

ABSTRACT

Potential for Technology Adoption and Adaptation of CNC Machining Systems in Trinidad and Tobago.

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The thesis appraises the technology of CNC Machining Systems for their adoption and adaptation for the local/regional industrial sector by examining the knowledge domain of the technology and the skill base required for transition from current stage of development.

A reversible vane type hydraulic motor was selected to demonstrate the potential of a higher precision grouping. The technology gap for CNC machining was highlighted. The motor components required machining accuracy unobtainable by conventional machine tools. Machining was performed using three axes, simultaneous control CNC machining centres and a CNC lathe with bar feeder capability. Other requirements were process planning techniques and the programming codes for a knowledge base for training of engineers.

The hydraulic motor was assembled and tested with a Vickers Inc. hydraulic trainer and an independent variable displacement Enerpac pump. Performance characteristics for torque and horsepower ratings at varying operating pressures were developed up to a test pressure of 620 psi.

The study has shown that CNC Machining technology can be introduced into the UWI's Mechanical Engineering Programme. Thereby, enhancing the potential for adoption of CNC technology in the indigenous industrial sector. This can be decisive in the mix of policies and reforms that can create a fundamental techno-economic transition that can assist in reducing the competitive gap and that will help create our future skill base.