



Power Plant Controller for Standard CElo-16

The safe solution
for power plant **control**

Higeco² More

Introducing the CCI: an important step toward a sustainable future

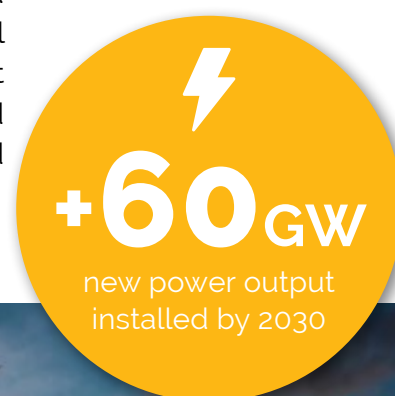
Sustainable Development Goals

The future of energy is renewable.

When it comes to unlocking the potential of renewables in the energy mix, getting distributed energy generation to play a role in grid balancing is a must. To reach the Green Deal target by 2030, the goal is to increase the installed power by 55GW. This is why the Italian Regulatory Authority for Energy, Networks and the Environment (ARERA) has made the installation of the Central Plant Controller (CCI) mandatory for production plants with a nominal power greater than 1 MW and connected in MV. This important move comes with the introduction of the European SOGL Guideline, Resolution 540/2021/R variants V1: 2020 and V2: 2021 and in accordance with the standard CEI 0-16.

What is the CCI for?

The CCI is installed at the delivery point and allows the monitoring of the main electrical quantities and remote control of the plant by the DSO (distributor), the TSO (Terna), and other authorised and potentially interested parties, such as the BSP.



Legislation

The European Guideline for electricity transmission system (SOGL) establishes the importance of monitoring and controlling distributed generation (DER) and in particular from renewable sources (RES).

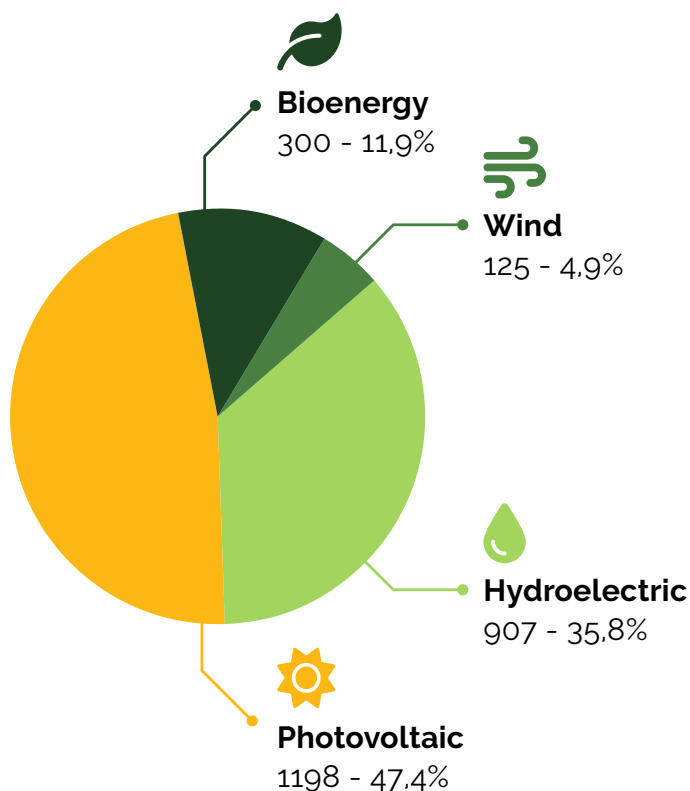
In line with new regulations, the Italian regulatory body ARERA entrusts the DSO with the task of acquiring and sending data from production plants to the energy transmission operator (TSO).

The CEI has introduced the Central Plant Controller (CCI) as the V1 and V2 variants in accordance with the standard 0-16. The CCI is installed at the Delivery Point and allows DSOs to monitor and regulate the power production plant, thereby taking part in the balancing of the grid.

The introduction of Resolution 540/21 by ARERA makes the use of the CCI mandatory for NEW PLANTS and retrofitting for EXISTENT PLANTS according to the following criteria:

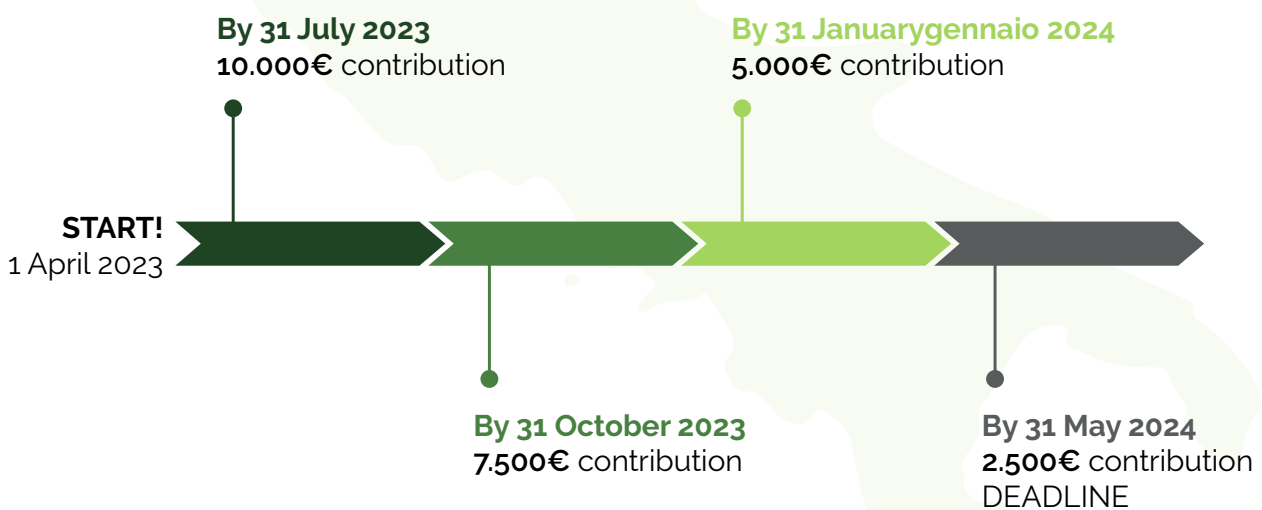
NEW PLANTS: mandatory for all plants that are operational starting 01/12/2022.

EXISTENT PLANTS: all plants that come into operation until 30/11/22 must be retrofitted by 31/01/2024.



Plants subject to CCI retrofitting
Statistical Report GSE - FER 2019, power output less than 10MW

HIGECO MORE CCI TAKES THE HEADACHE OUT OF ADAPTING YOUR SYSTEM OVERNIGHT TO COMPLY WITH CEI 0-16 V1 & V2 STANDARD AND LETS YOU ENJOY THE BENEFITS OF THE **ECONOMIC BONUS**



Bonus for CCI Compliance

The manufacturer sends confirmation to the distributor that work has been completed on meeting the CCI compliance. The distributor must carry out within two months of confirmation remote checks or sample inspections. In the event of a negative result, the manufacturer has 2 months to carry out corrective actions and communicate it to the distributor, who then organises new checks within 1 month.

In the event of a positive outcome, the distributor disburses the bonus within 3 months of notification of the compliance. The amount of the bonus depends on the date of communication of the compliance and whether the checks have been successful.

CCI Functionalities

Legislation requires 3 functional categories: mandatory, optional and voluntary:



The first group refers to mandatory monitoring functions. The CCI must be able to monitor active and reactive power, circuit breakers status, and communicate the collected data to the DSO (Distribution System Operator) with a sampling time of 4 seconds. The monitoring of the active power of individual generators (or inverters) is required for new systems only.



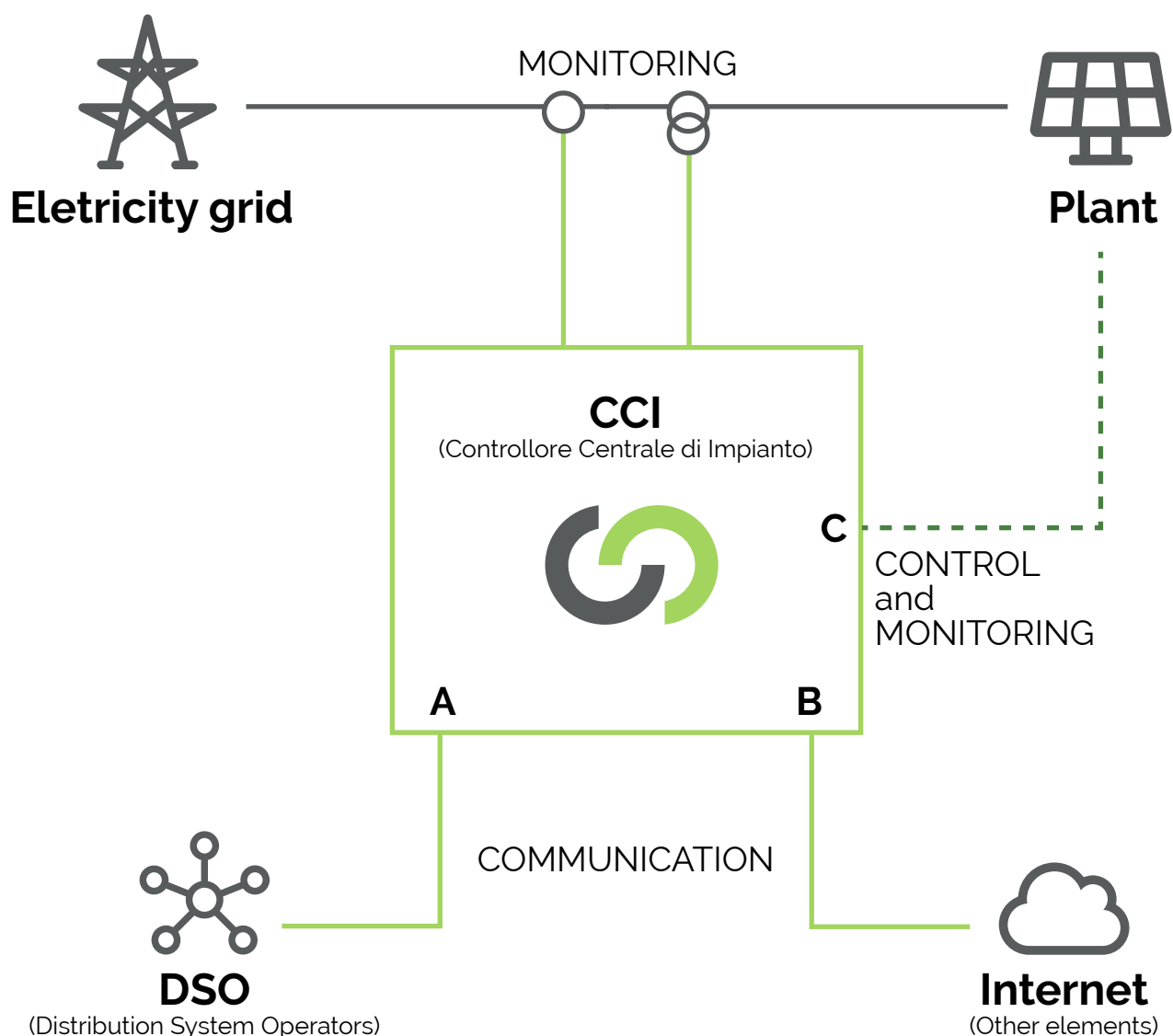
The optional functions are activated at the discretion of the DSO, are related to the remote control of the system and regulate the voltage and frequency of the network. Attention: CEI 0-16 V1: 2019 makes control functions mandatory for plants with a nominal power higher than 6MW.



Voluntary functions are activated at the discretion of the manufacturer and relate to plants in the dispatching service markets and include optimised management of the plant and loading in start-up or reconnection.

Real-time monitoring and control of production plants with power greater than or equal to 1 MW connected in Medium Voltage (MV)

The CCI communicates, on the one hand, with the production units, and on the other, with the DSO distributor through the IEC 61850 protocol, using the secure transport profile defined by IEC 62351. The diagram below illustrates the basic connection between the main elements in the system.



- Electricity grid
- Mandatory functions (monitoring)
- - - Control: optional function
Monitoring: mandatory function for new systems

The Higecco More solution

The Higecco More CCI is the optimal and flexible Made In Italy solution. This CCI has been designed, implemented and tested to meet the technical requirements established by the CEI 0-16 standard and network operators. Higecco More integrates in a single product, all the functions required by the standard for monitoring and control. This is thanks to considerable hands-on experience in countries where these functions are part of the Network Code.

Higecco More is a member of the Higecco Group and boasts years of hard-earned know-how in power plant control. And the expertise shows: clients with a Higecco CCI are up and running from day zero to meet all their monitoring and control needs. The Higecco CCI is flexible and can adapt to any renewable energy power plants existent or under construction.



HSC (Higecco Security Controller)
our high-performance RTU

MONITORING OF THE MAIN
ELECTRICAL MEASUREMENTS
AT THE DELIVERY POINT AND
FOR A SINGLE GENERATOR

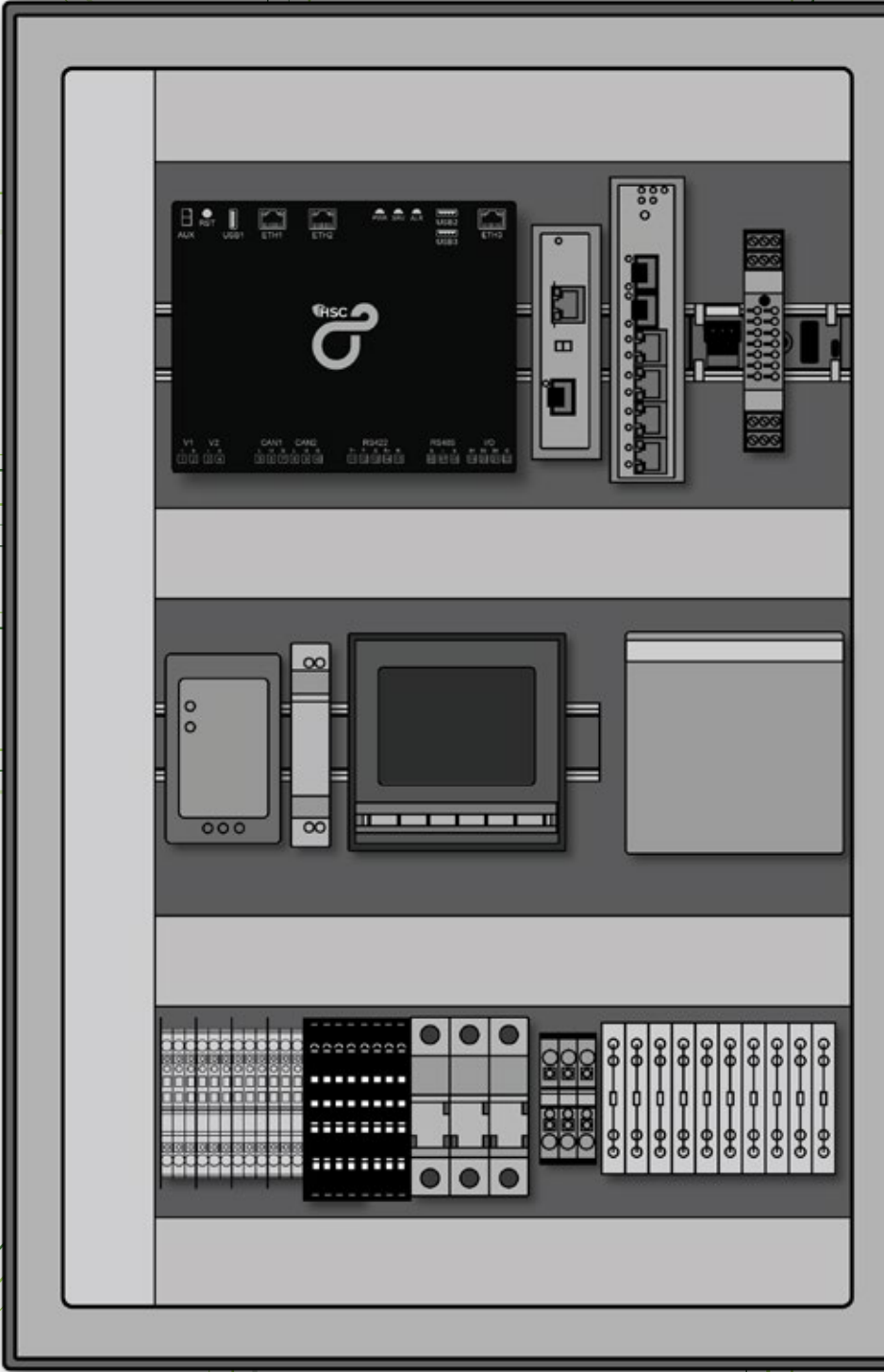
ACTIVE POWER
CONTROL

REACTIVE POWER
CONTROL

POWER FACTOR CHECK

RESPONSE TO VARIATIONS IN
FREQUENCY AND VOLTAGE

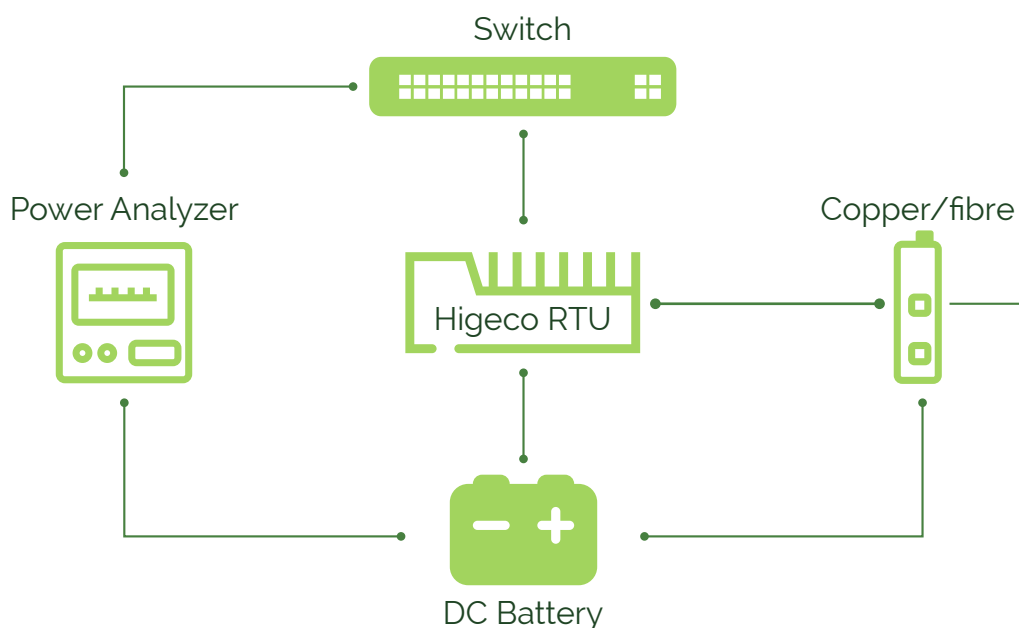
CONFIGURABLE
CONTROL POLICY



Architecture of the Higeeco More CCI

The Higeeco More CCI consists of:

- **The HSC** (Higeeco Security Controller) is an RTU (Remote Terminal Unit) that collects the monitoring data and implements the control functions. It communicates with the plant and the DSO (Distributor System Operators) using the communication protocols established by the standard;
- **Power analyzer** measures the electrical parameters at the connection point;
- **Battery** guarantees the functionality of the CCI even in the event of power outages;
- **Switch** interconnects the interface C with the system network;
- **Copper/fibre ethernet converter** guarantees the extension of copper connections over optical fibre.



Technical Data

ENCLOSURE

Mounting	Wall
Material	Sheet Metal
WidthxHeightxDepth (mm)	406x606x250

AC VERSION Q01-HSC-4T2F-10DI-PA

AC Power Supply Voltage	230Vac (207Vac - 252Vac)
Power Supply Frequency	50/60Hz
Backup battery	12Ah 4h@25W
Average consumption	0.25A @230Vac
Maximum consumption	10A
IP protection AC version	IP 50

DC VERSION Q01-HSC-4T2F-10DI-PA-DC

DC Power Supply Voltage	110 Vdc (67.2 - 154 Vdc)
Average consumption	0.52A @110Vdc
Maximum consumption	1.75A
IP protection DC version	IP 54

ENVIRONMENTAL CONDITIONS

Operative Temperature range	0°C +40°C
Relative humidity	10% to 95%

COMMUNICATION

CCI - Ethernet (No switch/bridge)	2xEth 1000Base-T 1xEth 100Base-T
CCI - Serial ports	2xRS485 2xCanbus (opzionale) 3xUsb
CCI - Digital Ports	13xDI
Ethernet Medium Converter	100/1000Base-X SFP a 100/1000Base-T
Ethernet Switch	2x100/1000Base-T 2x100/1000Base-X SFP
Communication protocols	IEC 61850, IEC 60870-101, IEC 60870-104, Modbus CanOpen, Opc UA, DNP3

AMPEROMETRIC AND VOLTAMMETRIC INPUTS

Maximum Voltage	400V TV terminals
Maximum Current	5A TA terminals
Isolation	2.5kV Power Analyzer inputs

FEATURES

Power Analyzer	Control EMA-90-N Classe 0.2S, 1-5A, 30-400VIn, 24Vdc, 96x96, 200ms, data refresh, door mounting
Visualization User Interface	Web Based
Configuration User Interface	USB
CCI - Monitoring functions	MCI Software License
CCI - Control functions	CCI Software License
PPC - Control functions	PPC Software License
Data Export	IEC 61850 toward DSO, Modbus, DNP3, IEC 60870-104 toward third party systems
GPS receiver for time synchronization	GPS/GLONASS 32dB, IP66, 5m cable, outdoor -40°C - +85°C

CERTIFICATIONS

Conformity CEI 0-16	Annex O 2022-03 Annex T 2022-03
PMD Conformity	CEI/EN 61557-12
Cyber Security	IsaSecure SDLA for IEC 62443-4-1 IsaSecure CSA for IEC 62443-4-2
Cryptographic component IEC 61850	FIPS 140-2 Livello 3 Test Certificate from UCA User Group
Secure Transport profile IEC 62351-3	Test Certificate IEC 62351-100-3

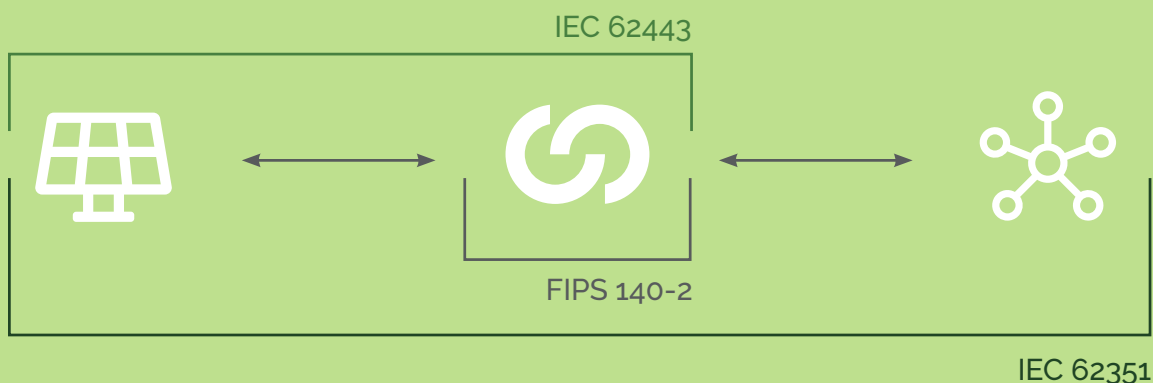
Cybersecurity

The Higeco More CCI was developed according to the "Security By Design" principle, in order to ensure the 3 pillars of security: Confidentiality, Integrity and Availability of data.

Management of the entire product life cycle, from design to updates and technical support, was built with cybersecurity as a priority along with IsaSecure SDLA certification for compliance with IEC 62443-4-1.

The heart of the CCI is the Higeco RTU Datalogger, a high-performance RTU, which implements a cryptographic component. FIPS 140-2 level 3 certified capable of resisting physical tampering, a firewall and any intrusions. Application Prevention Systems to prevent, detect and actively block cyber threats and attacks. IsaSecure CSA certification for compliance with IEC 62443-4-2.

Communication between the CCI and DSO is based on a secure profile defined by IEC 62351-3 of the IEC 61850 protocol.



Advantages of the Higeeco More solution



FLEXIBILITY

Modular solution that allows Higeeco More to meet the needs of any type of system, both new and existing, along with CT or VT supply.



COMPLETE SOLUTION

Higeeco professionals manage the supply of HW and SW components, installation, start-up, and compliance according to operational regulations (RDE).



EXPERIENCE

In-depth expertise acquired over years of implementing control systems for renewable power plants (PPC) abroad.



SPEED

Guarantee of timely access to the ARERA bonus thanks to the in-house design and production of hardware and software products.



CONTROL

Immediate and effective functionality: synonymous with the Higeeco Group.

SAFETY

Attention to continuous improvement of cybersecurity to ensure maximum protection of data and systems.



Contact us now

and enjoy the benefits
of the ARERA bonus!



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