MARELLI



- Tolmezzo (UD)
- Founded in 1969
- Business Line Marelli
- Competence center REAR LAMP
- 800 employees

- Premium Customers
- Innovation
- Advanced Technology
- Top Quality
- Costs Competitiveness

R&D

Innovation, Development, Simulation, Validation, Prototyping

TOOLSHOP

Design and Production of Mouldings, Laser Welding

MANUFACTURING

Moulding, Metallization, Manufacturing of PCB, Assembly Lines

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THESIS PROJECT TITLES

IN INNOVATION TEAM

a. Moving parts in Rear Lamp, study of use cases and opportunities offered by the use of mechanical actuators inside Rear Lamp, design and realization of the electronic system.
b. Study and analysis of a new light source based on LED chip on a transparent flexible surface for display light, design and realization of the electronic system.
c. Study and analysis of molded interconnect device technology for board to board communication inside Rear Lamp
d. MiniLED flexible stripes for exterior automotive lighting. Concept design and process optimization

Backgrounds appreciated:

ELECTRONICS	COMPUTER SCIENCE	PHYSICS

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THESIS PROJECT TITLES

IN SOFTWARE OR LASER WELDING TEAM

a. Implementing a tool for automatic calculation of the project Software & System development metrics and integrate it with the BI platform
b. Design and implement a SW (GUI) for managing of the configuration of the embedded SW component.
c. Identify possible review checks on development work products and implement a tool for perform this activity automatically considering artificial intelligence
d. Study of the Cybersecurity aspects related to the software development in the Rear Lamp domain
e. Study and integration of a tool for Model based design for Automotive applications
f. Study of the flash bootloader for automotive products starting from the customer functional requirement to the cybersecurity related requirements
g. Design of a modular proxy between an HMI interface and an OPCUA server for an industrial machine

Backgrounds appreciated:

ELECTRONICS	COMPUTER SCIENCE	PHYSICS

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THESIS PROJECT TITLES

IN VALIDATION TEAM

Components Validation:

a. OLED: Acquisition of OLED image through Luminance camera or dedicated Image Recognition techniques to analyze the pre and post test.
b. Export data from datasheet (pdf format) and populate a dedicated excel (LED Database and/or Global LED Selection) automatically.

Enviromental Validation:

a. Investigation about the parameters that affect the creation of cracks on chemical tests. The task of the work is to study both the rheology and thermal aspects that cause damages on the outer lenses of the lamps
b. Investigation of test strategies to detect internal tensions on the molded parts in outer lenses. The task of the work is to find a quick test to check the quality of the molded parts in production.

EMC\SW Validation:

a. Utilization of AI for project requirements analysis (for example starting from the DOORS database) and then automatic execution/compilation of a test plan including analysis of results to generate automatic test reports.
b. Development of virtual led driver models to perform the Software in the loop testing in Vector toolchain environment

Backgrounds appreciated:

ELECTRONICS | COMPUTER SCIENCE | PHYSICS | MECHANICAL/AEROSPACE

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THESIS PROJECT TITLES

IN HARDWARE OR EMC TEAM

a. Analytical study, modelling and characterization of the parasitic components and their mutual interaction of electronic components for filtering electromagnetic disturbance
b. Size migration of electronic components in automotive: a comprehensive feasibility and validation study towards miniaturization
c. Optical communication inside RL: feasibility and implementation of a multi-band optical physical layer to carry automotive grade communication protocol
d. Automatic system based on optical measurements for the configuration of led/oled drivers at end of the assembly process

Backgrounds appreciated:

ELECTRONICS | PHYSICS

IN SIMULATION TEAM

a. Structural Simulation: Application of statistical methods to manage boundary condition matrixes and reduce simulation runs
b. Thermal Simulation: Characterization of an Integrated Circuit thermal model using FloEFD and EDA Bridge (Smart PCB

Backgrounds appreciated:

ELECTRONICS | PHYSICS | MECHANICAL/AEROSPACE

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THESIS PROJECT TITLES

IN OPTICAL OR LASER WELDING TEAM

a. Diffractive and meta optics light projection applications in Rear Lamp design
b. Rear Lamp luminance homogeneity detection with neural network algorithms
c. Etendue theorem applications in Rear Lamp design for optical efficiency improvement
d. Viscoplastic fluids in 2D asymmetric plane compression flows: theory, solution techniques and application to a real industrial case of laser welding of polymers

Backgrounds appreciated:

PHISICS | MATHEMATICS

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MARELLI



GENERAL TIPS

- Experimental Thesis Project
- Tickets lunch + graduation reward
- Duration: 3-6-9 months
- Company tutor and mentor
- Hybrid Formula: smart working/on site
- Training Plan during onboarding

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MARELLI

MARELLI ATTRIBUTES

DRIVE RESULTS

ACCOUNTABLE

ENTREPRENEURIAL

INCLUSIVE

INNOVATIVE

AWARE

POWERING PROGRESS TOGETHER