



Alexandra-Veronica LUCA

WORK EXPERIENCE

07/2025–Present **Bioprocess Engineer**

Lonza, Visp (Switzerland)

- Timely independent review of paper-based and electronic manufacturing protocols
- Verify approved materials and completion of Filter Integrity Tests (FIT)
- Perform Audit Trail and Logbook reviews for data integrity
- Check process trends and critical process parameters within defined limits
- Confirm correct LIMS labeling in manufacturing protocols
- Author Batch Lifecycle Documents and compile cleaning report data
- Contribute to continuous improvement initiatives in the BRR area
- Support QA, BPE, and participate in cross-department meetings

06/2024–06/2025 **Automation Engineer**

Lonza, Visp (Switzerland)

- Develop, test and validate DeltaV control strategies for GMP-compliant systems
- Design and implementation of HVAC and BAS DeltaV automation
- Configured control modules, equipment modules, and system layouts in DeltaV
- Generate and validate technical documentation using Comos, Kneat, and Ubik
- Ensure automation compliance with GMP through documentation and validation
- Collaborate with cross-functional teams to align automation with process needs

01/2023–05/2024 **Industrial Automation Trainer**

Emerson, Cluj-Napoca (Romania)

European Learning & Development Center

- Provide extensive DeltaV software training sessions for international students
- Expertise in continuous and batch process design and operation
- Present automation solutions tailored to client needs
- Troubleshoot and optimize processes during live training
- Adapt training content for diverse technical backgrounds
- Deliver customer experience courses for customer-facing staff on multiple company sites

10/2022–12/2022 **Assistant project manager**

Babes-Bolyai University - UBB Tech Transfer / Endava Romania SRL, Cluj-Napoca (Romania)

Integrated system for automating business processes using artificial intelligence program - POC/163/1/3/121075

- Creating integrated project plans to align technical and business goals
- Implementing proactive solutions for technology development
- Coordinate project tasks, timelines, and resources to support on-time and on-budget delivery
- Monitoring project progress with a focus on efficient management
- Communicate with stakeholders to ensure alignment on project goals

09/2022–12/2022 **Technical consultant**

Babes-Bolyai University - UBB Tech Transfer, Cluj-Napoca (Romania)

- Selecting and evaluating early-stage technologies for feasibility and market potential
- Managing patent filing and attainment processes
- Provide technical consulting to support decision-making across teams
- Reviewing and assessing prior financed projects
- Coordinating project planning and timelines to support strategic milestones
- Preparing technical reports and presentations for internal and external stakeholders

09/2017–09/2019 **Chemical engineer**

Terapia - a SUN PHARMA Company, Cluj-Napoca (Romania)

- Conducted GMP-compliant qualitative and quantitative analysis of finished products
- Managed division and recording of reference substances
- Supported validation, qualification, and calibration of lab equipment, including IQ, OQ, and PQ
- Assisted with FATs to ensure equipment met required specifications before delivery
- Supported audits by providing documentation and ensuring regulatory compliance
- Forecasted material requirements to support seamless production and testing

EDUCATION AND TRAINING

02/2022

International Winter School Smart Feed

Smart Feed-Sustainable Model for Agroenergy and Feed production by Urban Waste Recycling and Treatment, Milan (Italy)

Insect and microalgae as novel feed for sustainable livestock production

05/2021–04/2022

Entrepreneurship for Innovation and Innovation Management Program

Institute of Advanced Studies in Science and Technology - STAR-UBB Institute, Cluj-Napoca (Romania)

Entrepreneurship for innovation through doctoral and postdoctoral research program - POCU/380/6/13/123886

10/2019–Present **Ph.D. candidate**

Babes-Bolyai University - Doctoral School of Chemical Engineering, Cluj-Napoca (Romania)

Ph.D. subject: Operation and automatic control of the wastewater treatment plant using artificial intelligence tools

10/2017–07/2019 **Master's degree - Advanced Chemical Engineering**

Babes-Bolyai University - Faculty of Chemistry and Chemical Engineering, Cluj-Napoca (Romania)

Specialization: Advanced Process Chemical Engineering

Dissertation subject: Modelling and simulation of carbon dioxide capture from steel production using gas-liquid absorption and membrane technologies (Examination grade: 9.75/10)

10/2013–07/2017 **Bachelor's degree - Chemical Engineering**

Babes-Bolyai University - Faculty of Chemistry and Chemical Engineering, Cluj-Napoca (Romania)

Specialization: Engineering and Informatics of Chemical and Biochemical Processes

Thesis subject: Modelling and simulation of a steel making plant (Examination grade: 9.40/10)

07/2016–08/2016 **Internship**

S.C. Carbochim S.A., Cluj-Napoca (Romania)

10/2010–07/2013 **Graduate - Journalism**

Babes-Bolyai University, Cluj-Napoca (Romania)

PERSONAL SKILLS

Mother tongue(s) Romanian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
Italian	A2	A2	A1	A1	A1
German	A2	A2	A1	A1	A1

Technical skills

- Configuring and administering DeltaV continuous and batch processes
- Developing intuitive displays for process control
- Identifying and resolving DeltaV system issues
- Extensive experience with Microsoft Office products
- Good command of engineering and documentation software:
 - Process Control & Automation: DeltaV, LabView
 - Modeling & Simulation: MATLAB, ChemCAD, Aspen Plus
 - Engineering Data & Documentation Management: COMOS, Kneat, Ubik, SAP
 - Design & CAD: Solid Edge, Visio, DWG True View, Drawio
 - Learning Management Systems: Cornerstone

Organisational/ managerial skills

- Efficient resource planning
- Maintaining organized and detailed documentation materials
- Implementing technical and soft skill assessments of course participants
- Mentoring by facilitating knowledge transfer and skill development of future trainers
- Effective continuous improvement based on feedback and industry advancements

Driving licence

B

ADDITIONAL INFORMATION

Scholarships World Federation of Scientists, 2019-2020

- Prizes**
1. Business plan (team leader) awarded with the first prize under the Human Capital Operational Program – “From Research to Start-Up” POCU/380/6/13/123886, April 2022
 2. Business plan awarded under the Human Capital Operational Program - POCU/380/6/13/123886, January 2022
 3. Science article awarded under National Project PRECISI-2021, November 2021
 4. Science article awarded under National Project PRECISI-2020, December 2020

- Publications**
1. A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2025, Fault detection and diagnosis of the wastewater nitrate and nitrite sensors using PCA and FDA combined with assessment of the economic and environmental impact of the faults, Environmental Monitoring and Assessment (IF = 3.00), 197, 121. DOI: <https://doi.org/10.1007/s10661-024-13593-z>
 2. A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2023, Fault type diagnosis of the WWTP dissolved oxygen sensor based on Fisher Discriminant Analysis and assessment of associated environmental and economic impact, Applied Sciences (IF = 2.50), 13(4), 2554. DOI: <https://doi.org/10.3390/app13042554>
 3. A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, V.-M. Cristea, 2021, Data driven detection of different dissolved oxygen sensor faults for improving operation of the WWTP control system, Processes (IF = 2.80), 9(9), 1633. DOI: <https://doi.org/10.3390/pr9091633>
 4. N.-B. Mihaly, A.-V. Luca, M. Simon-Varhelyi, V.-M. Cristea, 2023, Improvement of air flowrate distribution in the nitrification reactor of the waste water treatment plant by effluent quality, energy and greenhouse gas emissions optimization via artificial neural networks models, Journal of Water Process Engineering (IF = 6.70), 54, 103935. DOI: <https://doi.org/10.1016/j.jwpe.2023.103935>
 5. M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, 2020, Reducing energy costs of the wastewater treatment plant by improved scheduling of the periodic influent load, Journal of Environmental Management (IF = 8.40), 262, 110294, 1-10. DOI: <https://doi.org/10.1016/j.jenvman.2020.110294>
 6. M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, M.A. Brehar, 2019, Optimization and control of aeration distribution in the WWTP nitrification reactor, Revue Roumaine de Chimie (IF = 0.60), 65(6), 601-609. DOI: <https://doi.org/10.33224/rch.2020.65.6.11>
 7. A.-V. Luca, L. Petrescu, 2021, Membrane technology applied to steel production: investigation based on process modelling and environmental tools, Journal of Cleaner Production (IF = 10.00), 294, 126256. DOI: <https://doi.org/10.1016/j.jclepro.2021.126256>
 8. A. Mio, L. Petrescu, A.-V. Luca, S.T. Galusnyak, M. Fermeiglia, C.C. Cormos, 2022, Carbon dioxide capture in the iron and steel industry: thermodynamic analysis, process simulation and life cycle assessment, Chemical and Biochemical Engineering Quarterly (IF = 1.60), 36(4), 255-271. DOI: <https://doi.org/10.15255/CABEQUATION2022.2123>

- Conferences
1. A.-V. Luca, M. Simon-Varhelyi, N.-B. Mihaly, M.A. Brehar, V.M. Cristea, *Fault diagnosis of the WWTP dissolved oxygen and nitrates sensors*, 11th International Conference on Environmental Engineering and Management (ICEEM 11), Muttentz (Switzerland), 8-10 September 2021
 2. N.-B. Mihaly, A.-V. Luca, M. Simon-Varhelyi, V.-M. Cristea, *Artificial Neural Networks-based identification of the WWTP DO sensor types of faults*, 33rd European Symposium on Computer-Aided Process Engineering (ESCAPE 33), Athens (Greece), 18-21 June 2023
 3. N.-B. Mihaly, M. Simon-Varhelyi, A.-V. Luca, V.-M. Cristea, *Optimization of the wastewater treatment plant recycle flowrates using artificial neural networks*, IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), Cluj-Napoca (Romania), 19-21 May 2022
 4. M. Simon-Varhelyi, V.-M. Cristea, A.-V. Luca, M.A. Brehar, *Performance comparison of different optimization methods for the wastewater treatment plant model based on the activated sludge model no. 3 and design of the plant control*, 31st European Symposium on Computer-Aided Process Engineering (ESCAPE 31), Istanbul (Turkey), 6-9 June 2021
 5. M. Simon-Varhelyi, A.-V. Luca, M.A. Brehar, V.-M. Cristea, *Calibration of the wastewater treatment plant model based on the activated sludge model no. 2d - case study of a municipal WWTP*, World Congress on Civil, Structural, and Environmental Engineering (CSEE' 20), Lisbon (Portugal), 18-20 October 2020
 6. D. Cristiu, M. Simon-Varhelyi, A.-V. Luca, M.A. Brehar, V.M. Cristea, *Augmenting heat balance of the wastewater treatment plant model and improving plant control by counteracting temperature disturbances*, 30th European Symposium on Computer-Aided Process Engineering (ESCAPE 30), Milan (Italy), 24-27 May 2020