

EXECUTIVE SUMMARY

Alumex PLC, the largest and the leading manufacturer for aluminium extrusions in Sri Lanka with sustained brand loyalty among both local and international customer base. The organisation is a subsidiary of Hayleys Group under construction material sector with ability to curtail range of aluminium profiles including mill finished, powder coated, anodised, wood finished and aluminium components for domestic and industrial applications with high quality products. The organisation consists of various manufacturing processes with the highest annual manufacturing capacities among other local competitors positioning higher in the market. The organisation utilises imported primary billets and local secondary billets in manufacturing and focused on recycling aluminium producing aluminium billets as raw material for their extrusion products. The current market conditions. Economical savings and turbulent environment in the aluminium industry had the organisation focused utilising more local secondary billets in their production thus increasing the capacity of secondary billet manufacturing in melting plant to cater extrusion processes. However, the organisation was facing operational gap of capacity shortage in the melting plant unable achieve the production plan in secondary billet manufacturing due to various issues and restrictions.

The low production plan achievement of secondary billet manufacturing process was identified as the key problem through operational gaps including high machinery downtime, high breakdown frequency, high process downtime, high secondary billet defects, high melting ash loss, low melting production yield, long melting cycle time and high furnace door opening time. These operational gaps contributed at different degrees and inability to achieve the production plan of the melting plant which resulted both quantitative and qualitative restrictions in secondary billet manufacturing process. These gaps were discovered as first level causes followed by addressed root causes of low production plan achievement through improved performance and efficiency of the sub processes scrap segregation, melting and casting which were focused upon secondary billet manufacturing process as a whole.

Literature pertaining to above study revealed that capacity enhancement through production plan achievement of a manufacturing process with permanent and contingent resources allocated in more productive manner through minimised uncertainties and variations in the operational functions and machinery equipment of the plant. the study

focused on permanent resources as the researchers have emphasized on identified operational gaps categorised under a study framework of machinery maintenance, monitoring and control, process standardisation and process improvement under the main project of improving production plan achievement in secondary billet manufacturing in melting plant. The literature further elaborated that focusing on various total productive maintenance strategies with continuous improvement through techniques and methodologies to achieve process standardisation in melting plant and scrap yard for improved production plan achievement, enhanced capacity and plant performance considering overall equipment efficiency.

Identified project main problem along with sub problems were critically evaluated by the project team and discovered solutions with operational departments. The current situation for each sub problems under project components was analysed by collection of operational data, operational systems, process activities and documents and determined the current situation. The machinery maintenance component focused on the Melting Furnace A planned maintenance and breakdown scenario, monitoring and control component focused on billet defects and rework frequency, process standardisation focused on melting operation and sequence of melting operations and process improvement focused on lack of scrap segregation methodologies with current secondary billet manufacturing process.

The brainstorming sessions with project team and functional departments ensured initiation of the solutions were effective thus high degree of contribution to improved results. The implemented solutions through project techniques included preventive maintenance plan and schedule, digital database system, process flow charts, work instruction with checklist, layout planning and planned maintenance work with regard to melting plant and scrap yard operations to sustain best practices. The solutions implemented bridged the gaps and achieved main and sub objectives of the project within the project time period improving production plan achievement increased by 19.81%. However, the project solutions would require further guidance, monitoring and control with limited time availability and continued compliance levels.

Finally, the report discussed outputs and outcomes of the project followed by discovered relationship between solutions implemented and literature. The management skills developed and performed for management of the project was explained upon improving production plan achievement in secondary billet manufacturing process in melting plant.