

## Enso d.o.o.

Automation, Controlling and supervision systems  
Industrial automation and Custom made machines



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### Activities of company ENSO :

- Design, programming, testing and commissioning of automated production lines.
- Visualization and supervision of production processes, creating reports based on collected data.
- Central monitoring systems for production and infrastructure ( temperature, humidity, pressure, level, weight, flow etc. )
- PLCs ( Programmable Logical Controller ) control systems and solutions for production and process automation.
- Upgrade of machines with new functions, possible increase of production capacities etc.
- Design and technical documentation for automated systems - control and regulation.

### Projects and references:

- Automation and control line for plastics injection and processing of auto door interior (EKB Braunau)
- Upgrade of PLC automated machines (SELK Kutina)
  
- Upgrade of PLC automated machines (ALMOS Kutina)
- Monitoring of boiler room (DARUVARSKA PIVOVARA, Daruvar)
- System for weight measurement of ultrasound washing tubs, data processing and Visualization (SELK, Kutina)
- Automation and visualization of sorting and redistribution of Body shells (AUDI, Neckarsulm)
- Automation and integration of production Body shells "Mini" in line for production of "BMW X3" (MAGNA, Graz)
- Automation and integration of production line for production of body shells "PEUGEOT" (MAGNA, Graz)
  
- Supervision and visualization of infrastructure plants, data analysis, messages and alarms (SELK, Kutina)
- Programmierung und Inbetriebnahme der Karosserierückwandstation "MINI" (MAGNA, Graz)
- PLC programming, design and production release of a assembling machine for supporting the Temperature regulation device (Elektro kontakt, Zagreb)
- Programming and commissioning of the "MINI" body rear cover station (MAGNA, Graz)
- Integration of welding station and optical contact parallel checking stations (Elektro kontakt, Zagreb)
  
- Automation and supervision of time intervals of the drying and cooling process (SELK, Kutina)
- Visualization, data acquisition and processing of the line for "Energy regulation switch" (Elektro kontakt, Zagreb)
- Connecting soldering machines with automating belts for transport of incoming material (SELK, Kutina)
- Programming and production release of a windshield reinforcement unit of a body shell "MINI" (MAGNA, Graz)
- Automation, visualization and control of the washing process in acetone (SELK, Kutina)
- Programming and production release of the unit for preparing and assembling car body roof "MINI" (MAGNA, Graz)
- Oil and water adding regulation for centrifuges on grinding (SELK, Kutina)
- Measurement function upgrade on the line for "Energy regulation switch" (Elektro kontakt, Zagreb)

- Design and construction of a machine for blow-off, drying and cooling – blower and tunnel oven (SELK, Kutina)
- Controlling temperature for "LONG"(SELK, Kutina)
- Visualization, data acquisition and processing of the line 8 for "Energy regulation switch" (Elektro kontakt, Zagreb)
- Design and construction of a machine for electric component pasivation - automated machine (SELK, Kutina)
- Data acquisition and processing and visualization of soldering machines (SELK, Kutina)
- Visualization, data acquisition and processing of the line 4 for "Energy regulation switch" (Elektro kontakt, Zagreb)
- Design and construction of a machine for disposition, drying and cooling – tunnel oven (SELK, Kutina)
- Design and construction of a special board with electrical units for measuring devices (SELK, Kutina)
- Design production release for the "Shaft carrier production line" (BMW, Dingolfing)
- Design and construction of regulated drying system of metallization on electronic components (SELK, Kutina)
- Design production release for the "Shaft carrier production line" (BMW, Dingolfing)
- Automation and visualization of 6 machines for rounding electronic components (SELK, Kutina)
- Programming and production release of oven for annealing steel turbine motor parts (General Electric, Mađarska)
- Programming and commissioning of temperature control in the mushroom chamber (Gljivara Križanić, G. Bogičevci)
- Design and production of electronic component seeding machine (SELK, Kutina)
- Programming and production release of a production line for car engaging battery (TKSE, Hohenstein; BMW, Dingolfing)
- Visualization, data acquisition and processing of the line 2 for "Energy regulation switch" (Elektro kontakt, Zagreb)
- Design and construction prototype machine for cleaning gitters (Epcos Croatia, Kutina)
- Programming and production release of a stations for making carrier shaft for "S" clase (Mercedes, Stuttgart)
- Design and construction machines for separation galvanized elements with permanent magnets (Epcos Croatia, Kutina)
- Design and construction machines for cleaning "gitter" (Epcos Croatia, Kutina)
- Design and construction machines for cevap
- Programming and commissioning of control container for server space for SHELL Nigeria (EMERSON, Zagreb)
- Upgrade control, flow, temperature, wetness and data on machine "LAKI" (SELK, Kutina)
- Programming and production release of a production line for AUDI body (AUDI, Ingolstadt)
- Automation and integration of production cells for PVC filler for AUDI body (AUDI, Ingolstadt)
- Programming and production release of machines for mounting energy switches (Elektro kontakt, Zagreb)
- Programming of the device to verify the correctness of digital switches with 5 tracks (Elektro kontakt, Zagreb)
- Programming and commissioning of the final assembly line of cars (BMW, Dingolfing)
- Programming and optimization of the device to verify the correctness of analog switches (Elektro kontakt, Zagreb)
- Upgrading control motion of the belt and turning drum separator beads (SELK, Kutina)
- Visualization of the output lines via a web server and display it on a large screen (Elektro kontakt, Zagreb)
- Design and manufacture of machines for the passivation of electronic components - coating components in monitored atmosphere (KEKO Varicon, Žužemberk, Slovenija)
- Programming and commissioning of control container for server space for SHELL Nigeria (EMERSON, Zagreb)
- Upgrading of two-handed management control to machines for screening (SELK, Kutina)
- Programming and commissioning of control containers of Communications for Finland (EMERSON, Zagreb)

- Design and manufacture of belt conveyors for transport of glass solar panels - Solvis Varaždin (ATINEL, Varaždin)
- Programming and commissioning of an assembly line for marks and decorations (AUDI, Ingolstadt)
- Reconstruction, repair and upgrade of an elasticity meter for spring quality control (AURORA, Čazma)
- Visualization, collecting and processing of data from "line 8" on a energy regulation switch (Elektro kontakt, Zagreb)
- Automation conveyors and CNC milling machine for the purposes of education (RITEH, Rijeka)
- Programming and visualization of final assembly for BMB South Africa (SAR Elektronik, Dingolfing)
- Electrical design and manufacture of EPLAN for the BMW Landshut, project 3D Printing parts (MULTINORM, Cerna)
- Design and manufacture of belt conveyors for transport of glass solar panels - Solvis Varaždin (ATINEL, Varaždin)
- Programming and commissioning station for lateral side of the BMW made of carbon fiber (MULTINORM, Cerna)
- Programming and commissioning of the production line for the hood of the Jaguar in Albersdorf (WIET, Kirchberg-Austrija)
- Programming and commissioning the machine for hydro design - making expansion joints (SPIROFLEX, Ruščica)
- Carbon Cutting Programming and Commissioning for the i-Series Electric Car (BMW, Landshut)
- Reconstruction of material tearing machine and spring testing (ESCO, Bjelovar)
- Design and manufacture electronic component marking machine (TDK Šumperk, Czech Republic)
- Design and manufacture of machines for the exclusion, counting and packaging of electronic components (TDK Croatia, Kutina)
- Design and production of machine for control and packaging of electronic components (TDK Croatia, Kutina)
- Programming and commissioning of the bodywork finishing line at the paint shop (Audi, Ingolstadt)
- Programming and Commissioning of the Completing Line (BMW, Dingolfing)
- Programming and Commissioning of a Robotic Station for Optical Body Gap (BMW, Dingolfing)
- Programming and Commissioning of Body Swivel Brackets (BMW, Dingolfing)
- Design and manufacture of machine for control and packaging of electronic components (KEKO Varicon, Žužemberk, Slovenia)
- Design and development of the gluing machine (TDK Šumperk, Czech Republic)
- Design and production of electronic components rewinding machine (TDK Croatia, Kutina)
- Design and production of a machine for mixing production traps (TDK Šumperk, Czech Republic)
- Design and production of a machine for optical control and packaging of plastic components (Tomplast, Slovenia)
- Design and production of bowl and linear feeder (EGO, Zagreb)
- Programming and commissioning of the assembly line for inverter units for e-vehicles (Valeo Siemens eAutomotive, Veszprem)

## **Equipment and tools:**

### **Use of devices , equipment and tools world famous producers:**

- Automation and management: Siemens, PILZ, Advantech, Festo, Lenze, Omron, Moeller ...

- Sensors: Sick, Leutze, Omron, Baumer, Eurotherm, Pepperl+Fuchs ...
- Frequency converters and drives: SEW, Danfoss, Lenze, Mitsubishi, Siemens ...
- Robotics: Kuka, ABB, Epson, Adept, Motoman, Fanuc

**Visualization and SCADA programs:**

- WinCC, WinCCflexible, ProTool, DAQFactory, Zenon, InTouch ...

Detail information about company activities, contact and other You can find on [www.enso.hr](http://www.enso.hr)

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