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Numericalcontrol (NC) machine is an automated machine-tool that is operated by accuratelyprogrammed commands fixed on a standard.

Most of NC machines are today computernumerical controlled (CNC), in which computers play an integral part of thecontrol (Lan, 2010). The first NCmachines were built in 1940s and 1950s, based on existing tools that weremodified with motors that moved the controls to follow points served into thesystem on pressed tape. These early servomechanisms were rapidly enlarged withanalog and digital computers, creating the modern CNC machine tools that have reformedthe machining processes (Mukherjee, et al., 2014). CNC lathesare swiftly replacing the older production lathes due to their ease of setting, operation, repeatability and accuracy. These are designed to use modern carbidetooling and are more compatible with modern technology. The part may bedesigned and the tool paths are programmed by the CAD/CAM process or manuallyby the programmer and the resulting file is uploaded to the machine. Aftersetting and taking trials, the machine will continue to turn out parts underthe irregular control of an operator (Moriwaki, et al.

, 2006). With speedygrowth in this industry, different CNC lathe manufacturers use different userinterfaces which sometimes make it difficult for operators as they should be informedwith them. With the beginning of cheap computers, free operating systems suchas: Linux and open source CNC software, the entire price of CNC machines hasbeen dropped (Suresh, et al., 2012). In modern CNCsystems, end-to-end component design is highly automated using computer aideddesign (CAD) and computer-aided manufacturing (CAM) programs (Hao & Liu, 2017). The programs produce a computer file that is interpreted to obtain the commandsneeded to operate a machine via a post processor and then biased into the CNCmachines for production.

Since any module might require the use of severaldifferent tools – drills, saws, etc., modern machines often combine multipletools into a single " cell". In other installations, several differentmachines are used with an external controller and human or robotic operatorsthat move the unit from machine to machine. In either case, the series of stepsneeded to produce any part is highly automated and produces a part that closelymatches the original CAD design (Pawar, et al., 2016). With therecent development of high speed machining technology, two-dimensional contourend milling has achieved an increasing demand in the manufacturing of die andmold products. This is partially since an unexpectedly larger number ofmechanical parts are made of two-dimensional contour and even more complexobjects are generally created from a billet by using two-dimensional roughing, semi-finishing and finishing processes.

In two-dimensional contour end milling, conventional offset contour CNC tool paths generated by commercial CAM softwareare extensively used to machine these mechanical parts (Xu, et al., 2013). Inrecent times, as the incredible demands for mechanical parts with highgeometric and dimensional accuracy increase, a requirement to produce thoseparts with such accuracy is greatly understood by today's manufacturingindustries. To this end, CNC machine tools are the most important means of productionfor the manufacturing industries (Zhu, et al., 2012). CNC machine tools have been widely usefulto a range of applications, for example, in the aerospace industries.

With therecent advancement of the machine tools manufacturing technologies includinghigh speed feed drives and highspeed spindles, high speed end milling on theCNC machine tools has become constantly popular, and is being performed to manufacturethe sections with the required contour geometry and dimensional accuracy (Sawula, et al., 2012). however, the geometric accuracy of the machined surface is greatly influencedby the numerous errors sources ranging from errors existing in the machine toolsystem itself to the errors due to the cutting process. Motivated with the background and issues onerrors of structure and application or program in the machine tool system andthe cutting process which cause machining geometric errors as discussed above, and compare with the current research work about tool path modification methodsfor the improvement of the machining geometric accuracy in 3-axis CNC machine.

With thisaim, this review paper proposes comparing or to evaluate different from offsetstructure (such as tool path, geometric positioned) generation by forward andbackward tool path modification methods to regulate the cutting engagementangle and therefore the cutting force at a desirable constant level, which willconsequently response how improve the machining geometric accuracy in 2D endmilling on a 3-axis machining center, and how is choose suitable method in anysection of 3-axis CNC machine.