

# Mauro Moro

## Senior Software Engineer

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### PROFESSIONAL SUMMARY

Senior Software Engineer with 25+ years of experience in full software lifecycle management, automation, and system integration across highly regulated industries. Expert in designing, developing, and deploying automated solutions from design through validation (FAT/SAT) complying with industrial standards (IEC 61131-3, ISA 95, GAMP 5, GMP). DevOps & Software Engineering Expertise: Extensive experience implementing CI/CD-like workflows for automated deployment pipelines, version control systems, and database management. Strong background in developing containerized industrial applications, custom .NET Core microservices, ASP.NET web interfaces, and automated testing frameworks. Proven track record managing complex distributed systems, ensuring security compliance, and integrating IT/OT infrastructure in mission-critical environments. Global Experience: Delivered projects across pharmaceutical, automotive, oil & gas, power generation, and manufacturing sectors in South Africa, Congo, Angola, USA, Canada, China, Iraq, Turkey, Russia, and throughout Europe.

### CORE SKILLS

Software Development & DevOps: C#, .NET Core, Python, JavaScript, ASP.NET, ASP.NET Core APIs, REST APIs, Microsoft SQL Server (design, optimization, stored procedures), VersionDog, Git, PowerShell automation, OPC communication, middleware development, automated testing frameworks (IQ/OQ/PQ), virtual commissioning. Industrial Automation & Control Systems: PLC programming (Siemens, Rockwell, Omron, Schneider Electric, Codesys), HMI/SCADA development (WinCC, FactoryTalk, Wonderware InTouch), DCS (Emerson DeltaV, Siemens PCS7), MES integration (EMERSON Syncade, SIMATIC IT eBR, MODA-ES), Industrial protocols (Profibus, Ethernet/IP, OPC UA/DA, Modbus), Motion Control (Kinetix 5500, servo systems), Computer Vision (Cognex, OpenCV with Python), Industrial Robotics (COMAU, KUKA, ABB, FANUC, STAUBLI, Mitsubishi). Simulation & Virtual Commissioning: Technimatix Robcad, Delmia Igrip, ABB RobotStudio5, RSEmulate5000, offline programming, digital twin concepts, process simulation.

Expert in industrial simulation and offline programming tools: Technimatix Robcad for robot simulation and offline programming, Delmia Igrip for digital manufacturing simulation, ABB RobotStudio5 for ABB robot simulation, RSEmulate5000 for Rockwell PLC simulation. Used extensively for layout validation, offline programming, virtual commissioning, and process optimization across automotive and manufacturing projects.

### WORK EXPERIENCE

#### Senior MES Engineer

SKAN AG | Basel, Switzerland

SKAN AG - Senior MES Engineer (March 2024 – Present) - Basel, Switzerland. Part of the AMS project team as IT/OT specialist focusing on MES system development and integration. Daily duties include developing automated MES processes and implementing secure system integrations with QMS, EMS, DH, and SCADA systems. Building data pipelines for real-time information exchange between manufacturing systems. Managing configuration and deployment workflows in GMP-validated environments. Implementing automated monitoring and audit trail systems for compliance. Ensuring secure communication protocols between IT/OT infrastructure. Technologies: MES systems, SQL Server, system integration APIs, SCADA interfaces, document management systems.

#### Senior CSV & MES Engineer

LONZA | Basel, Switzerland

LONZA - Senior CSV & MES Engineer (September 2022 – February 2024) - Basel, Switzerland. Led Global Traceability Platform (GTP) implementations across multiple international sites including Geelen Netherlands, Houston USA, and Stein Switzerland. Designed and implemented validation automation workflows for global deployment consistency. Developed validation documentation including URS, FS, RA, IQ, OQ, PQ according to GAMP5 standards. Managed system configurations in document management systems QMS ensuring version control and traceability. Implemented secure data integration between MODA-ES MES and enterprise systems. Created automated testing procedures using KNEAT CSV validation platform. Coordinated cross-site deployments with standardized deployment procedures. Technologies: MODA-ES MES, KNEAT CSV, QMS Document Management, SQL Server, validation frameworks, automated testing, global deployment.

## **Senior Automation Software Engineer**

*BIOGEN | Luterbach SO, Switzerland*

BIOGEN - Senior Automation Software Engineer (November 2021 – June 2022) - Luterbach SO, Switzerland. Automation team member involved in Control System Maintenance & Validation. Managed version control and deployment of control systems using VersionDog. Implemented audit trail systems including PM-Analyze and SIMATIC Logon for manufacturing/process servers. Executed validation procedures from Engineering phase FAT/SAT to Validation phase IQ/OQ/PQ. Maintained distributed control systems including EMERSON DeltaV DCS and EMERSON Syncade MES. Managed SIEMENS TIA Portal controllers with CPU-1500 series for auxiliary systems including BMS and CU. Ensured secure system integration and GMP compliance. Technologies: EMERSON DeltaV, EMERSON Syncade, SIEMENS TIA Portal, VersionDog, PM-Analyze, SIMATIC Logon, version control, audit trail, distributed systems. Manager: Thomas Balanant at Thomas.balanant@biogen.com.

## **Senior Automation Software Engineer CSV**

*CSL Behring | Lengnau BE, Switzerland*

CSL Behring now ThermoFisher Scientific - Senior Automation Software Engineer CSV (February 2021 – October 2021) - Lengnau BE, Switzerland. Part of PCS/MES team executing Control System Validation procedures. Developed automated validation workflows from FAT to SAT through IQ/OQ/PQ stages. Implemented secure integrations between SIMATIC PCS 7 PCS and SIMATIC IT eBR MES. Created testing automation procedures for validation efficiency. Managed configuration changes in version-controlled environment. Ensured compliance with CSV and GAMP5 requirements. Technologies: SIMATIC PCS 7, SIMATIC IT eBR, CSV frameworks, validation automation tools, version control. Manager: Patrick Krumm at Patrick.krumm@thermofisher.com.

## **Senior Automation Software Engineer**

*Johnson & Johnson | Limerick, Ireland*

Johnson & Johnson - Senior Automation Software Engineer (November 2020 – February 2021) - Limerick, Ireland. Obsolescence resolution project for GMP-validated lens fabrication line. Created Change Request documentation according to GAMP5 standards for validated systems. Developed and executed automated Test Plans for system upgrade validation. Managed integration of multiple controllers including SIEMENS PLCs, ROCKWELL PLCs, MITSUBISHI and OMRON Robots. Implemented barcode reader upgrade with minimal production disruption. Integrated Cognex vision systems with existing automation infrastructure. Technologies: SIEMENS PLCs, Rockwell PLCs, Cognex Vision Systems, GAMP5 validation framework, automated testing, system integration.

## **Senior Automation Software Engineer**

*Eli Lilly | Cork, Ireland*

Eli Lilly - Senior Automation Software Engineer (April – November 2020) - Cork, Ireland. IE43 T2 Project for new filling machine automation system. Implemented distributed control system with multiple Rockwell CompactLogix PLCs. Developed FactoryTalk SE plus ME SCADA system with SQL Server backend for production data. Executed Source Code Reviews SCR according to Lilly Quality Standards. Integrated Staubli Robot Arm and Cognex vision system into production line. Managed CSV process from FAT through SAT stages. Built automated data collection and reporting workflows. Technologies: Rockwell CompactLogix, FactoryTalk SE/ME, SQL Server, Staubli Robotics, Cognex Vision, CSV procedures, source code review, automated data collection.

## **Senior Automation Software Engineer Vision R&D;**

*Crest Solutions | Cork, Ireland*

Crest Solutions Abbott S57 Project - Senior Automation Software Engineer Vision R&D; (September – December 2019) - Cork, Ireland. R&D; Vision Department automation development. Designed and developed automation software from scratch following structured development lifecycle. Implemented Rockwell Automation Studio5000 plus FactoryTalk SCADA system. Integrated Cognex Insight 5000/7000 camera systems with PLC controllers. Developed RFID tracking system integration. Created comprehensive technical documentation from Functional Description through FAT commissioning. Technologies: Rockwell Studio5000, FactoryTalk, Cognex Insight cameras, RFID systems, SQL Server, R&D;, vision systems.

## Senior Automation Control System Engineer

*Müller UK & Ireland | Market Drayton, United Kingdom*

Müller UK & Ireland - Senior Automation Control System Engineer (December 2017 – August 2019) - Market Drayton, United Kingdom. Led modernization project upgrading obsolete Siemens S5 systems to TIA Portal. Performed reverse engineering and system migration for legacy industrial systems. Developed custom .NET Core microservices for MES database integration. Built ASP.NET web interfaces for real-time production monitoring and recipe management. Implemented Wonderware InTouch SCADA on ArcestrA platform. Created automated data collection workflows using Wonderware System Platform and SQL Server. Designed SQL Server database schemas for manufacturing data analysis and recipe management. Developed Python scripts for data transformation and system health monitoring. Managed deployment pipelines from development through production validation. Technologies: Siemens TIA Portal, Wonderware InTouch, ArcestrA, .NET Core, ASP.NET, MS-SQL Server, Python, System Platform, reverse engineering, data analysis, microservices, web development.

## Software Control System Engineer

*TeamTechnik GmbH | Stuttgart, Germany*

TeamTechnik GmbH TESLA Project - Software Control System Engineer (January – July 2017) - Stuttgart, Germany. Commissioning and deployment of 11 identical automated machines for TESLA motor. Implemented standardized deployment procedures across multiple machines using CI/CD-like approach. Commissioned and tuned Rockwell ControlLogix PLCs with Kinetix 5500 motion controllers. Performed servo axis commissioning and optimization for 33 total servo axes. Developed custom communication AOI using .NET Core for PLC-MES data exchange. Implemented OPC communication protocols for real-time production data collection. Created automated testing procedures for motion control validation. Technologies: TESLA, Kinetix 5500, Rockwell, ControlLogix, RSLogix5000, motion control, servo, AOI, MES, .NET Core, OPC, automated testing, standardized deployment.

## Software Control System Engineer

*Medtronic | Galway, Ireland*

Medtronic - Software Control System Engineer (September 2016 – December 2017) - Galway, Ireland. R&D; Equipment Software Standardization Team member. Developed standardized software architecture following ISA88-TR88.00.02 PackML guidelines. Implemented reusable software modules for equipment automation using modular design principles. Created C# .NET Core automation tools for software development workflow automation. Built Python-based computer vision inspection applications using OpenCV. Integrated vision systems with .NET Core services for equipment validation and quality control. Developed automated testing frameworks for software validation procedures. Managed version control and deployment processes for standardized equipment software. Technologies: Rockwell, RSLogix5000, FactoryTalk, ISA88, PackML, C#, Python, OpenCV, R&D;, .NET Core, automated testing, version control, modular design.

## Control System + Robot & Vision Project Manager

*Woelco GmbH | Stuttgart, Germany*

Woelco GmbH - Control System + Robot & Vision Project Manager (January – August 2016) - Stuttgart, Germany. Full project lifecycle management from design through commissioning. Designed complete automation solution architecture from scratch. Developed Functional Description documentation for system requirements. Programmed and integrated Staubli SCARA robot with Bosch PLC. Calibrated and integrated Cognex vision system with three InSight 5000 cameras and two barcode readers. Implemented robot-vision coordinate system calibration for precision pick-and-place. Developed palletizer/de-palletizer application with quality inspection workflow. Technologies: Staubli, Bosch, Cognex, vision system, palletizer, pick and place, quality inspection, project management.

## ICSS Engineer

*Alstom Power GmbH | Mannheim, Germany*

Alstom Power GmbH - Instrument & Control Safety System ICSS Engineer (January – December 2015) - Mannheim, Germany. Gas Turbine control system software design and development. Designed and developed control software from Functional Description through commissioning. Implemented GE Mark V I-Dos & HMI systems and GE Mark VI controllers. Developed SIEMENS PCS7 control systems for power plant auxiliary systems. Commissioned Purge Credit and WLNOx systems at CSEPEL Power Plant in Budapest. Implemented LC III conversion and IBH system in Abu Dhabi power plant. Managed deployment procedures for mission-critical power generation systems. Technologies: GE Mark V, GE Mark VI, SIEMENS PCS7, gas turbine, power plant, Budapest, Abu Dhabi, SCADA, mission-critical systems.

## **ICSS Commissioning Engineer**

*Sase Group S.r.l. | Russia*

Sase Group S.r.l. - Instrument & Control Safety System ICSS Commissioning Engineer (September – December 2014) - Russia. Control system commissioning and validation in Russian power facilities. GAZ-PROM Vultylskaya: Modified Siemens PCS7 Gas Turbine controller software for three units managed by Ethos Energy. SULZER Dzerzhinsk: Executed scheduled outage maintenance on Siemens Teleperm controller for Sulzer Russia. Performed system validation, redundancy checks, and network diagnostics. Conducted servo valve calibration and LVDT validation procedures. Technologies: Siemens PCS7, Siemens Teleperm, SGT-600, gas turbine, Russia, GAZ-PROM, SULZER, distributed control systems.

## **Automation Project Engineer**

*RioTinto | Zurich, Switzerland*

RioTinto - Automation Project Engineer Software (December 2012 – August 2014) - Zurich, Switzerland. Software design and deployment for aluminum manufacturing facilities. Project 1 Dunkerque France: Designed safety PLC software from scratch following IEC 61131-3 standards. Developed Siemens S7-400 Safety CPU application for gas supply control system. Created HMI application with Simatic Manager and WinCC Flexible. Executed on-site deployment and commissioning at RioTinto Dunkerque facility. Project 2 Canada: Developed Functional Description for carbon coke handling system. Programmed Allen-Bradley ControlLogix PLC using RSLogix5000. Developed FactoryTalk SE SCADA interface. Implemented virtual commissioning environment using RSEmulate5000 for pre-deployment testing. Created simulation PLC to emulate site conditions before physical deployment. Managed remote deployment procedures from Switzerland to Canadian facility. Technologies: Siemens S7-400 safety, Allen-Bradley, RSLogix5000, FactoryTalk, RSEmulate5000, simulation, aluminum, mining, Dunkerque, Canada, virtual commissioning.

## **Maintenance Lead Engineer**

*Ambrosetti Ruote SA | Lugano, Switzerland*

Ambrosetti Ruote SA - Maintenance Lead Engineer Automation (March – November 2012) - Lugano, Switzerland. Modernization project leader for manufacturing automation. Evaluated existing automation systems and identified optimization opportunities. Led maintenance team implementing continuous improvement initiatives. Upgraded and enhanced PLC and Robot controllers including Siemens S7, Mitsubishi, Beckhoff, and ABB IRC5. Implemented performance monitoring and system optimization. Improved production line efficiency through automation enhancements. Technologies: Siemens S7, Mitsubishi, Beckhoff, ABB IRC5, maintenance, modernization, continuous improvement.

## **Gas Turbine Control System Engineer**

*Sase Group | Budapest, Hungary*

Sase Group - Gas Turbine Control System Engineer (January - February 2012) - Budapest, Hungary. Control system inspection and validation at APLIQ CSEPEL II Power Station. Short project during Gas Turbine scheduled outage. Executed system inspection and validation procedures for GE Speedtronic Mark V I-Dos. Performed network diagnostics ArcNet LAN, redundancy validation, power supply checks. Validated servo valves and LVDT sensors for critical control systems. Provided technical support for spare I-Dos PC installation in MS-DOS environment. Technologies: GE Mark V, Speedtronic, I-Dos, gas turbine, Budapest, ArcNet, LVDT, redundant control systems, industrial networks.

## **Automation Control System Project Manager**

*New Energy S.r.l. | Torino, Italy*

New Energy S.r.l. - Automation Control System Project Manager (January 2010 – December 2011) - Torino, Italy. Project management and technical leadership for diverse automation projects. Automated assembly machine Settimo Italy: Designed and commissioned pen manufacturing automation using Schneider Electric M340 PLC with UnityPro IDE. Pilkington Glass Robotics Settimo Italy: Commissioned ABB IRC5 robot serving Engel extrusion press, utilizing ABB RobotStudio5 for offline programming and simulation. Al Rasheed Power Plant Baghdad Iraq: Commissioned Siemens SGT-800 Gas Turbine with PCS7 DCS and auxiliary systems including Omron CJ1 PLC for fuel oil supply, SYMAP controller PMS for Black Start diesel generator. COBO Oil-Rig Angola offshore: Served as ICSS engineer on Petromar platform with Siemens S5 PLCs, Siemens Teleperm M DCS, Triconex ESD controller, and Bently Nevada 3500 vibration monitoring system for Mark V LM2500 GT generator. Technologies: project manager, Schneider Electric, ABB IRC5, RobotStudio, Siemens PCS7, SGT-800, Omron, Iraq, Angola, offshore, Triconex, Bently Nevada, oil & gas.

## **ICSS Project Manager**

*GS Automation S.p.A | Congo, Africa*

GS Automation S.p.A - Instrument Control Safety System ICSS Project Manager (January – December 2009) - Congo, Africa. Project management for Oil & Gas platforms and power generation systems in Africa. ENI Congo Kitina Oil-Rig: Modified GE-Fanuc 90-70 PLC logic for gas appoint and booster compressor, interfaced with ABB Infi90 DCS using Harmony IDE. ENI Congo Awa-Paloukou Platform: Developed Emerson DeltaV DCS software implementing daily gas counter system. SAIPEM Awa-Paloukou Maintenance: Performed instrument calibration for temperature, flow, pressure, level transmitters, validated DCS logic vs P&IDs, validated ICSS vs C&E; matrix, managed Emerson DeltaV with SIL 2 modules for ESD and F&G; systems. Unit 420 Commissioning: Commissioned heating gas system for Solar gas turbine power generator, worked on electrical schematics and Emerson DeltaV DCS logic. Unit 520 Commissioning: Commissioned sea water treatment system with hypochlorite system governed by Siemens PLC. Kitina Platform Survey: Validated ICSS system vs Cause & Effect Matrix, validated ESD and F&G; systems for ICS-Triplex controller and GeneralMonitors systems. Technologies: ENI, Congo, offshore, GE-Fanuc, ABB Infi90, Emerson DeltaV, SAIPEM, SIL 2, ESD, F&G, ICS-Triplex, oil & gas, instrumentation.

## **Control System & Robot Engineer**

*Gaiotto Automation S.p.A. | Modena, Italy*

Gaiotto Automation S.p.A. - Control System & Robot Engineer (January 2007 – August 2008) - Modena, Italy. Software development and commissioning for ceramic manufacturing. Designed and developed software for Siemens S7-300 PLCs and WinCC Flexible HMI. Programmed KUKA KRC2 robot controllers. Commissioned robotized material handling islands at Hatria ceramic factory in Teramo Italy. Integrated robot systems with PLC controllers for automated ceramic product handling. Technologies: Siemens S7-300, WinCC Flexible, KUKA KRC2, robotics, ceramic, material handling.

## **Sales & Customer Care Manager**

*Visual Components Italia | Turin, Italy*

Visual Components Italia - Sales & Customer Care Manager (January 2005 – December 2006) - Turin, Italy. Sales and technical consultancy for simulation software. Conducted customer training on industrial simulation tools. Provided technical consultancy and solution architecture for automation projects. Performed backend development and customization for simulation applications. Led marketing activities and customer engagement initiatives. Technologies: Industrial simulation software, technical pre-sales, training, consultancy, marketing.

## **Key Account Manager Automotive Automation**

*Akka Technologies SA | Turin, Italy*

Akka Technologies SA - Key Account Manager Automotive Automation (January 1999 – August 2004) - Turin, Italy. Technical lead managing 35+ engineers across multiple automotive automation projects for COMAU client. Major Projects: ABB Beauchamps Paris France for Mercedes W251 and Ford Amazon as Robcad designer/developer for B&W; layout validation. Volvo P13 Gent Belgium as software designer for ABB Sat Line PLC at Steelweld Breda Netherlands. Opel Epsilon J3200 Project as PM managing 15 people across 3 sites Comau Borgaretto Italy, Opel Russelsheim Germany, Vauxhall Ellesmere Port UK, provided Delmia Igrip layout simulation, offline programming for 200+ Fanuc robots, on-site commissioning. Goodyear Danville Virginia USA NG99: Software development and commissioning for 11 Comau C3G+ robots with TI505 PLCs, developed communication protocols with master line

PLC, also deployed to Izmit Turkey, Sava Slovenia, Luxembourg. Pico Detroit USA: Team leader for Fanuc RJ2 robot programming on GM project. Renault Sandouville France R84: Commissioning of robotic islands with ABB S4 robots for Body & White. Volkswagen Bruxelles Belgium S5 Golf: Commissioning of B&W; robotic islands with KUKA VKRC1 robots. Technologies: COMAU, automotive, project manager, Robcad, Delmia, Igrip, simulation, FANUC RJ2, ABB S4, KUKA VKRC1, TI505, Goodyear, Renault, Volkswagen, Opel, Mercedes, Ford, Volvo, offline programming.

## **PLC Programmer**

*Auconel S.r.l. | Turin, Italy*

Auconel S.r.l. - PLC Programmer (January – December 1998) - Turin, Italy. Control system development for Pirelli Tire manufacturing. Pirelli Settimo Torinese Italy: Commissioned Siemens S7-300 PLC and OP17 HMI with Protool, programmed FM354 Ax control card for Rubber Laminate Extrusion Line and Rubber Circles Line. Turk Pirelli Izmit Turkey: Commissioned Siemens S7-400 with Profibus fieldbus and OP35 HMI for Rubber Laminate Extrusion Line. Technologies: Pirelli, tire industry, Siemens S7, Profibus, Protool, rubber, extrusion, Turkey.

## EDUCATION & TRAINING

Italian Air Force Academy - Electromechanical Aviator (September 1982 – June 1983) - Caserta, Italy. Military technical training in electromechanical systems for aviation.

Italian Air Force English School - Military English School (January 1984 – December 1984) - Rome, Italy. Specialized English language training for military aviation context.

Italian Air Force Operation Base - Aermacchi MB326 Crew Chief (June 1985 – September 1985) - Galatina, Italy. Technical training and certification as crew chief for Aermacchi MB326 aircraft maintenance and operations.

Italian Air Force Operation Base - Liquid Oxygen Specialist (June 1986 – August 1986) - Porto S. Stefano, Italy. Specialized training in liquid oxygen systems for aircraft support and safety.

N.A.T.O. E3-A AWACS Main Operating Base - Boeing 707 E3-A/AWACS ECS Environmental Control System (October 1989 – December 1990) - Gailenkirchen, Germany. Advanced NATO training on Boeing 707 E3-A AWACS Environmental Control System, international military cooperation and complex aircraft systems maintenance.

## REGULATIONS & STANDARDS

Expert knowledge in industrial regulations and standards: Quality Standards including GAMP5 Good Automated Manufacturing Practice, GxP regulations, GMP Good Manufacturing Practice. Industrial Standards including IEC 61131-3 for PLC programming, ISA-95 Enterprise-Control System Integration, ISA88-TR88.00.02 PackML Packaging Machine Language. Validation Protocols including CSV Computer System Validation, FAT/SAT procedures, IQ/OQ/PQ documentation and execution.

## INDUSTRIES & GLOBAL EXPERIENCE

Extensive experience across multiple industries worldwide: Pharmaceutical & Medical Devices including Lonza, Biogen, CSL Behring/ThermoFisher, Medtronic, Johnson & Johnson, Eli Lilly, Abbott, SKAN with expertise in GMP, GAMP5, CSV validation. Automotive including COMAU, Mercedes, Ford, Opel/Vauxhall, Volkswagen, Renault, TESLA, Volvo with robotics and assembly line automation. Rubber & Tire manufacturing including Pirelli and Goodyear. Food & Dairy processing at Müller. Oil & Gas platforms including ENI Congo offshore platforms, Angola SAIPEM with safety systems and ICSS. Power Generation including Alstom Gas Turbines GE Mark V/VI, Siemens SGT series, Power Plants in Budapest, Iraq, Abu Dhabi. Mining & Aluminium at RioTinto Dunkerque and Canada. Glass industry at Pilkington. Ceramic industry at Hatria. Global project experience across South Africa, Congo, Angola, USA including Virginia Detroit Houston, Canada, China, Iraq Baghdad, Turkey Izmit, Russia GAZ-PROM SULZER, Hungary Budapest, Abu Dhabi, and throughout Europe including Germany Switzerland Italy Ireland UK France Belgium Netherlands Slovenia Luxembourg.