

ELECTRICAL DESIGN SERVICES

Manufacturing-ready EPLAN documentation for machine builders

delivered remotely from European Union to global clients

Antonín Musil

Electrical Engineer | EPLAN Specialist Over 20 Years Experience in Industrial Control Systems

Complete Electrical Project Design

From concept to manufacturing-ready documentation in **EPLAN Electric P8** and **Pro Panel**. I deliver complete design packages including schematics, panel layouts, cable schedules, and bill of materials - ready for panel builders and installation teams.

PLC Integration: Siemens S7 and TIA Portal, Allen-Bradley ControlLogix and CompactLogix, B&R X20

VFDs Integration: Siemens Sinamics, Allen-Bradley Kinetix and Powerflex, B&R Acopos and ACOPOSmulti, SEW Movidrive

Peripherals Integration: IO-Link, digital, analog, networks

Smart Peripherals Integration: Industrial robots, cameras, readers, welders, detectors, analyzers, printers, etc.

Safety Integration: Using safety modules or safety PLCs

Communications: External peripherals, remote monitoring and diagnostics, HMIs

Integration with Other Disciplines: Pneumatic, hydraulic, fluid, power, custom electronics, etc.

Multi-Standard Compliance: Projects designed to meet UL 508, NFPA, CSA, IEC, EN, CE standards depending on target market.

Assignment for Production: Labels, 2D documents for preparing parts, component lists, finding replacements in case of component unavailability

TYPICAL PROJECT TIMELINE

WEEK 1: Discovery & Planning

- Review specifications, mechanical drawings, timeline schedule
- Define I/O requirements, PLC, VFDs, HMIs, peripherals, safety components
- Clarify standards and certification requirements
- Agree on deliverables

WEEKS 2-8: Design & Development

- Priority ordering of key components with long delivery times if implementation date could be at risk
- Create schematics
- Create panel layouts
- Weekly progress calls
- Iterative refinement

WEEKS 9-12: Delivery & Support

- Complete documentation package
- BOM for procurement
- Panel build support

ONGOING: Post-Delivery

- Updates as needed
- Installation support
- Troubleshooting help

FREQUENTLY ASKED QUESTIONS

Q: What industries do you specialize in?

A: Food Processing (sanitary design, washdown requirements), Chemical Industry (including components for explosive areas), Wood Processing (dust environments, safety systems), and Plastics Manufacturing (process control, temperature management).

Q: What does a complete documentation package include?

A: Schematics with clear device labeling (IEC standard, metric units), 3D or 2D panel layouts optimized for assembly, complete cable schedules and routing plans (mm² cross-sections with AWG equivalents for US compatibility), bill of materials, assembly instructions for panel builders, and commissioning guidelines — all documented entirely in English to maintain clean version control and eliminate translation errors.

Q: Why work with a remote EU-based designer instead of a local firm?

A: Four practical reasons: (1) *Flexible capacity* — scale engineering resources up or down with your project pipeline, no fixed overhead; (2) *EPLAN expertise* — not every firm has in-house EPLAN capability, yet many clients request it;

Q: What are your certifications and qualifications?

A: Licensed Electrical Engineer (per Czech regulations), High Voltage Certification (equipment design above 1kV), and ATEX certification knowledge (explosive atmosphere equipment design) — backed by over 20 years of hands-on experience in design, programming, commissioning, and troubleshooting, including proven remote delivery since 2016 with occasional on-site visits when commissioning support is needed.

Q: What if we need changes during production?

A: Documentation updates are included. I provide support throughout panel build and commissioning.

Q: Can you help with PLC programming?

A: Yes, I have over 15 years PLC programming experience (Siemens, Allen-Bradley, B&R) and can provide integrated electrical + controls packages.

Q: How different are American and European projects, really?

A: Less than most people expect. Voltage/frequency (480V/60Hz vs. 400V/50Hz) and standards (UL vs. IEC) are straightforward — mainly a matter of component selection and documentation format. The real complexity comes from industry type (food vs. chemical vs. automotive vs. woodworking), technology level (relay logic vs. modern PLCs vs. robotics), system complexity (standalone machine vs. integrated line), and environment (standard vs. explosive atmosphere vs. washdown) — not from which side of the Atlantic the order comes from.

READY TO START YOUR PROJECT?

Contact Information

Email: antonin.musil@system77.com

Phone: +420 727 935 589

Phone: +1 945 229 0363 – available on request

LinkedIn: linkedin.com/in/antonin-musil-9777321b6

Website: www.system77.com

Location: Czech Republic (Central European Time zone)

Convenient time for calling: 7:00 UTC to 21:00 UTC

Business Registration

Licensed Sole Proprietor (Czech Republic, European Union)

Business ID (IČO): 02487861

Tax ID (DIČ): CZ7712064789

Verify credentials: <https://rzp.gov.cz/verejne-udaje/en/udaje/vyber-subjektu;ico=02487861>

Authorized for electrical engineering design, industrial automation, and technical consulting services.

Next Steps

1. **Schedule a consultation call** - 30 minutes to discuss your project
2. **Review project requirements** - Share specifications and drawings
3. **Receive proposal** - Detailed scope, timeline, and pricing
4. **Start with pilot project** - Prove value before committing to full project

No upfront payment required for initial consultation.

MORE DETAILED QUESTIONS DURING CALL

What PLC system do you use (A-B, Siemens, Mitsubishi)?

What VFDs do you use (only for asynchronous motors or also servos and other specialties), manufacturer (A-B, Siemens, Mitsubishi, etc.)?

Do you also use other smart peripherals (industrial robots, cameras, security elements, etc.)?

Do you use IO-Link communication for peripherals, or only 4-20mA?

What will the list of mechanical components look like, who will create it?

What will the machine specifications look like, who will create them?

How do you address machine safety (safety PLC or safety module)?

Is there a default standard, a default CAD project? Will this be followed completely, or will we use our own practices?

What standards should the project include, what will be the geographical location of the machines (UL for USA, CE for EU, IEC and others for elsewhere)?

Who will determine the manufacturer of the switchboards, elements inside and elements outside these switchboards?

Who will assemble the equipment of these switchboards, do you have someone of your own?

Who will assemble the electrical equipment on the machine outside the switchboards, do you have someone of your own?

Who will make the program for the PLC? Do you have someone of your own?

Who will be responsible for the safety of the machines? The manufacturer of the machinery, or someone else?

Can your equipment be used in explosive zones? (explosive dusts, gases, or liquids)?

What will the project contain - only electrical diagrams and layout of elements in the switchboard? Or also 3D drawings, pneumatic, hydraulic, fluid, mechanical, or other diagrams?
Will the bill of materials be integrated into the project, or will it be a table in Excel, or in any database?
Who will make the component labels and tags? Will they need to be plain or durable?
Will the machine operator be completely unskilled as always, or at least partially intelligent?
Will the maintenance and repairs of the machine be provided by the customer, their current collaborator, or the machine manufacturer?

ABOUT ME

Born 1977

1992-1996 - Secondary Technical School: Mechanical Engineering

1996-2001 - Technical University of Brno, Faculty of Electrical Engineering and Computer Science

Specialization: Cybernetics, Automation and Measurement

Diploma thesis: Sampling and memory unit of digital oscilloscope

Highest level: "Inženýr" (equals Master's degree in the USA)

2001-2016 - PLC Programmer (Siemens S7), Industrial Robot Programmer (ABB, KUKA), VFDs Programmer (SEW, Siemens), Automation Technology Maintenance (wood processing industry), System Integrator

Long-term business trips: Germany, China, Russia, Switzerland, India

2016-now - Electrical Design Engineer | EPLAN Specialist | Industrial Automation & Control Systems | Remote Project Support

COMMUNICATION PHILOSOPHY: "WHAT IS WRITTEN IS GIVEN"

- **English** - professional written and spoken technical language

- **Czech** – native language

RECENT PROJECTS

2016 - Ski production line, B&R safety PLC and servo drives, Czech Republic, European Union

2016 - Foil ejector for plastic industry, Interroll drives, Czech Republic

2017 - Hydraulic press upgrade, wood processing industry, Czech Republic

2017 - Paper ejector for wood processing industry, Siemens safety PLC and drives, Slovakia, EU

2017 - Documentation of cutting machine, wood processing industry, Czech Republic

2017 - Wastewater treatment plant, participation on large project, Siemens peripherals, Czech Republic

2017 - Scattered wood material distribution, replacement from Siemens S5 to S7, Czech Republic

2018 - Flux application, ABB robot, A-B 1734, 1732 safety system, servos, automotive, Czech Republic

2019 - Cosmetics production, A-B 1794 and drives, safety modules, Japan

2019 - 53 machines in production line for cosmetics, A-B 1794 and drives, safety modules, Romania, EU

2019 - Conveyors in plastic industry, Siemens S7 safety system, SEW drives, Czech Republic

2021 - Cosmetics production, A-B 1794 and drives, safety modules, Mexico

2022 - Conveyors in textile industry, Siemens S7 and Lenze drives, Czech Republic

2022 - Signal acquisition from data center, special PLCs and Weidmüller peripherals, Czech Republic

2022 - Vegetable processing, A-B 1794 and drives, A-B safety PLC, Spain, EU

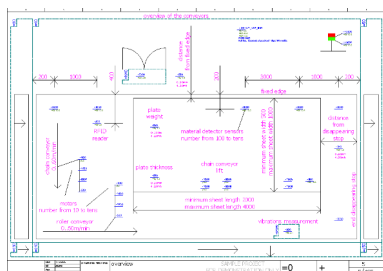
2023 - Laser marking machine, modification, Czech Republic

2023 - Inkjet marking machine, Siemens LOGO, Czech Republic

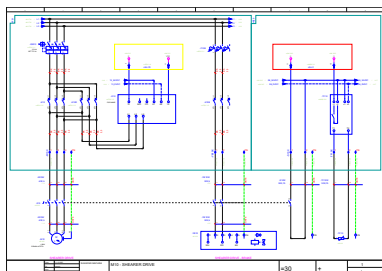
2024 - Camera system in brewery, Keyence cameras and sensors, Czech Republic
 2024 - Packaging machine in cosmetics industry, Siemens safety PLC and drives, Czech Republic
 2024 - Multi-purpose marking machine, Siemens S7-200, INVT drives, Czech Republic
 2024 - Participation on production line for cosmetics, A-B 1794 and drives, safety modules, Romania, EU
 2025 - Conveyors in plastics industry, Turck peripherals, Interroll drives, Czech Republic
 2025 - Plastic belt processing, INVT PLC and servo drives, Banner safety PLC, USA
 2026 – Plastic fabric processing, Siemens PLC and drives, Banner safety, Switzerland

SIMPLIFIED PROJECT CASE STUDY

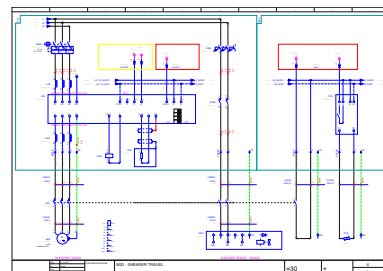
Please do not try to explore the following simplified examples, I will be happy to provide complete documentation - 106 pages in PDF, 8MB file size.



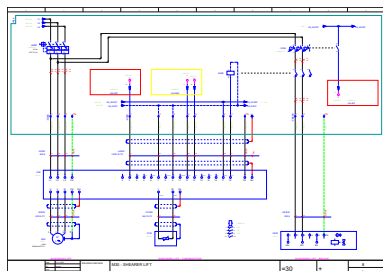
Mechanic and functional overview



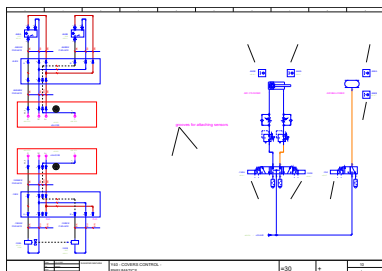
Motor powered by pair of contactors



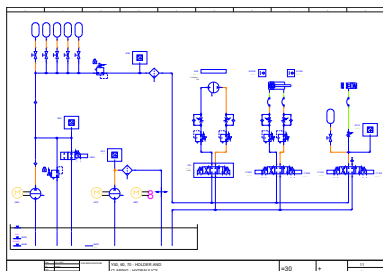
Motor powered by an IP20 VFD



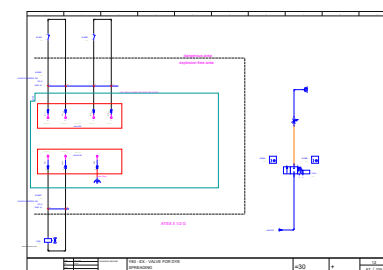
Motor powered by an IP68 VFD



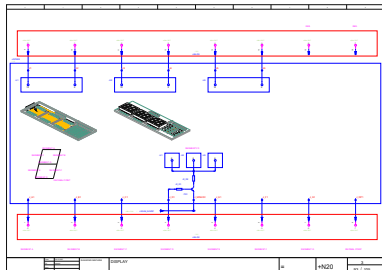
Simplified pneumatic diagram



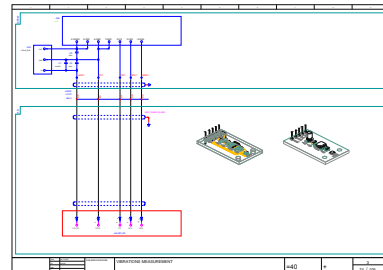
Simplified hydraulic diagram



Simplified fluid diagram in EX zone



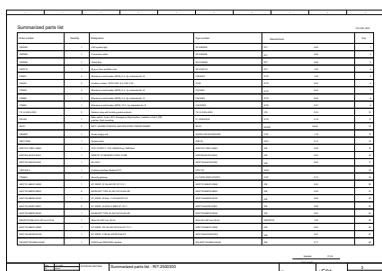
Imported 3D PCB model, created by KiCad



Imported 3D PCB model, created by KiCad



2D layout of mounting plate



Summarized part list