

Mihailo Luković

Mechanical and Controls Engineer
European Organization for Nuclear Research
Geneva, Switzerland

Contact:
mihailo.lukovic@cern.ch
mihailo.lukovic.contact@gmail.com
+33 07 49 56 83 16

Profile:

Motivated and self-managing **mechanical and control engineer** with M.Sc. degree working on a novel timing detector with picosecond resolution for the CMS experiment at CERN. Enjoy working on complex projects which require **multidisciplinary** and **detail-oriented** approach. Demonstrated the ability to **clearly communicate** with project stakeholders and external services through the work on the **large international collaboration**. Striving for continuous improvement of technical and managerial skills and currently pursuing the **CAPM certification** from the **Project Management Institute**.

Experience:

Mechanical Engineer | *CERN, European Organization for Nuclear Research*

Apr, 2024 – present

- **Key roles:**

- Responsible for **thermal studies** of the detector's evaporative **CO₂-based** cooling system
- Lead responsible for **detector integration**
- Project representative in the CMS Detector Safety System working group
- Project logistics manager

- **In charge of:**

- **Design, assembly** and **commissioning** of test setups for studying thermal performance of detector's high-pressure **two-phase cooling system** and detector electronics
- **Coordination** and **execution** of thermal tests under all detector operational scenarios and **optimization** studies to increase the **heat-transfer** of the cooling system
- Detector integration activities, including continuous development of **large assemblies** in **CATIA**, and generating relevant **technical documentation** and associated **2D drawings**
- Carrying out **Finite Element Analysis (FEA)** of detector components, including the analysis of complex detector cooling lines in accordance with EN 13445 and EN 13480
- Supervising students working on **static-structural** and **thermal** simulations in **ANSYS**
- Providing input to facilitate **planning** for integration, testing, and commissioning activities in upcoming project stages
- Development, implementation, and maintenance of a dedicated **PLC-based SCADA** system including integration of required instrumentation
- **Communication** and **collaboration** with the CMS Technical Coordination on the design and implementation of the new CMS detector safety system
- Reporting logistics requirements for integration and installation to the CMS Logistics WG

- **Working environment and communication:**

- Member of a large international collaboration (MIT, Fermilab, etc.), with an extensive experience in clearly **presenting** and **reporting** to large audiences across multidisciplinary teams
- Work across multiple projects simultaneously, combining **Agile** and **Waterfall** project management approaches to structure tasks and deliver work efficiently

Technical Student | *CERN, European Organization for Nuclear Research*

Feb, 2023 – Apr, 2024

- Member of a team in charge of the mechanical design and thermal studies of new CMS subdetector's cooling system prototypes
- In charge of **test setup design** and **control system development** for data acquisition
- Actively participated in early **R&D** prototyping stages of detector's cooling system
- Performed **thermal analysis** to evaluate CO₂ cooling system's performance and gained deeper understanding of CO₂-based cooling system

Teaching Assistant | *University of Belgrade, Faculty of Mechanical Engineering*

Oct, 2020 – Jun, 2022

- Member of a team which gives two courses on Machine Elements
- Mentored students through their mandatory project assignments and evaluated their progress through the semester

Lecturer | *University of Belgrade, Faculty of Mechanical Engineering*

Feb, 2020 & Jun, 2020

- Tutored students in the subject of **Thermodynamics**

Software Skills & Languages :

- CATIA, ANSYS
- Siemens S7-300 and S7-1500, TIA Portal, WinCC-OA
- Python, basic knowledge of Matlab
- MS Office, LaTeX
- Serbian (native)
- English (full working proficiency)

Education:

Master of Science <i>Automatic Control</i> University of Belgrade, Faculty of Mechanical Engineering Thesis: <i>Mechanical and SCADA system design of the Endcap Timing Layer's thermal test setup</i>	Oct, 2021 – Feb, 2024 (GPA: 10.0/10.0)
Bachelor of Science <i>Mechanical Engineering</i> University of Belgrade, Faculty of Mechanical Engineering Thesis: <i>Heat exchanger design for industrial plant applications</i>	Oct, 2018 – Sep, 2021 (GPA: 9.96/10.0)

Courses & Certificates:

Functional Tolerancing - ISO GPS Specifications <i>Vertice Engineering</i> A three-day course on ISO GPS specifications with the main objective of developing the ability to define functional tolerances according to ISO GPS standards. The course provided theoretical understanding and hands-on exercises in the analysis of functional needs, definition of ISO GPS specifications of interfaces and datum reference frames and covered the subject of tolerance stackups.	Dec, 2025
ANSYS: Structural mechanics simulation with Ansys Mechanical <i>CADFEM</i> Extensive four-day course on structural mechanics simulation with hands-on exercises complemented with theoretical approach. The course covered a wide range of simulation aspects starting from boundary conditions and meshing, through contact and material definition, followed by bolted joints and finishing with optimization-related topics.	Apr, 2025
Fast Forward, the productivity system for researchers <i>Mind Matters</i> Structured 7-week program focused on agile project and time management for researchers. Helped translate long-term goals into actionable short-term objectives with a clear execution plan. Included techniques to improve daily productivity, maintain focus, and build sustainable work routines.	Dec, 2024
SIMATIC Programming Level 2 in the TIA Portal <i>Siemens</i> A four-day, Level 2 course on programming in TIA Portal with hands-on exercises on Siemens S7-1500 controller. Focus on indirect addressing and making library-conformant blocks in TIA Portal.	Nov, 2024
JCOP - Finite State Machines <i>CERN, European Organization for Nuclear Research</i> Introduction to concept of Finite State Machine and its implementation in Detector Control System using JCOP tools together with WinCC-OA.	Oct, 2024
JCOP framework and WinCC-OA <i>CERN, European Organization for Nuclear Research</i> WinCC-OA course together with JCOP framework, a specific tool developed at CERN serving as WinCC-OA extension, used for Detector Control System design.	May, 2023

Honours & Awards:

CERN EP department award <i>CERN, European Organization for Nuclear Research</i> An award for exceptional contribution to the work of the Organization given by CERN Experimental Physics (EP) department.	Nov, 2024
1st place <i>Regional Mechanics Competition</i> Regional competition of faculties of Mechanical Engineering that gathers students from the Balkans. Competition in solving problems related to the kinematics and dynamics of systems.	May, 2022
Best student of the generation award <i>Bachelor of Science, Faculty of Mechanical Engineering</i> Several scholarships provided for the best students in the Republic of Serbia	Oct, 2021

Contacts for reference:

- **Natalia Koss** (CERN) – natalia.koss@cern.ch
Cryogenics Engineer; Former MTD Engineering & Infrastructure Coordinator; Former supervisor
- **Prof. Slawomir Marek Tkaczyk** (FNAL & CERN) – tka@fnal.gov; slawomir.tkaczyk@cern.ch
Senior Physicist; MTD Technical Coordinator