Assuring flawless aluminium profiles



Challenge

Scrap production is a common headache among manufacturers and the aluminium extrusion field is no exception. However, eliminating scrap can be very challenging due to the harsh conditions that prevail in factory environments.

Imagine being a press operator, responsible for tuning the press in order to maximize product quality. Now, imagine that you would need to physically monitor the product's quality from all angles, during extrusion at temperatures over 400oC and speeds that reach 40 meters per minute. Seems impossible?

DIATOMIC Support

Without DIATOMIC, it would have been hard to accomplish this experiment. Due to its cyber-physical nature, real production conditions were required in order for CYRUS to reach the Market stage, and the financial support offered by DIATOMIC made this possible. Also, thanks to DIATOMIC, we had the opportunity to cooperate with Ingenno, a great company with expertise in Industrial Design and Marketing strategies.

Finally, the advice we received from our Coaches to focus on the cost-benefit approach helped us form the final product and make it appealing to our clients.

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Timeline



Stakeholders

D-Cube is a spin-off company from CERTH, with an expertise in Computer Vision and Artificial intelligence for Industrial applications. Ingenno is a design company offering services for creating new physical and digital products and applications. Alumil is the largest aluminium industry in Greece, acting as a testbed and a potential customer.

End Users

Press Operator: This role corresponds to both the Extrusion Press Operator and the Press Operator Assistant, as both are responsible for keeping track of the production and ensuring that the press is well tuned.

Quality Assurance Worker: This role corresponds to the Finish Cut Saw Operator; whose responsibility among others is to assure that defective profiles will not be routed into the next production stages.

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Key Results

The output of this experiment is a robust and market-ready product. In order to achieve this, during the experiment, we focused on ensuring:

• System stability and robustness: Considering the harsh conditions of an industrial environment (high temperatures, high speeds, 24/7 production), the final version of CYRUS has 99.9% uptime, as well as robust and real-time detections

• System effectiveness: Clients reported 0.6% scrap reduction from the first 3 months in a single press. This corresponds to savings of approx. €53,000 annually.

Impact

CYRUS aims to direct scrap reduction by suggesting actions to prevent scrap production at the exact time of its occurrence. Just-In-time corrections on the press also lead to raw material and operational cost savings. The production is now transparent to all employees, making the production monitoring more effective.

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Testimonials

CYRUS made it possible to physically monitor the production line from all sides and be inside my airconditioned office at the same time! This is a lifesaver, especially during the summer, when the temperature may exceed 45oC.

- Anonymous, Press Operator

✓ All statistics regarding the scrap production have been manually collected for years. Besides the effort required, it was difficult to draw any meaningful conclusion that would improve our process. CYRUS allowed us to experiment with different parameters and monitor the quality's outcome. It has great potential!

- Anonymous, Quality assurance manager

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