

# **HOLDING COMPANY SERVICES**

Our businesses group interaction allows us to deliver different kinds of services such as:

Electrical Engineering, Control and Instrumentation Services. Equipment Mounting and Supply.

# SOME OF OUR SERVICES

LCR Group Energy provides services in the development of engineering projects in electricity areas, control and instrumentation, through all the stages in its development, from its engineering up until its building stage.

## Our services include:

Specialized studies in electricity: power flows, harmonics, reactive power compensation, etc.

Profile, conceptual (pre-feasibility), basic (feasibility) and detail engineering.

Procurement management.

Support in the building process and work inspection.

Technical audits.

Mesh grounding systems measures.

Study and adjustments of power system protection.

Electrical engineering, Control and Instrumentation



# SOME OF OUR SERVICES:

Our services include:

- Electrical rooms
- Retrofit
- Switchgear
- Load centers (EV charger)
- Motor control center
- SF6 GIS substations
- Unit substations
- Transformers
- Isolators, circuit breakers, recloser and insulators
- Harmonic filters, capacitor banks
- Generator sets

Equipment mounting and supply



# SOME OF OUR SPECIFIC SERVICES

## ARC FLASH STUDY

The technical scope is defined according to the following considerations:

On-site visits are carried out in every electrical room, whereby the type, model, arrangement, protection adjustments and gas pipelines (if applicable) of the main equipment in the electrical room are verified.



Once the information-collecting process is done, analyzed and reviewed, a general report is made, in which the results of the calculation of heat energy for each unit are given, through the application of a specialized software.

The NFPA70E Standard is used to perform the risk classification before ArcFlash and for its calculation recommendations given in IEEE 1584 "Guide for Performing Arc Flash Hazard Calculations" are used.

Finally, a series of recommendations are delivered prone to enhance the current facilities, among others, risk classification for the units according to NFPA70E, safety distances, advised PPE per electrical room and incorporation of arc mitigation units.

Electrical engineering, control and instrumentation

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## ELECTRICAL ROOM AUDITING

A checklist is carried out along with the client, containing the minimum requirements that an electrical room needs, to comply with regulations and provisions, such as: NEC, NCH, Elec. 4/2003, among others determined by LCR Group.



When the checklist is established, on-site visits are carried out to every electrical room, where visually it should be verified the status of:

- Technical documentation of room units (plans, specifications, manuals, etc.).
- Units identification (data plate, tag's, etc.).
- Obsolescence of bigger units, such as CMM' sySwitchgear's.
- Light level (light measure) facing the main units.
- Visual inspection of interior electrical piping/conduits
- Temperature measure within the room

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# SOME OF OUR SPECIFIC SERVICES

- Pollution presence verification.
- Safety equipment presence.
- Fire extinguishing system presence.
- Arc-Flash characteristics verification (if applicable).
- For distribution switchgears it will be necessary to check the availability of the circuit identification plate and the appropriate single line diagram.
- Other features considered by the consultant.

Finally, the company will deliver:

- Recommendations, for each electrical room, prone to standardize and enhance the current status.
- Action plan for each electrical room.
- Investment price estimate.

Electrical engineering, Control and Instrumentation.





# SOME OF OUR SPECIFIC SERVICES

## SEP STUDY

The technical scope is defined according to the following considerations:

The process begins submitting a request for information to the client, which is analyzed by LCR Group and - if not updated - the information-collection process should be carried out, in order to update it.

Once the information-collecting process is done, analyzed and reviewed, a model made by a specialized software is delivered. During this process a series of meetings and workshops are carried out along with the plant operations personnel, in order to set the load factors needed to determine the consumption of the transformers and system conductors.

Once the SEP model is determined, is possible to perform the following specialized studies: -  
Power flow studies

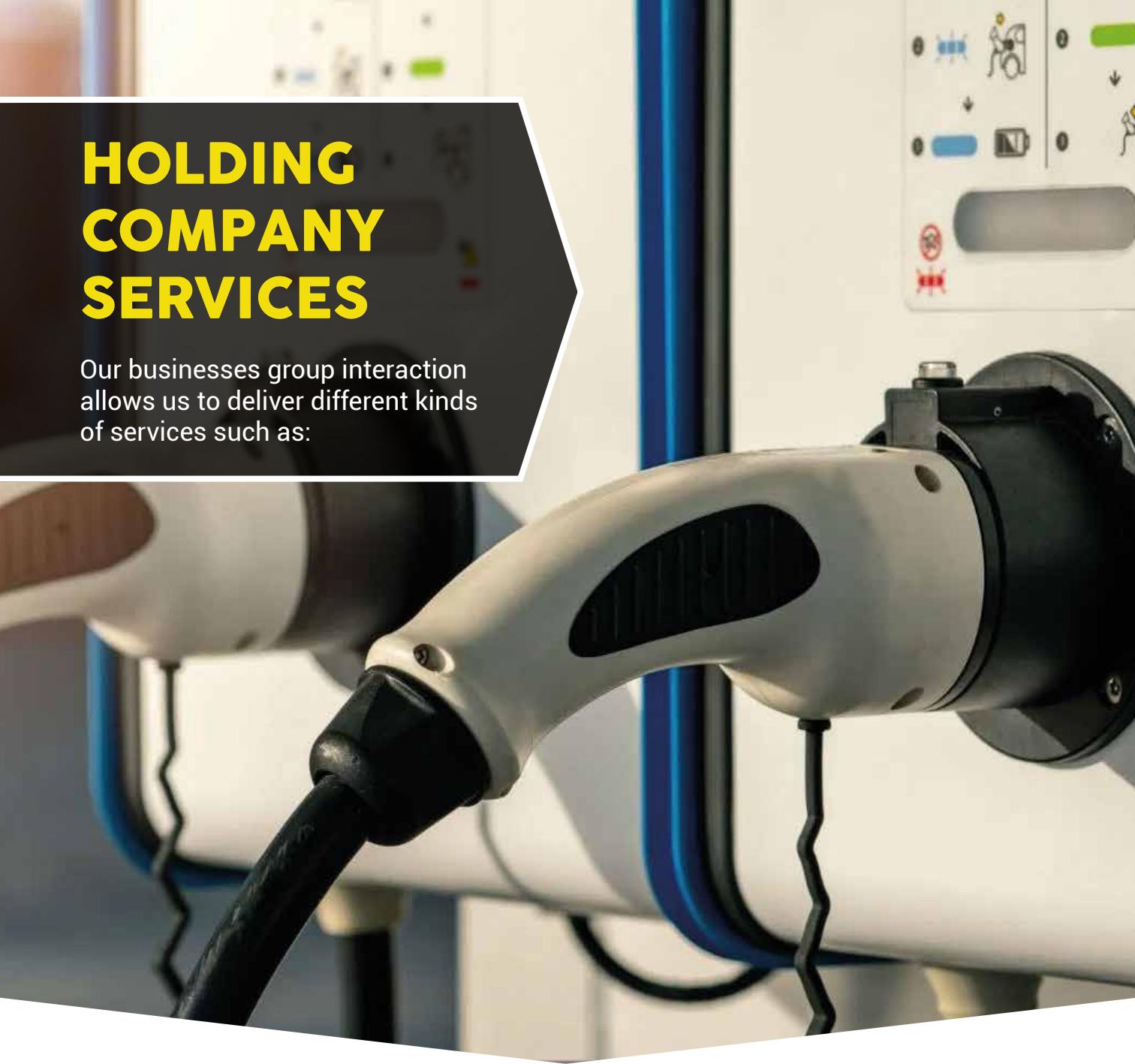
- Reactive power compensation
- Short circuit studies
- Motor start-up
- Arc-Flash studies
- Power system protection coordination

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LCR Group Energy, delivers consultancy services in electromobility solutions.

Our services include:

Conceptual (pre – feasibility), basic (feasibility), and detailed engineering.

Electromobility.

Engineering for single or three phase solution.

Civil engineering for car/bus charging stations.

Engineering for fast charging and trickle charging.

Standardization of facilities.

Technical specifications.

Documentation management for TE-6 application.

Projects execution



# HOLDING COMPANY LCR GROUP



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