



Elettra Sincrotrone Trieste

# Power Converters Technician for Elettra 2.0 project

Deadline: 31 May 2022

Ref: GA/22/12

## Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center operated as a user facility, featuring a 2.0/2.4 GeV, third-generation synchrotron light source (Elettra), a new free-electron laser light source (FERMI) and a variety of support laboratories. The extremely high quality of the machines and beamlines has set new performance records and has been producing results of great scientific and technological interest. In order to allow the laboratory to remain competitive in the next 20 years, an entirely new source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being developed. The new source will exhibit a major increase in the brilliance and coherence fraction of the photon beams. The Elettra 2.0 optics is based on our enhanced symmetric six bend achromat structure (S6BA-E) with a 12-fold symmetry and an emittance of 200 pm-rad at 2.4 GeV. The new structure creates also straight sections in the arcs permitting the installation of additional insertion devices, thus increasing the number of beamlines. Existing beamlines will have to be upgraded and new beamlines developed to take full advantage of the characteristics of Elettra 2.0. The new machine is scheduled for commissioning in the second half of 2026. See <http://www.elettra.eu> for more information.

## Beamline/Activity/Project description

In order to allow the laboratory to remain competitive in the next 20 years, an entirely new source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being developed. The new source will exhibit a major increase in the brilliance and coherence fraction of the photon beams. The Elettra 2.0 optics is based on our enhanced symmetric six-bend achromat structure (S6BA-E) with a 12-fold symmetry and an emittance of 200 pm-rad at 2.4 GeV. The new structure creates also straight sections in the arcs permitting the installation of additional insertion devices, thus increasing the number of beamlines. Existing beamlines will have to be upgraded and new beamlines developed to take full advantage of the characteristics of Elettra 2.0. The new machine is scheduled for commissioning in the second half of 2026.

The Power Supplies Team is responsible for all DC power supplies of the Elettra Storage Ring and booster magnets, as well as for the power supplies of the correction coils of the insertion devices. Its activities include the design, specification development, testing, installation and commissioning of the new converters required by the new projects. Other tasks include ordinary and extraordinary maintenance, and the design and implementation of updates of existing equipment, including more than 300 DC power supplies in the Booster systems and the Elettra storage ring, as well as those installed at the FERMI source, with power ranging from a few tens to tens of thousands of Watts.

## Job description

The successful candidate will be part of the team responsible for the development, construction, maintenance, and management of the power supplies for the magnets of the new Elettra 2.0 machine. The successful candidate may also be involved, with the other members of the team, in the maintenance activities of the converters of the current machine as training and to free other members of the team to increase their involvement in the developments related to the new machine.

The activity carried out covers aspects of hardware and software, such as the selection and installation of control and regulation systems of the converters, maintenance of existing systems, integration of new components and subsystems, writing of software for the control of quality of converters and writing of firmware for digital controllers of new devices.

Furthermore, the activities will cover the following additional aspects:

- Assembly and test of prototypes
- Realization of schematics and PCB using electronic CAD
- Simple mechanical assemblies for realizing prototypes

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- Verification of the performance of the power supplies with the instrumentation of the Power Supplies Laboratory.
- Interfacing with supplier companies
- Support in compiling lists of components and technical documentation for offers / tenders

## Qualifications

A technical high school diploma in electrotechnics/ electronics / IT or equivalent is required.

The following additional technical skills will be considered as an advantage:

- Knowledge of power electronic.
- knowledge of electronic laboratory instruments, such as oscilloscopes, function generators, spectrum analyzers, analog and digital multimeters;
- manual skills in the use of basic workshop tools;
- experience in assembly, development, integration, validation and documentation of hardware devices and related firmware;
- knowledge of Windows and Linux platforms;
- knowledge of Office software (e.g. Word and Excel), CAD (Altium), Labview, Matlab, C, C ++ programming;
- design and development of microcontroller / processor systems;
- A / D and D / A conversion.

Excellent oral and written communication skills in Italian as well as good oral and written communication skills in English (B1 level) are essential.

Time management skills and ability to prioritize are expected, together with the ability to interact with staff at all levels and to work as part of a multi-disciplinary team.

The appointment envisioned is a fixed term contract with an initial duration of 12 months, renewable on the parties' agreement.

The salary will be commensurate with the previous experience and qualifications of the candidate.

Applications should include full curriculum vitae and contact information (including electronic mail) of at least one reference.

Due to the situation related to the COVID-19 virus, the interviews will be organized by video conference call.

The deadline for the submission of the application is May 31, 2022.

In accordance with the provisions of article 21 of the Italian legislative decree no. 39/2013 and in conjunction with article 53 (subsection 16ter) of Italian legislative decree no. 165/2001, employees or former employees of any Italian Public Entity who have exercised authority over Elettra Sincrotrone Trieste S.C.p.A. or have negotiated with Elettra - Sincrotrone Trieste S.C.p.A. within the last three years will be excluded from the present selection procedure. We thank all applicants in advance.

For more information, please contact Roberto Visintini (email: roberto.visintini@elettra.eu).

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To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=2522>

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