Human Asset Management: How to Increase the Delivery Capacity of Maintenance Human Potential at Hydro Paragominas

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Abstract

Hydro Paragominas started its bauxite mining operations in 2007, March, and ever since, it already overcame many challenges, which were stabilization and overcoming of production targets, greater domain over processes inherent to bauxite characteristics and accomplishment of physical availabilities. Maintenance is considered one of the strategic factors of the organization, but is still in the process of stabilization and have opportunities in relation to the stability of the indicators of this area. Recognizing the human asset as one of the five types of assets that must be managed in order to achieve organizational strategic planning, Hydro Paragominas initiated in 2016, May, an unprecedented study in the company to know how effectively people were being applied in the process maintenance. The result in 2016 was amazing for the company and that shown how much Hydro Paragominas must improve its internal maintenance processes to start climbing the ladder towards world-class maintenance. In the first year of implementation of the improvement, a productivity increases of 12% was achieved in relation to the previous year. This paper aims to present the applied methodology for studies of the work samples, application strategies and benefits acquired, to share the lessons learned for similar future projects and what was done in one year to surpass the 12% productivity goal higher than got in 2016.

Keywords: Maintenance, human asset, work samples.

1.   Hydro Paragominas

Hydro Paragominas is a Brazilian bauxite mining company which is part of the Norsk Hydro group. Hydro's bauxite mine is located approximately 70 kilometers from the municipality of Paragominas in northeastern Pará, on Miltonia Plateau 3. Hydro Paragominas started operation in March 2007 and today mines about 15.2 million metric tons of ore per year, producing 11.4 million metric tons of bauxite annually, which supplies 70% of bauxite to the biggest alumina refinery in the world using the only bauxite slurry pipeline in the world.

Current deposits in Paragominas represent a lifetime of decades for mining activities, in a process aligned with the best environmental and operational safety practices.

Hydro Paragominas has three general maintenance managements dedicated 24 hours a day for the three processes of bauxite exploration: mining (Figure 1), beneficiation and transportation by pipeline. There are around 400 maintenance workers in the company, which corresponds for almost 40% of all employees.

Figure 1. Surface miner loading trucks in a mining area.

After stabilizing the processes of maintenance, availability, safety and costs, the maintenance leadership, in the search for continuous improvement, decided to apply work sampling, an unprecedented analysis at Norsk Hydro group, to know the real productivity of the maintenance workers in the day by day and to identify the main loss of the activities. In other words, this study focused in identify unproductive activities at Hydro Paragominas maintenance human asset management and how this situation could be improved to respond to organizational challenges.

2.   Human Asset Management and Tool Selected for Productivity Measurement

The international standard *ISO 55.000:2014 – Asset management – Overview, principles and terminology*[1] says that "an asset is an item, thing or entity that has potential or actual value to an organization", thus, Hydro Paragominas ratifies from this standard the recognition that human potential value has for the company. How to measure and control this value? How to determine if the capacity to deliver the full potential of maintenance human has reached its goal in achieving the corporative requirements?

The selected tool at Hydro Paragominas for measurement of maintenance labor productivity was "Work Sampling". It is a statistical technique for determining the proportion of time spent by workers in various defined categories of activity. It was developed by British statistician Leonard Henry Caleb Tippet in the 1930s when introduced in a textile factory, where machine operators were observed at random intervals in order to estimate the percentage of time machines were idle[2].

"*Work Sampling*" consists of a large number of random observations of predetermined tasks that an employee or group of employees perform. Data collected by the work sampling observations identifies the amount of time spent on each task[3]. The number of workers observed represents a small sample of an entire population, every observation of a worker at work is considered an observation and, therefore, each work sample can result in a large number of observations. Instead of dealing with the entire population, the procedure consists of collecting a sample, analyzing it, and building a confidence boundary around it.

Another critical success factor was the unconditional support of the "whole" maintenance management body of the organization which, by knowing "work sampling" and its benefits, made all its engineers available for a whole week to be dedicated only to data collection.

6. References

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