



PLB exercise – NLMK

(Data Acquisition to define Quality Control and definition of Root Cause Analysis to solve criticalities)

Module title: MODULE 3: ICT'S FOR DECISION MAKING IN INDUSTRY 4.0
Learning Outcomes linked:
Lean thinking. Problem solving. Quantitative Analysis. Root Cause Analysis.
Aims of the Activity:
To find ways to solve the problem of the continuous monitoring of the product quality by control and analysis of speed of the piston thrust process in the die-casting and control of the outflow of the molten metal from the injection chamber.
Duration of the Activity:
Individual work: 1 hour Team work: 6 hours Group reflection: 2 hours Total: 9 hours



Introduction
<p>The project focuses on the definition and control of different KPI in the piston thrust process in the die-casting and control of the outflow of the molten metal from the injection chamber. For this reason the first step is to obtain data during production and compare these data with the threshold parameters of the production process. In case of significant differences the second step is to implement a Root Cause Analysis to identify the critical issues and then set up a plan of actions aimed at improving process quality.</p> <p>For these reasons it is useful define:</p> <ul style="list-style-type: none"> • The explanation of the PBL methodology. • The explanation of how this methodology can help the team to find the way to solve the problem.
Problem
<p>How to monitor continuously the speed of the piston thrust process in the die-casting and control of the outflow of the molten metal from the injection chamber.</p>
Learning objectives
<p>How and where to install the sensors to measure the quality of product. How to proceed to data acquisition. How to organize and cluster the data How to design Root Cause Analysis How to proceed to data analysis and correction.</p>
Resources
<p>Technical manuals of the machine. Sensors catalogues. Website technical information.</p>
Product specifications
<p>Plan identifying:</p> <ul style="list-style-type: none"> • Suitable Sensors. • Location where you place sensors.
Guiding questions
<p>Do you really need to control the speed of the pistons in the die-casting? What is the problem of non-controlling? Why do you choose this sensor? How will you use technical and quantitative methods to analyze data? What you will do with the collected data?</p>
Assessment exercises
<p>Respond individually to the guiding questions. Discuss the answers together.</p>



Time constraints
3 team work sessions. (3 hours each) 2 group reflection. (1 hours each)