

ABSTRACT

Like many other industries in general, milling industries have several challenges that still roam around. One of the several challenges that this industry face is estimating the workpiece's cost before producing it. Usually, workshops use computer numerical control machines and simulation software to understand the milling process better. Since CNC provides more accurate machining time prediction, operators have a way to estimate costs and tackle this problem. However, some workshops do not use CNC machines to process some workpiece or even have a CNC machine. These workshops estimate the cost of a conventional milling machine process merely out of their intuition. Although they are an expert for this field, estimation based on intuition is not accurate. Inaccurate costing can lead to misinformation and profit loss. Other than that, determining the optimal cutting parameter is a challenge itself. Using a conventional machine, determining cutting parameters is more based on the operator's intuition than real calculations. Different input of cutting parameters alters the final result of estimated unit cost and cycle time. Therefore, a solution in the form of a quick cost estimation application is needed to tackle this problem. This application can estimate the machining process's optimal cost and time by having inputs such as raw dimensions, material, and process planning. The application also informs the user of the optimal cutting parameters and cutting tools of choice that bring about such results. Users can input the necessary milling constraints, such as tool deflection, to limit and ratify the work.

Keywords: Milling Operation, Cost Estimation, Cutting Parameters, Optimization, Prototype Application, Production Time