTENANCE

QUWATT offers partners a comprehensive diesel service generator sets, UPS (UPS), voltage regulators, AVR and perform high quality installation and commissioning of any types and types of equipment. Commissioning performed by highly qualified engineers of our team.

Regulated service from QUWATT Company is your confidence that the equipment will reliably serve the entire allotted time.

We guarantee high-quality and timely service at the highest level, in full

according to the requirements of the vendors. Our services also include training.

All engineers are periodically trained in factories. Having our own spare parts warehouse in Kazakhstan makes it possible to provide timely technical support.



THANK YOU !

