

Success Story

Automated insertion of metal parts in plastic injection moulded products

Anziplast



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Company description

Anziplast is a Belgian company specialized in development and production of injection-moulded parts for a wide range of high-tech companies. Customers reside within different sectors, including automotive industry, packaging, electronics, household products and machine construction. With a fleet of 60 injection moulding machines, more than 5000 tonnes of a broad variety of thermoplastics are processed every year. Apart from production itself, Anziplast offers a complete product design support trajectory, from assistance in the product design phase, material choice and rapid prototyping to mould engineering and production.



Motivation and challenges

The Anziplast case covers the automation of insertion of metal parts in plastic injection moulded products. The insertion is a step in the production process that requires operator involvement at runtime.

Consequently, one operator should be dedicated solely to the production process and cannot perform other tasks on other machines, leading to suboptimal resource utilization.



Anziplast proposed to investigate the possibility to improve the production process gain by automation, for two different cases. In the first case, small threaded insert parts are placed in the mould to be embedded in the moulded part. The second case covers the embedding of a shaft element in an injection moulded tabletop.



The main opportunity to improve efficiency of the production process in both cases is to make the production cycle itself independent of the operator. It does not mean that every task will have to be automated to completely get rid of operator involvement, but operator involvement can be significantly reduced by concentrating manual tasks in distinct timeslots during which the operator performs preparatory tasks to provide as input for an automated system. This reduction of manual labour affects project prices in a positive way on the one hand, and enables operators to perform a variety of

valuable tasks on the other hand, enhancing operator potential in a high-technological but synergetic work environment.

Feasibility study

Flanders Make performed a feasibility study for the two abovementioned cases, and covered two different aspects on what feasibility means in the context of an industrial automation objective. First, both cases are considered from a physical point of view, and the actual manual actions are analysed in detail. Similar actions are tested with a cobot and a custom proof-of-concept gripper design to verify the actual physical feasibility. This investigation also defines the hardware requirements, which is a primer on the estimation of the investment cost.

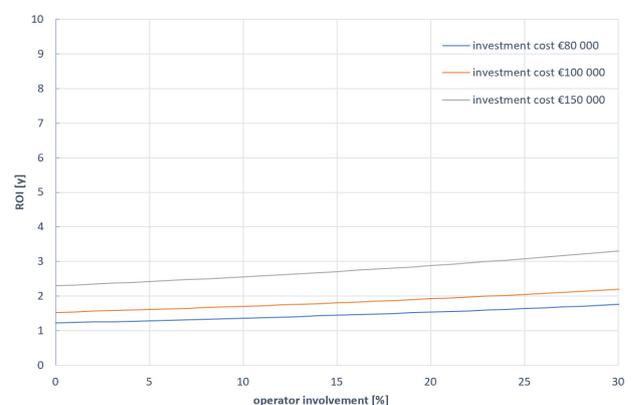


Secondly, both cases are considered from an investment perspective. The return on investment is determined, as well as how different factors like operator involvement and cycle time scaling have an impact on the investment return rate. Based on a cost model, feasibility is verified regarding investment.

Effect of cycle time scaling on ROI



Effect of operator involvement on ROI



Result

Based on the feasibility study, Flanders Make was able to help Anziplast in deciding whether automation of a given production process is profitable, or to which extent the level of automation can be persisted in order to gain a beneficial impact on both the process outcome as well as operator value.

Interview

How could COTEMACO support you?

Via the SME support programme, COTEMACO engages with SMEs from the automotive and food sectors through field labs. These regional field labs in the Netherlands, the UK, Belgium and Germany are showcasing key production steps in the automotive and food industries, in order to tackle current low sectorial awareness and knowledge gaps. The field labs will exchange knowledge on different manufacturing tasks, such as handling and (un)loading.

With the COTEMACO programme, manufacturing SMEs are guided through the process of adopting collaborative robotic and shop floor digitalisation technologies, from the exploration of technological opportunities to the detailed definition of a business plan.

“Currently, we need 100% of the available time of one operator to keep one injection moulding machine running for the production of this specific type of products, where metal accessories are embedded in the moulded parts. The operator needs to put the inserts in the mould, and needs to remove them after each moulding cycle. Our goal is to implement a cobot-based automation and reduce the operator involvement to 15% to keep the machine running. In the remaining time, the operator can perform tasks on other machines.” – *Maurits Van Steen, Technical Manager, Anziplast*

What was implemented and what are the benefits?

“We will proceed with the technical implementation here at Anziplast. COTEMACO has shown us the concept of how to work out such a process and has shown us conceptual solutions on how to handle some challenging steps in the process. By combining these insights with our own extensive knowledge about the injection moulding process itself, we will implement the cobot-based automation and meet the targeted cycle time.”

Were your expectations fulfilled - technical implementation and support through COTEMACO?

“Yes, COTEMACO has given us multiple ideas on how to handle the problems we will encounter when implementing an automation for the processes within the project scope. Since the study is prior to the implementation itself, direct support has been limited, but during the final project presentation by Flanders Make, there was enough time for questions and discussion. We learned how Flanders Make approached the project, where they gathered relevant information and got their opinions on the different possible solutions, with an open mind regarding different solutions being available on the market.”



What is COTEMACO?

The project, which is an initiative of Interreg North-West Europe, aims to support around 60 SMEs in the automotive and food manufacturing industries with so-called „test environments“ and to encourage them to integrate collaborative robotic systems and digital technologies into their business. Accordingly, in addition to increasing production flexibility, the relocation of production abroad will be curbed and the number of jobs in manufacturing increased, which will generally lead to an improvement in the competitiveness of the companies involved.

In the project new technologies are implemented in application examples - the aim is to move from the prototype in the laboratory environment to the transfer to production, taking into account the legal situation and certifications.

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