



## WP4 - Electrical Infrastructure Upgrade

October 18th, 2024

Eng. Luigi Cappelli

# Working Package Summary

**TARGET:**  
To improve LNGS  
Electrical Grid in  
terms of



That's why the WP is divided in the following 4 activities:

- 4.1 - Power system upgrade for new experiments
- 4.2 - UPS power distribution upgrade
- 4.3 - Energy efficiency and user safety
- 4.4 - Supervisory Control And Data Acquisition

# WP 4.1 – Power system upgrade for new experiments

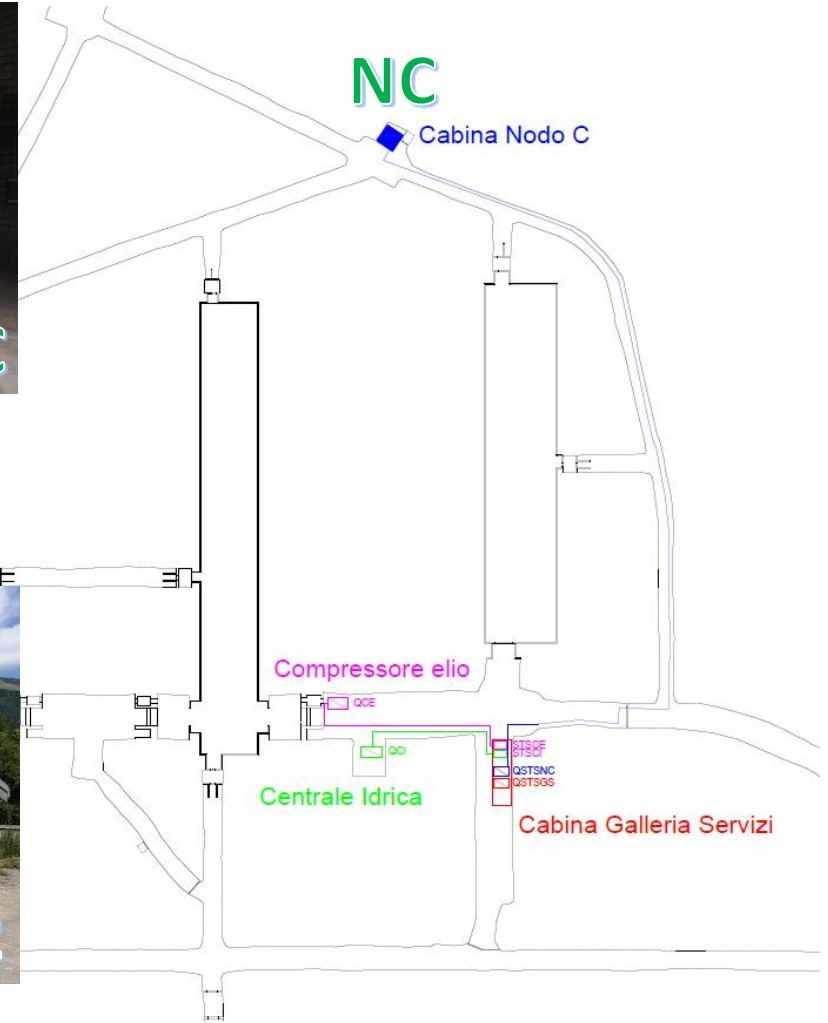
- **Casale San Nicola substation:**
  - New Power Control Center (PCC): 2 MW peak power from the latter source of energy;
- **Nodo C substation (underground):**
  - Additional power transformer;
- **Underground lab:**
  - Redundant energy source for critical loads;



“Nodo C” substation



“Casale San Nicola” substation





# WP 4.1 – Power system upgrade for new experiments

- **EXECUTIVE DESIGN:**  
Professional: *Eng. Giuseppe D'Ottavi*  
Cost: 40.671,37 €
- **SAFETY COORDINATOR:**  
Professional: *Eng. Barbara Cantalini*  
Cost: 17.364,64 €
- **WORKS:**  
Company: *Elettrosolving Srl*  
Costs
  - Work: 454.948,90 €
  - VAT (22%): 100.088,76 €
  - TOTAL: 555.037,66 €
- **TOTAL COST OF THE ACTIVITY: 613.073,67 €**

START DATE: Oct 10th, 2024  
ESTIMATED END: Feb 7th, 2025\* (120 days)

\* some of the places are still not available (experiments moving in new locations)



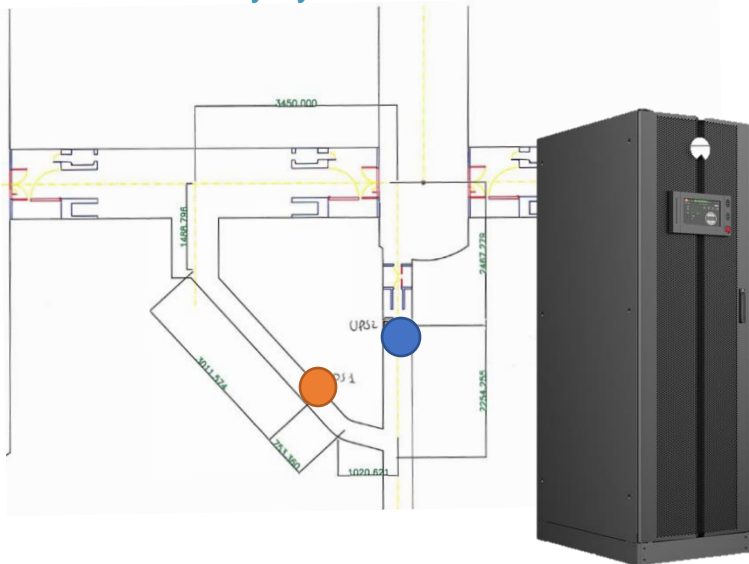
**LNGS-PNRR staff involved:**

- RUP: Luigi Cappelli
- Ufficio del RUP: Barbara Sartini
- DL: Lucio Di Paolo
- DO: Nicola Massimiani, Manuel Palesse

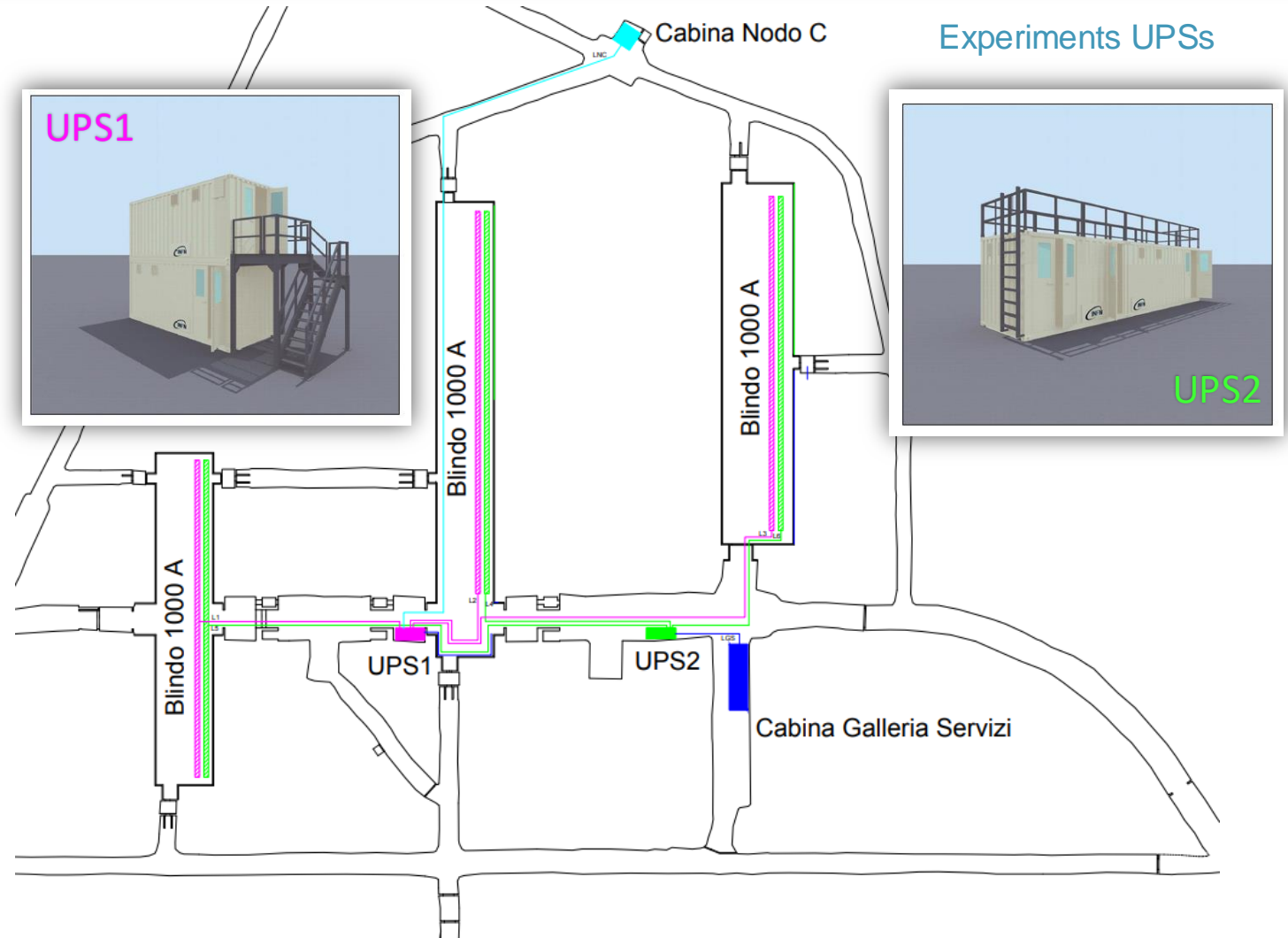
# WP 4.2 – UPS power distribution upgrade

- **Underground lab:**
  - N. 2 new modular and redundant UPS (2N+1) for experiments;
  - N.2 new modular and redundant UPS (2N+1) for LNGS safety systems;
  - Distribution busbars in the 3 main halls

Safety systems UPSs



LNGS - 18 October 2024



Luigi Cappelli

- **EXECUTIVE DESIGN & SAFETY COORDINATOR:**  
Professional: *Eng. Giuseppe Baldassarra*  
Cost: 150.242,97 €
- **WORKS:**  
Company: *3M Elettrotecnica Srl*  
Costs
  - Work: 1.295.941,09 €
  - VAT (22%): 285.107,04 €
  - TOTAL: 1.581.048,13 €
- **TOTAL COST OF THE ACTIVITY: 1.731.291,10 €**  
  
START DATE: Oct 14th, 2024  
ESTIMATED END: Jun 11th, 2025 (240 days)

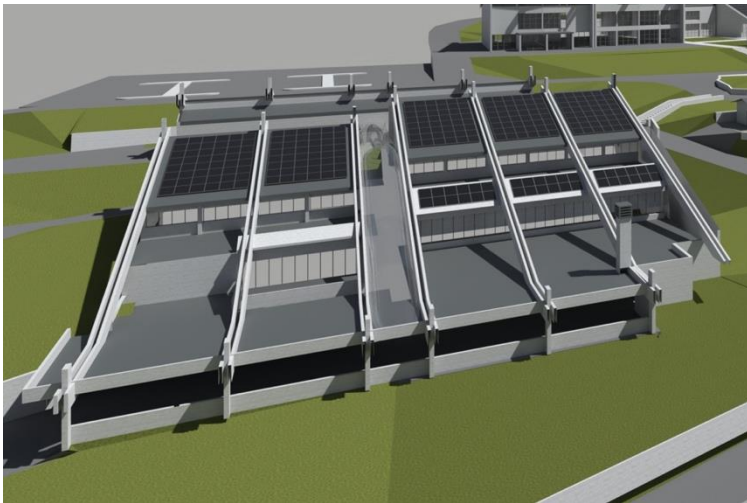
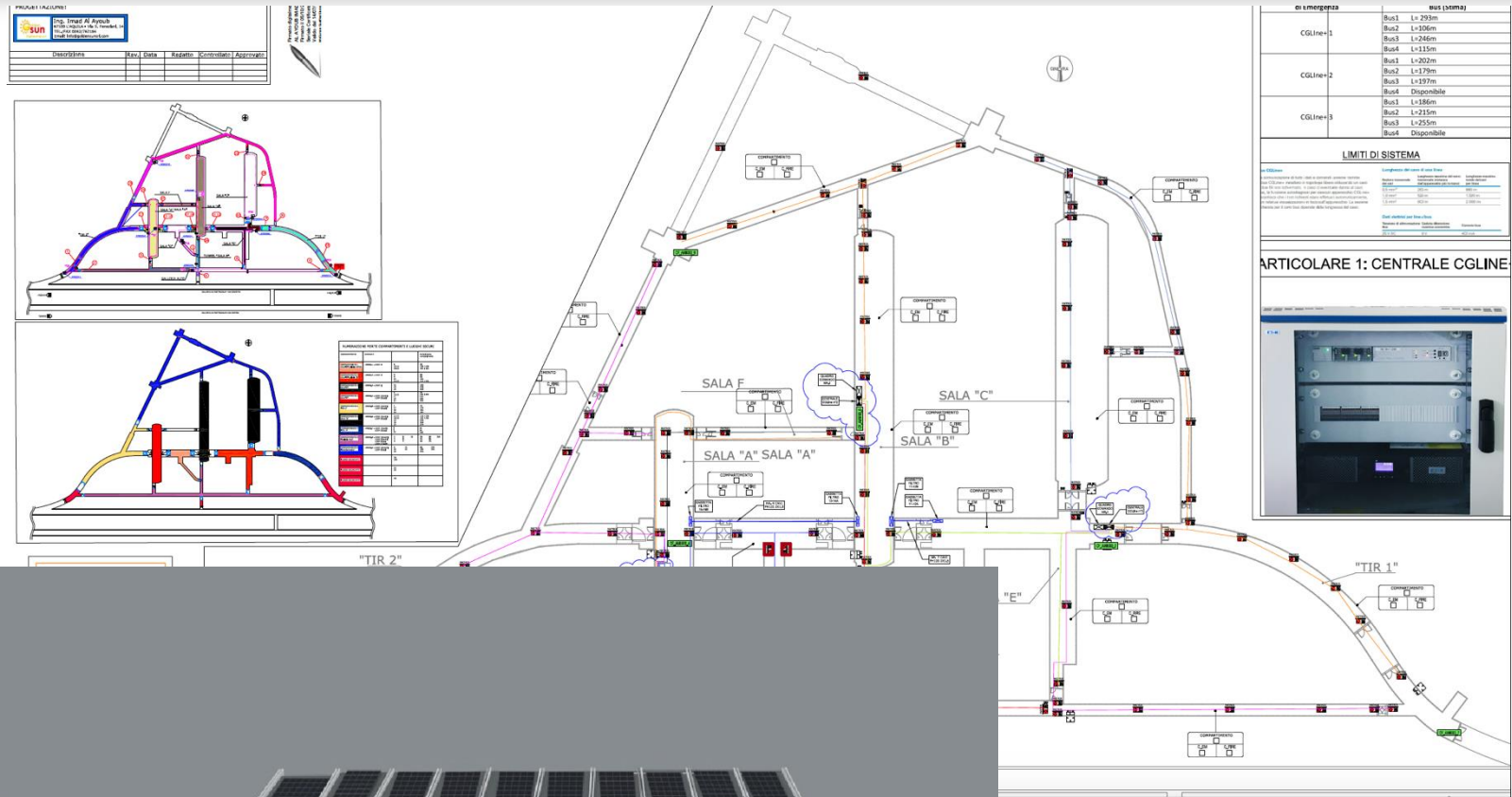


**LNGS-PNRR staff involved:**

- RUP: Luigi Cappelli
- Ufficio RUP: Antonio Iannuzzo
- DL: Fabrizio Torelli
- DO: Nando Polidoro, Manuel Palesse

# WP 4.3 – Energy efficiency and user safety

- **External lab:**
  - N. 876 PV panels on sloping roofs (400 kWp);
  - Lights revamping (LED)
  - EV charging stations;
- **Underground lab:**
  - Lights revamping (LED)
  - Upgrade of emergency lighting
  - Adaptive emergency lighting



- **EXECUTIVE DESIGN:**  
Company: *Goldensun Engineering Srl*  
Cost: 99.584,36 €
  
- **SAFETY COORDINATOR:**  
Professional: *Eng. Mauro D'Antonio*  
Cost: 69.366,74 €
  
- **WORKS:**  
Company: *Lorusso Impianti Srl*  
Costs
  - Work: 1.850.581,80 €
  - VAT (22%): 407.128,00 €
  - TOTAL: 2.257.709,80 €
  
- **TOTAL COST OF THE ACTIVITY: 2.426.660,90 €**

START DATE: Sep 4th, 2024  
ESTIMATED END: Aug 8th, 2025 (335 days)



**LNGS-PNRR staff involved:**

- RUP: Luigi Cappelli
- Ufficio RUP: Barbara Sartini
- DL: Fabrizio Torelli
- DO: Nando Polidoro, Manuel Palesse, Claudio Ianni, Paolo Cavalcante



- **Supervisory Control And Data Acquisition**
  - I-Fix Licenses
  - Update for existing licenses
  - I-Power Module for Electrical Systems
  - Modems LTE for alarms

- **SUPPLY & SERVICE:**

Company: *Servitecno Srl*

Costs

- SUPPLY: 138.000,00 €
- VAT (22%): 30.360,00 €

- **TOTAL COST OF THE ACTIVITY\*:** 168.360,00 €

*\* The present cost is lower than the funded one.  
Therefore a budget variation is foreseen*



Photo courtesy of GE

LNGS-PNRR staff involved:

- RUP: Augusto Goretti



**Thank you!**  
**Q&A**

October 18th, 2024

Eng. Luigi Cappelli