

EDUCATION AND TRAINING

CyberSecPro Training

We are creating cutting-edge education and training to advance competencies and professionalism in EU cybersecurity.

OUR VISION

Next level cybersecurity education and training



Co-funded by
the European Union

Network Protection for Energy Control Systems

CSP004_C_E

PRESENTATION BY:

- **CRISTINA ALCARAZ**
UNIVERSITY OF MALAGA, SPAIN

EDUCATION AND TRAINING

CyberSecPro Training

We are creating cutting-edge education and training to advance competencies and professionalism in EU cybersecurity.

OUR VISION

Next level cybersecurity education and training



Co-funded by
the European Union

Acknowledgement

- *Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.*
- *Project Agreement no. 101083594*

Topic-1: Introduction to Energy Control Network Protection

Overview

- Introduction to the application scenario and the main security challenges in power control systems
- Taxonomy of threats and case studies
- Final remarks
- References and sources

Topic-1: Introduction to Energy Control Network Protection

Overview

- Introduction to the application scenario and the main security challenges in power control systems
- Taxonomy of threats and case studies
- **Final remarks**
- References and sources

Final remarks

- Energy infrastructures are fundamental systems for social and economic wellbeing
 - Everyone depends on energy to live
 - All organizations, companies and institutions depends on energy to work properly
 - All critical infrastructures depend on energy to operate
- Unfortunately, energy systems rely on multiple network components and new technologies for their own control and monitoring, so the central infrastructure tends to be susceptible to multiple types of attacks
 - In fact, the number of incidents is increasing every year, with the additional risk of affecting other critical infrastructures, systems or components
 - And threats are becoming more intelligent, persistent and destructive -- what characterises an APT

Topic-1: Introduction to Energy Control Network Protection

Overview

- Introduction to the application scenario and the main security challenges in power control systems
- Taxonomy of threats and case studies
- Final remarks
- **References and sources**

References and sources

1. Some figures are attributed from Vecteezy,
URL: <https://www.vecteezy.com/> - thanks !
2. DeepL Translator for proofreading.
URL: <https://www.deepl.com/translator>
3. ENISA, CIRAS, 2024
URL: <https://ciras.enisa.europa.eu>
4. CloudShark.org – modbus-bug0.pcapng
URL: <https://www.cloudshark.org/captures/4b8f9f3579b3>
5. C. Alcaraz, J. Lopez, A Security Analysis for Wireless Sensor Mesh Networks in Highly Critical Systems,
IEEE Transactions on Systems, Man, and Cybernetics, Part C: Applications and Reviews, vol. 40, no. 4, pp. 419-428, 2010, ISSN: 1094-6977
6. Netresec, "Captures files from 4SICS Geek Lounge", 2024
URL: <https://www.netresec.com/?page=PCAP4SICS>
7. CS3Sthlm, 2014-2020, 2024
URL: <https://cs3sthlm.se>



References and sources

8. NIST, National Vulnerability Database, 2024
URL: <https://nvd.nist.gov/>
9. MITRE, MITRE CVE,
URL: <https://cve.mitre.org/>
10. MITRE, MITRE ATT&CK, 2024
URL: <https://attack.mitre.org/>
11. Fursov, Ihor, Klym Yamkovi, and Oleksandr Shmatko. "Smart Grid and wind generators: an overview of cyber threats and vulnerabilities of power supply networks." Radioelectronic and Computer Systems 4 (2022): 50-63



Connect with CyberSecPro: How to register and other practical information

1. Website:
www.cybersecpro-project.eu
2. X (Twitter):
https://twitter.com/CyberSecPro_eu
3. LinkedIn:
<https://www.linkedin.com/company/cybersecpro-euproject/>



**Co-funded by
the European Union**

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

Project Agreement no. 101083594

 ACEEU ACCREDITATION COUNCIL FOR ENTREPRENEURIAL & ENGAGED UNIVERSITIES	 AIT AUSTRIAN INSTITUTE OF TECHNOLOGY	 APIROPLUS SOLUTIONS	 SINTEF	 SOCIAL ENGINEERING ACADEMY	 TAL TECH
ACEEU GmbH Germany Visit Website	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH Austria Visit Website	APIROPLUS SOLUTIONS LTD Cyprus Visit Website	SINTEF AS Norway Visit Website	Social Engineering Academy GmbH Germany Visit Website	Tallin University of Technology Estonia Visit Website
Logo missing	 COFAC COOPERATIVA DE FORMAÇÃO E ANIMACÃO CULTURAL C.R.L.	 Consiglio Nazionale delle Ricerche	 Technische Universität Braunschweig	 TECHNICAL UNIVERSITY OF CRETE	 trustilio Enhance your Trustworthiness
C2B CONSULTING Italy Visit Website	COFAC Portugal Visit Website	Consiglio Nazionale delle Ricerche Italy Visit Website	Technical University of Braunschweig Germany Visit Website	Technical University of Crete Greece Visit Website	trustilio B.V. The Netherlands Visit Website
 focal point Cyber Defence Exercises as a Service	 GOETHE UNIVERSITÄT FRANKFURT AM MAIN	 ITML	 LNINOVA	 UNIVERSIDAD DE MÁLAGA	 NOVA UNIVERSIDADE NOVA DE LISBOA
FOCAL POINT Belgium Visit Website	Goethe University Frankfurt Germany Visit Website	Information Technology for Market Leadership Greece Visit Website	Uninova Portugal Visit Website	Universidad de Malaga Spain Visit Website	Universidade Nova De Lisboa Portugal Visit Website
 Institut Mines-Télécom	 LAUREA	 GRUPPO Maggioli	 University of Cyprus	 FACULTY OF SCIENCES NOVI SAD 1969 SERBIA	 UNIVERSITY OF PIRAEUS RESEARCH CENTER
Institut Mines-Télecom France Visit Website	Laurea University of Applied Sciences Finland Visit Website	Maggioli S.p.A. Italy Visit Website	University of Cyprus Cyprus Visit Website	University of Novi Sad Faculty of Sciences Serbia Visit Website	University of Piraeus Research Center Greece Visit Website
 PDMFC	 Security Labs Consulting Ltd	 SGI	 Zelus		
PDMFC Portugal Visit Website	Security Labs Consulting Ltd Ireland (Republic) Visit Website	Serious Games Interactive Denmark Visit Website	ZELUS P.C. Greece Visit Website		

Thank you

If you have any questions, please do not hesitate to contact us:

- Cristina Alcaraz
alcaraz@uma.es
- Abdelkader Shaaban
abdelkader.shaaban@ait.ac.at