

# SERVICES

Technical Service and Support

**SALICRU**



# SALICRU SERVICES

## Technical Service and Support

### Data that endorse our willingness to serve

With six decades of experience, Salicru **has been at the forefront** of design, manufacturing, marketing and technical services in the power electronics market. Our combined experience in these different process levels has allowed us to develop excellent products and offer a highly professional service.

Currently, SALICRU has **14 branches** in Spain, all of which have a SERVICES team of the highest standard. Our international subsidiaries and distributors undergo intensive and rigorous training to ensure that our service excellence is maintained at the desired level in each country we operate in.

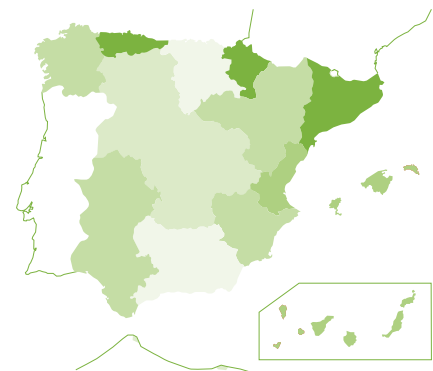
As an additional service priority, SALICRU focuses on **ongoing training** for customers, distributors, and field technicians.

In services, technological progress is being achieved hand in hand with remote connection and the corresponding monitoring, which is why our devices can be remotely connected directly to our **Technical Service headquarters**. Connectivity is now a fundamental element of predictive maintenance, scheduling periodic maintenance and reacting quickly to conditions that interfere with smooth operation. Having a Connected Software department has allowed us to achieve maximum autonomy and ensure excellence in this field.

Our wide range of **maintenance contracts** adapts perfectly to the needs of our clients in terms of timetables and modalities.

## National Coverage

|           |                    |                        |
|-----------|--------------------|------------------------|
| Alicante  | Las Palmas de G.C. | Santa Cruz de Tenerife |
| Barcelona | Madrid             | Seville                |
| Bilbao    | Málaga             | Valencia               |
| Gijón     | Palma de Mallorca  | Zaragoza               |
| La Coruña | San Sebastian      |                        |



## International Coverage

|                |                    |             |                |
|----------------|--------------------|-------------|----------------|
| Algeria        | Denmark            | Kazakhstan  | Portugal       |
| Andorra        | Dominican Republic | Kuwait      | Romania        |
| Argentina      | Ecuador            | Latvia      | Russia         |
| Austria        | Egypt              | Libya       | Saudi Arabia   |
| Bahrain        | El Salvador        | Lithuania   | Senegal        |
| Bangladesh     | Equatorial Guinea  | Malaysia    | Singapore      |
| Belarus        | Estonia            | Malta       | Sweden         |
| Belgium        | France             | Mauritania  | Switzerland    |
| Bolivia        | Germany            | Mexico      | Syria          |
| Brazil         | Greece             | Morocco     | Tunisia        |
| Bulgaria       | Guatemala          | Netherlands | Turkey         |
| Chile          | Hungary            | Nicaragua   | UAE            |
| China          | Indonesia          | Nigeria     | United Kingdom |
| Colombia       | Iran               | Norway      | United States  |
| Cuba           | Ireland            | Pakistan    | Uruguay        |
| Cyprus         | Italy              | Peru        | Venezuela      |
| Czech Republic | Jordan             | Poland      | Vietnam        |



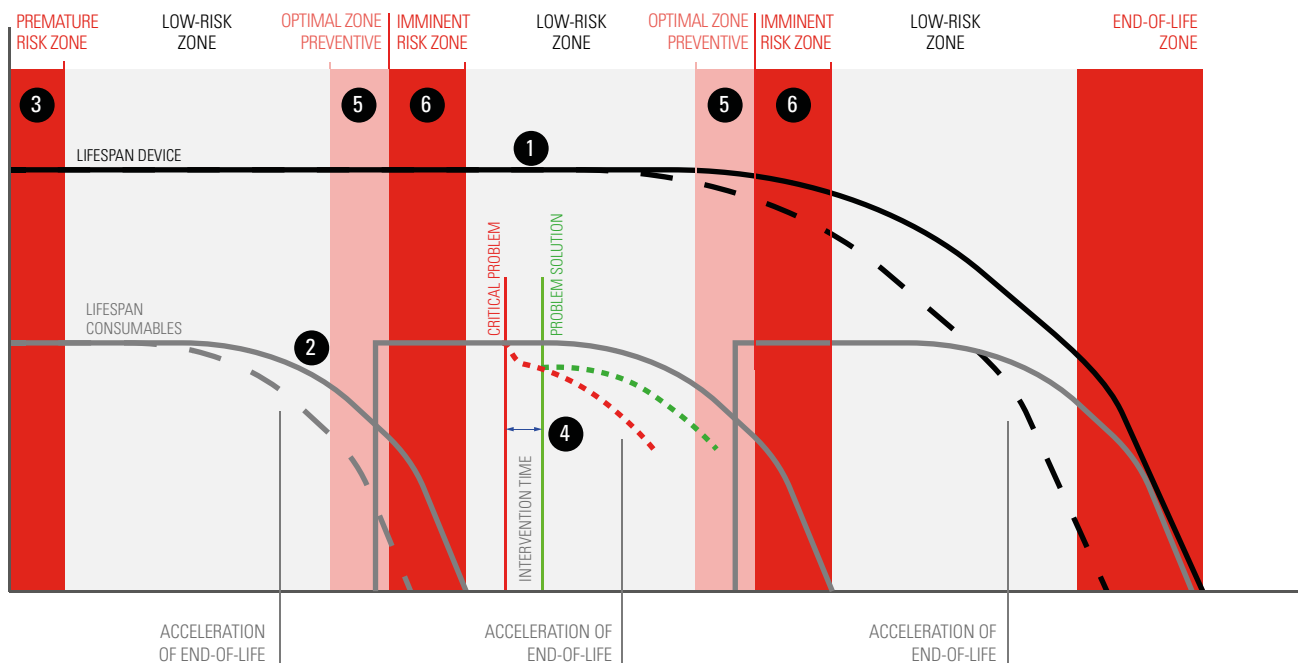
## Condition-based maintenance, a success factor

In a world where competitiveness is an increasingly decisive factor, high productivity is a must, and once it is achieved, it must be ensured at all times.

Our products, and more particularly our uninterruptible power supply systems, play a critical role in guaranteeing this productivity and, as such, must be subject to a series of properly planned preventive operations.

The performance of any electronic device can be represented as a curve that arcs over time to the end-of-life point (1). On a smaller scale, the same is true for consumable components (2) such as batteries, capacitors or, for example, in the case of UPS systems, fans. The distance between the starting point of the life of a device

or component and the end-of-life point will depend largely on its operating conditions. Optimum conditions are achieved when the equipment has a sufficiently good power quality, loads appropriate to its topology and efficient and regularly performed maintenance. This requires optimal dimensioning and a good maintenance service, both of which SALICRU can provide with the utmost assurance of the desired outcome.



In the era of the Internet of Things, preventive measures have been taken to a new level with the possibility of obtaining, analysing and managing data in real time.

Despite this ideal situation, there is a grey area at the beginning of the device's life (3), in which what's known as premature death can occur. This can be caused either by a statistical failure in the equipment or by improper dimensioning of the requirements, neither of which is likely to be detected during commissioning. The best way to keep this factor under control is by remotely and constantly monitoring your equipment. Today's new technologies allow us to keep our devices connected and receive real-time notifications and alarms. SALICRU's **technical service** offers, among other things, remote monitoring, monthly equipment status reporting and a response time of less than 24 hours.

Comparatively, having equipment connected to our remote maintenance service would be the equivalent of having a medical centre monitoring your neurological system in real time and being able to act swiftly at the slightest sign of illness. This extended connectivity also allows us, at any time, to shorten the intervention time in the event of an unexpected problem (4) or even to propose preventive maintenance (5) and schedule it at the customer's convenience to avoid reaching situations of imminent risk (6), seeking to time the maintenance intervention to ensure minimum impact on the customer's productivity.



# Services

## Optimised TCO

All power electronics contain components with a limited service life, which is why they must be regularly monitored and checked to maximise their operating life and minimise inconveniences caused by wear and tear.

By doing this, we can ensure that the equipment will continue to operate normally and not be affected by internal failures.

The service lives detailed in this document are derived from statistical averages and are by no means absolute and immovable values because, beyond their physical composition, they can be affected by many other factors external to the device. Among other things, the service regime, environmental pollution, and the working temperature to which they are subjected can all have a direct and significant effect on the overall performance.

Let's take a closer look at an explanation for the various consumables.

### DC capacitors (electrolytic)

Our experience has shown that, due to the way in which they are manufactured, these components must be replaced before they reach the end of their service life (estimated at around 5 years) or at the first sign of any deterioration in performance (except for those used in modular systems).

The main cause of wear is usually the deterioration of the oxide layer on the internal boards due to the voltage fluctuations to which they are subjected (causing the layer to wear thin) or the appearance and subsequent expansion of a leakage point on the same board, which results in a reduction in the stipulated impedance.

### AC capacitors

Although of different construction, the purpose of these types of capacitor is the same, as is the cause of the faults that can occur.

In this case, fault detection can be visually corroborated (in addition to the relevant maintenance checks) when a deformity in the capacitor housing is detected due to a difference in internal and external fluid pressures.

Replacement after approximately 5 years of service is also recommended.

### DC and AC capacitors in modular UPS devices

Due to the architecture of these systems, the capacitors used in modular UPS devices are manufactured to provide an extended service life, with operating hours twice as long as those used in monoblock systems. When nearing the estimated life expectancy, you should check the condition of the DC and AC capacitors to decide whether they should be replaced or whether their maintenance period can be extended due to the working conditions in which they have been operating.

### Fans

Their cooling function makes these elements important for preventing other problems caused by overtemperature. Consequently, any incorrect functioning will compromise other components.

As they are essentially mechanical components in constant motion, the accumulation of dirt due to the suction effect, or wear and tear to the small internal motor are the main causes of faults. They should be replaced every 5 years of service.

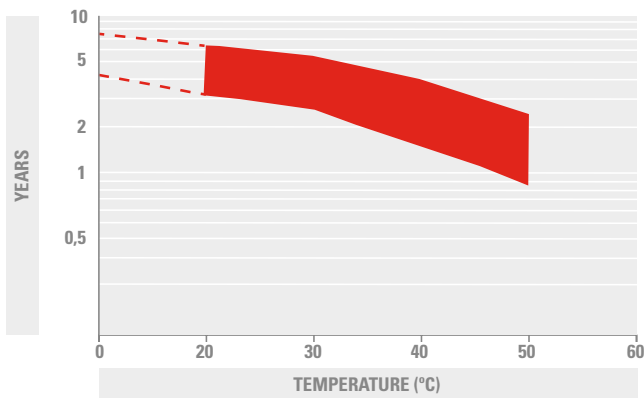


## Batteries

Batteries are the UPS components that require the most attention due to their function and sometimes because of the high number of components per unit (the more components, the higher the statistical probability of failure). They are also probably the components most susceptible to being affected by external factors. As an example, the graph shows how high temperatures can affect the lifespan of a battery.

The operating time or useful life of Lead-acid batteries (the type most frequently used) is normally judged by battery manufacturers to be the point at which they can no longer support a proper charge or when the available capacity of the battery is equal to or less than 70% of the original capacity. In general terms, the useful life of every battery is marked in the manufacturer's specifications and at Salicru, we have two types: batteries with a useful life of 5 years, which must be replaced after 3-4 years, and batteries with a useful life of 10 years, which must be replaced after 3-4 years and 6-8 years respectively.

Dependence of battery service life on temperature



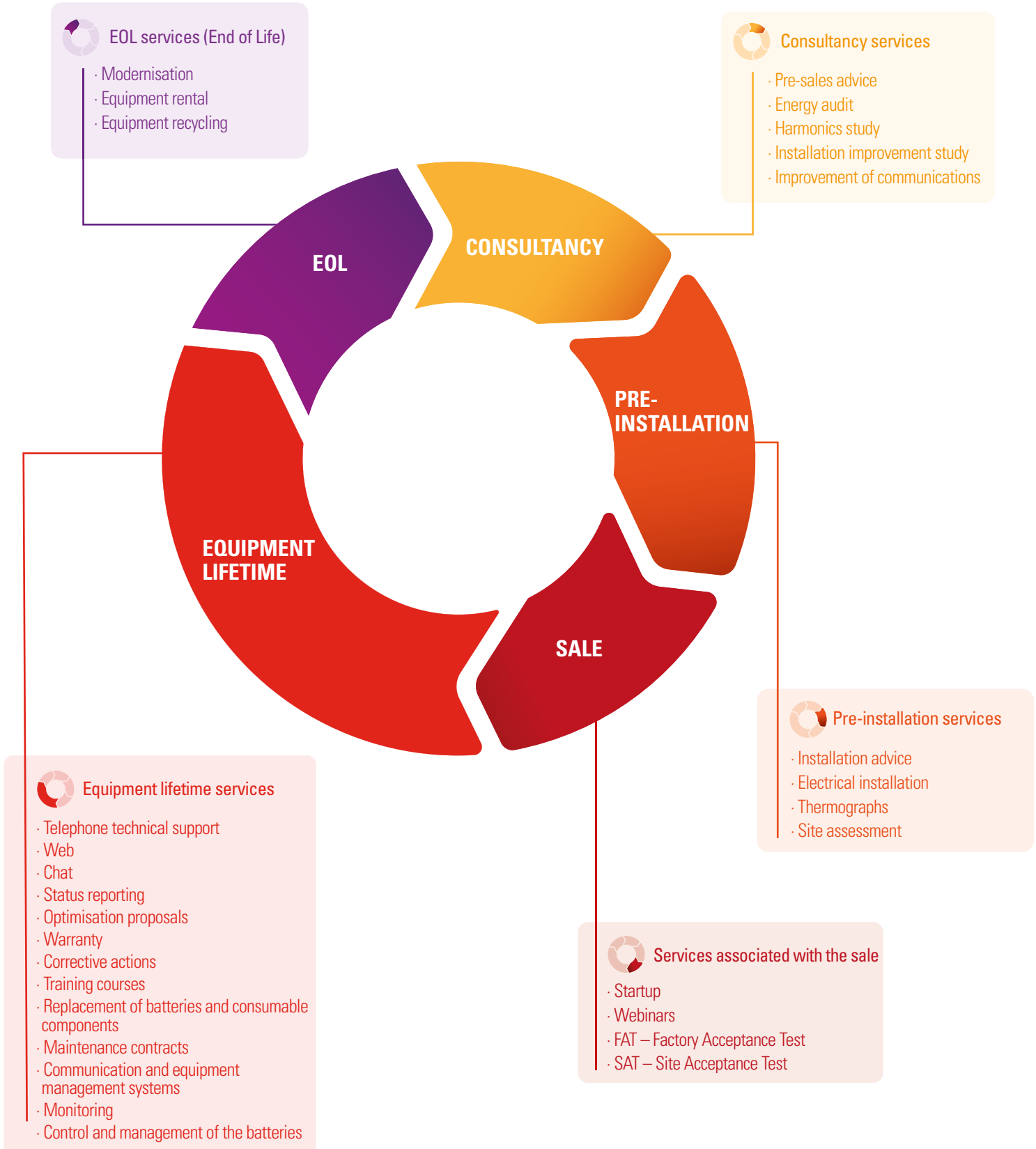
If the battery pack is not performing its intended function you can check its level of deterioration by carrying out routine maintenance checks. More visible signs are when the sulphation of the electrolyte reaches the outside of the housing or a strong acidic odour is given off, but these are extreme fault situations that should never be allowed to occur.



## Catalogue of services (\*)

SALICRU's services are not limited to interventions during the product's operation. Alongside the stages that make up the *customer journey*, we have drawn on our years of experience and knowledge of our customer's needs to create a complete catalogue of services that guarantee operational continuity and, therefore, your peace of mind.

(\*) All services described below are available in Spain and Portugal. Please request information on availability in other countries at [services@salicru.com](mailto:services@salicru.com).





## Consultancy services

### PRE-SALES ADVICE

Our technical staff will inform and advise customers on the most suitable devices and options for their applications, needs and budget. They can also carry out product demonstrations and seminars to present new devices.

### ENERGY AUDITS OF FACILITIES

An expert group of professionals will study and analyse all details of your facility and application. Once completed, a detailed report will be delivered, including:

- Equipment status.
- Consumption and loads.
- Main parameters of the low voltage AC network. Analysis of the dimensioning of the electrical installation. Capacity and type of cooling system.
- Review of the protections.
- Tables and graphs with the results obtained: I, V, W, VA, THD, ...
- Conclusions and recommendations for improvement.

### HARMONICS STUDY

Once identified, our technicians will measure and quantify the harmonics in order to correctly dimension the solution.

### INSTALLATION IMPROVEMENT STUDIES FOR EQUIPMENT REFURBISHMENT

Bearing in mind that the environment of a device may vary during its time in use – for example, increases in the connected power, additional loads of a different type to those included in the initial study, etc. –, based on the current demand on the system we propose studies to determine how to improve the existing installed equipment.

### IMPROVEMENT OF COMMUNICATIONS

Advice and proposals to implement, retrofit or upgrade communications and connectivity systems and connectivity in existing hardware and/or hardware systems.



## Services in the pre-installation phase

### INSTALLATION ADVICE

We provide detailed information on the necessary connection components, protection boards, environmental conditions and system dimensions to avoid issues during start-up.

### ELECTRICAL INSTALLATIONS

Possibility of support and execution of the electrical installation appropriate to your devices. We thus ensure a perfect match with the chosen power supply system.

### THERMOGRAPHS

Thermal study of the installation and installed systems to determine the degree of overheating and recommend possible corrective actions or redimensioning.

### SITE ASSESSMENT AND AUDIT

At the client's request, we can visit the final site of the equipment to be installed, look for alternative sites, assess the means and logistical interventions required, carry out reconfirmation measurements and receive a suitability report, prior to the delivery of the equipment.



## Services associated with the sale

### STARTUP

Includes system start-up, adjustment of the main parameters and basic training for maintenance personnel (depending on the model).

### WEBINARS

SALICRU offers online seminars to present its new products and disseminate valuable technical information.

### FAT (Factory Acceptance Test)

Validation of equipment in our facilities following the test guidelines determined by the customer, with the participation of a large team of technicians, including the technical sales department, test department, Product Manager and Technical Service, as appropriate. The price will vary depending on the list of tests to be carried out.

### SAT (Site Acceptance Test)

Validation of equipment at the final product site by our technicians, following the test protocol determined by the customer and in accordance with the technical specifications specified at the time of the offer. The price will vary depending on the list of tests to be carried out.



## Equipment lifetime services

### TELEPHONE TECHNICAL SUPPORT

By default, and without the need to contract any additional service, our technical support department is at your disposal. All you need to do is call our telephone hotline and a technician will advise you on the possible cause of the failure and, if necessary, book a date and time for an intervention. (+34 93 848 24 00).

### WEB

Always putting our dedication to service first, SALICRU provides its customers with a comprehensive website with information on how to contact us for technical assistance or commercial enquiries and download software or documentation such as whitepapers, manuals, catalogues, etc. ([www.salicru.com](http://www.salicru.com)).



### CHAT

Online service on the SALICRU corporate website ([www.salicru.com](http://www.salicru.com)), allowing our customers to contact customer services, whether sales, service or technical support, to resolve all kinds of queries.

### MONITORING

The **NIMBUS remote monitoring system** comprises 3 systems: the Nimbus Card (Embedded Linux Systems) housed inside Salicru equipment and connected to the Internet either via the customer's corporate network or optionally via 3G/4G router; the Nimbus Cloud, a system that collects, organises and distributes the sensors and alarms sent by Salicru equipment, and Salicru's team of Technical Support Service engineers, who offer a 24/7 service to ensure we respond to the needs of even the most demanding customer requirements by offering the appropriate service at all times in accordance with the type of service contract purchased.

All this information is available via the Nimbus Cloud app or web version.

### STATUS REPORTING

Both through continuous monitoring and on-site visits by our technicians, we provide detailed reports on the operation and status of the equipment and the installation.

### OPTIMISATION PROPOSALS

By analysing the operation and extracting status reports on the equipment, we can anticipate future needs, providing our clients with recommendations and proposals for improvement to optimise the solutions.





# Equipment lifetime services

## WARRANTY

During the warranty and extended warranty periods, our technical service will offer the appropriate assistance according to the type and dimensions of the equipment. These services may include replacement, shipment to our facilities for repair or on-site repair.

## CORRECTIVE ACTIONS

These are on-site actions necessary for the repair of a device. Repair of equipment anywhere in Spain through an extensive network of authorised technical services. In the rest of the world, according to international coverage.

## COURSES

The training given by SALICRU will help you operate your power system safely: harmonics, neutral point treatment, communication software, electrical supervision, etc.

SALICRU offers you over 55 years of professional experience in the constantly developing power electronics market. Therefore, the courses are suitable both for those who do not have specific knowledge of these types of products and those who need to renew or update their knowledge.

List of courses

The most popular training courses are as follows:

|                                 |                      |
|---------------------------------|----------------------|
| <i>Stabilisers</i>              | 1 day                |
| <i>Single-phase UPS systems</i> | 1 day x each series  |
| <i>Three-phase UPS systems</i>  | 2 days x each series |
| <i>Drives</i>                   | 1 day                |
| <i>Solar inverters</i>          | 1 day                |
| <i>Rectifiers</i>               | 2 days x each series |

## General characteristics of the courses

- In each training session, full documentation is provided for the course follow-up. Bookings must be made at least 30 calendar days in advance.
- SALICRU reserves the right to cancel the course if the minimum attendance requirement is not met.
- The courses will be held at our headquarters.
- In-company training courses can be offered on request.
- Please consult the specific conditions of each course.

## REPLACEMENT OF BATTERIES AND CONSUMABLE COMPONENTS

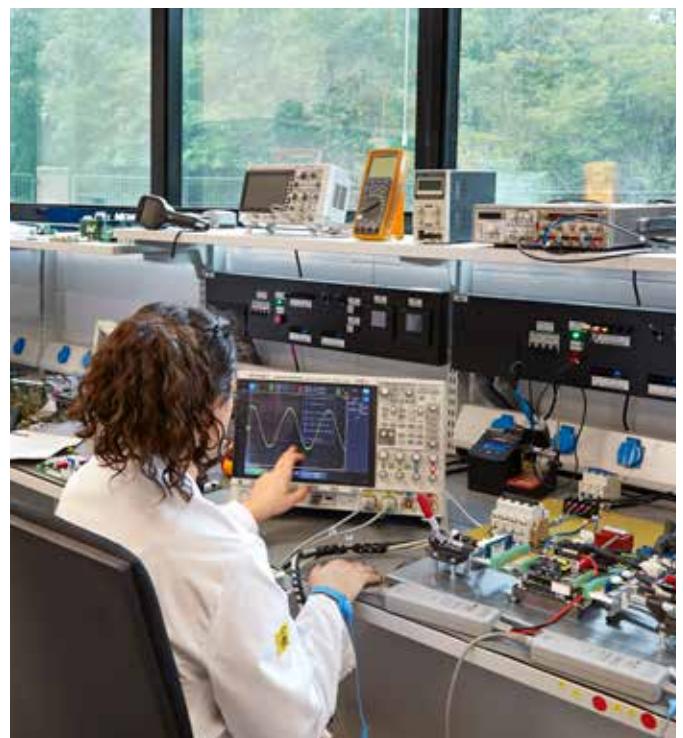
Batteries are energy storage devices with a limited lifespan. As we mentioned before, they are designed to meet certain objectives in terms of duration, cycling, energy availability, watertightness, etc., but the fulfilment of these values is, in turn, strongly dependent on optimum environmental and usage conditions.

The same applies to other consumable components, also previously reviewed (generally capacitors and fans), which are subject to thermal stress, electrolytic wear and tear or physical wear and tear.

Although power electronics devices are undergoing increasingly advanced tests, SALICRU strongly recommends that you do not neglect to have our technicians inspect and maintain them. A thorough physical and visual inspection often provides information that is easily overlooked in the self-test results.

SALICRU works with leading component manufacturers and can supply replacement parts of the same specification and quality as installed. If the customer requires it, SALICRU will take care of replacing components at the equipment site.

In the case of batteries, our test and replacement service includes tests at the customer's premises, verifying the condition of each battery cell, the total capacity of the entire unit and the remaining lifespan. These checks can be purchased separately or as part of our maintenance plans.





# Equipment lifetime services

## MAINTENANCE CONTRACTS

All electronic devices require periodic maintenance to ensure optimum performance in the event of mains disturbances (power cuts, overvoltages etc.).

With this goal in mind, SALICRU offers you the services of a large and expert human team of technical professionals. Salicru's technical staff will always be at your side to offer you a fast, quality service in the event of any possible incidents with your equipment, even before they occur.

### Preventative and corrective visits

After the warranty on your product expires, SALICRU offers a range of maintenance packages that include preventative and corrective interventions.

#### Preventive visits

Preventive actions guarantee the customer improved safety with regard to the maintenance and proper functioning of the equipment. All the maintenance plans include an annual preventive visit during which specialised technicians carry out a series of verifications, checks and adjustments to the systems.

#### Corrective visits

Corrective maintenance and/or repair visits are included in all the maintenance plans, and are unlimited. This means that SALICRU will service the equipment as many times as necessary in case of breakdown.



## Configuration of maintenance contracts

Available in a wide range of schedules and formats, the Maintenance Contracts (MC) offered by SALICRU ensure maximum performance and optimise the service life of your power systems.

The advantages of MCs include preferential treatment, maximum response speed, on-site advice by qualified technicians, detailed reports and analyses, etc.

To configure your maintenance contract, please select the desired support service availability times and the type of service you require.

### ACCORDING TO SERVICE AVAILABILITY



LV8

LD24

### ACCORDING TO SERVICES INCLUDED



VP

OO

MO

OB

FO

MB

FB

FV

## According to service availability

| MAINTENANCE CONTRACT | TELEPHONE SERVICE HOURS PREFERENTIAL   | TECHNICAL ASSISTANCE HOURS          | DAYS            |
|----------------------|--|-------------------------------------|-----------------|
| LV8                  | Monday to Thursday 08:00 h - 18:00 h<br>/ Friday 08:00 h - 15:00 h<br>(Except public holidays) | Within 24 h                         | Monday - Friday |
| LD24                 | 00:00 - 24:00  | On the same day as the notification | Monday - Sunday |



All services are available in Spain and Portugal. Please request information on availability in other countries at [services@salicru.com](mailto:services@salicru.com).



## According to services included

| PLAN | 1 PREVENTATIVE VISIT | CORRECTIVE VISITS | LABOUR | BATTERIES | MATERIALS | CONSUMABLES (1) | REPLACEMENT DEVICE |
|------|----------------------|-------------------|--------|-----------|-----------|-----------------|--------------------|
| VP   | •                    | —                 | —      | —         | —         | —               | —                  |
| 00   | •                    | •                 | •      | —         | —         | —               | —                  |
| M0   | •                    | •                 | •      | —         | •         | —               | —                  |
| 0B   | •                    | •                 | •      | •         | —         | —               | —                  |
| F0   | •                    | •                 | •      | —         | •         | •               | —                  |
| MB   | •                    | •                 | •      | •         | •         | —               | —                  |
| FB   | •                    | •                 | •      | •         | •         | •               | —                  |
| FV   | —                    | —                 | —      | —         | —         | —               | •                  |

(•) Included (-) Not included (1) Capacitors, fans and power supply

|    |  |  |
|----|--|--|
| VP | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· Corrective visits not included.</li> <li>· Batteries, materials and consumables not included.</li> <li>· 10% discount on change of batteries, materials and consumables.</li> </ul>            |  |
| 00 | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> </ul>  | <ul style="list-style-type: none"> <li>· Batteries, materials and consumables not included</li> <li>· 10% discount on change of batteries, materials and consumables</li> </ul>  |
| M0 | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> </ul>  | <ul style="list-style-type: none"> <li>· Includes unlimited replacement of materials in the event of failure</li> <li>· Batteries and consumables not included</li> <li>· 10% discount on change of batteries and consumables</li> </ul>   |
| 0B | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> <li>· Includes replacement of defective batteries</li> </ul> | <ul style="list-style-type: none"> <li>· COMPLETE change of batteries at the end of their useful life</li> <li>· Materials and consumables not included</li> <li>· 10% discount on change of materials and consumables</li> </ul>  |
| F0 | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> </ul>  | <ul style="list-style-type: none"> <li>· Includes unlimited replacement of materials and consumables in the event of failure</li> <li>· Batteries not included</li> <li>· 10% discount on change of batteries</li> </ul>   |
| MB | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> <li>· Includes replacement of defective batteries</li> </ul> | <ul style="list-style-type: none"> <li>· COMPLETE change of batteries at the end of their useful life</li> <li>· Includes unlimited replacement of materials in the event of failure</li> <li>· Consumables not included</li> <li>· 10% discount on change of consumables</li> </ul> |
| FB | <ul style="list-style-type: none"> <li>· 1 annual preventative maintenance visit</li> <li>· All necessary corrective visits, unlimited in number</li> <li>· Visits outside established service availability not included</li> <li>· Includes replacement of defective batteries</li> </ul> | <ul style="list-style-type: none"> <li>· COMPLETE change of batteries at the end of their useful life</li> <li>· Includes unlimited replacement of materials and consumables in the event of failure</li> </ul>  |
| FV | <ul style="list-style-type: none"> <li>· Includes replacement of equipment in case of breakdown</li> <li>· Includes change of equipment at the end of its service life</li> </ul>  |  |

The service must be contracted with the TIME-SERVICE code. Examples: LV8-00, LD24-MB

All services are available in Spain and Portugal. Please request information on availability in other countries at [services@salicru.com](mailto:services@salicru.com).



## Equipment lifetime services

### COMMUNICATION AND EQUIPMENT MANAGEMENT SYSTEMS

A wide variety of options - software and hardware - for equipment management and controlled shutdown of connected equipment under any operating system.

The most important being:

- **Software adapters.**

This system consists of real-time management and monitoring of the UPS, which allows complete remote control of the UPS at all times through software installed on a PC/Server and/or Ethernet/SNMP adapter.

SALICRU offers this complete solution by means of the software: UPSMAN, UNMS II, RCCMD, WINPOWER, UPSMON POWERMASTER and VIEWPOWER, and the different Ethernet/SNMP adapters available for the various UPS series.

- **NIMBUS**

Individual and group UPS management and monitoring system, with mobile APP and WEB, advanced alarm system, possibility of performing remote tests, notification of recommendations, etc.

- **SNMP / Web Manager**

These are a series of external cards designed for the management and monitoring of SNMP (Single Network Management Protocol) and web environments.

- **Sensors.**

Specially designed to be connected directly to the inputs/outputs of the SENSORMANAGER.

- **UNMS II - UPS Network Management System**

Software for easy monitoring of networked distributed power, easily adaptable to a user's specific needs.

- **UPS Management Software.**

These are a series of client/server modules for networks and local workstations that monitor the status of the system's supplies and make the appropriate adjustments in the event of any changes.



### CONTROL, MANAGEMENT, MONITORING AND MAINTENANCE OF THE BATTERIES - BACS II

The status of each battery element is key to the proper functioning of systems. This solution ensures you can take advantage of the full life of the battery, optimise its useful life, be aware of its operating status at any time, forecast failures, etc.

The BACS II system is designed to monitor and control batteries individually or in battery blocks, providing a symmetrical charging process.

Intensive and comprehensive analysis of a single battery in the power supply system.

- Available for up to 3 groups of sealed lead-acid batteries (2-4 V, 6 V and 12 V) with capacities between 7 Ah and 5,000 Ah.
- Increased durability and capacity of the battery pack. Batteries can be used up until the end of their useful lives.
- No need to replace the complete battery pack as a preventive measure.
- Avoids unexpected or inadvertent battery failures. Optimisation of battery capacity.



## End-of-life services

### MODERNISATION

On request and whenever necessary, SALICRU will assess the potential adaptation of an equipment to new requirements. Examples of adaptation needs could include adjustment to new mains voltages in the case of relocation of production to a country with different voltages or frequencies, adaptation to new regulations, a change of IP protection level, etc.

### RENTING

In many cases a temporary backup or battery charging system may be required. This need may arise, for example, because of the installation of a provisional system following an incident, or in situations whereby

protection is essential and urgently required but the purchase has to be delayed until the next financial year due to budget constraints. Emergency projects, such as field hospitals, may also require power backup.

### RECYCLING

SALICRU can manage the removal of equipment and batteries, sparing the customer the effort involved in understanding and complying with the proper procedure for disposing of power electronics components.



# SALICRU

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## OFFICES AND TECHNICAL SERVICE AND SUPPORT CENTRES (TSS)

|           |                            |                        |
|-----------|----------------------------|------------------------|
| ALICANTE  | LAS PALMAS DE GRAN CANARIA | SANTA CRUZ DE TENERIFE |
| BARCELONA | MADRID                     | SEVILLE                |
| BILBAO    | MÁLAGA                     | VALENCIA               |
| GIJÓN     | PALMA DE MALLORCA          | ZARAGOZA               |
| LA CORUÑA | SAN SEBASTIÁN              |                        |

## SUBSIDIARIES

|                      |         |                |
|----------------------|---------|----------------|
| AUSTRALIA            | FRANCE  | PERU           |
| CHINA                | MOROCCO | PORTUGAL       |
| UNITED ARAB EMIRATES | MEXICO  | UNITED KINGDOM |

## REST OF THE WORLD

|                |                    |             |               |
|----------------|--------------------|-------------|---------------|
| ALGERIA        | DENMARK            | IVORY COAST | ROMANIA       |
| ANDORRA        | DOMINICAN REPUBLIC | JORDAN      | RUSSIA        |
| ARGENTINA      | ECUADOR            | KUWAIT      | SAUDI ARABIA  |
| AUSTRIA        | EGYPT              | LATVIA      | SENEGAL       |
| BAHRAIN        | EL SALVADOR        | LIBYA       | SINGAPORE     |
| BANGLADESH     | EQUATORIAL GUINEA  | LITHUANIA   | SWEDEN        |
| BELARUS        | ESTONIA            | MALAYSIA    | SWITZERLAND   |
| BELGIUM        | FINLAND            | MALTA       | SYRIA         |
| BOLIVIA        | GERMANY            | MAURITANIA  | TUNISIA       |
| BRAZIL         | GREECE             | NETHERLANDS | TURKEY        |
| BULGARIA       | GUATEMALA          | NICARAGUA   | UAE           |
| CHILE          | HUNGARY            | NIGERIA     | UKRAINE       |
| COLOMBIA       | INDONESIA          | NORWAY      | UNITED STATES |
| CUBA           | IRAN               | PAKISTAN    | URUGUAY       |
| CYPRUS         | IRELAND            | PANAMA      | VENEZUELA     |
| CZECH REPUBLIC | ITALY              | PHILIPPINES | VIETNAM       |

## Product Range

Uninterruptible Power Supplies (UPS)  
Solar Inverters  
Variable Frequency Drives  
DC Systems  
Transformers and Autotransformers  
Voltage Stabilisers  
Protective Power Strips  
Batteries

