

Primo™ system helps SuMax Enterprises to reduce part set-up time by 90%


Customer:

SuMax Enterprises Pvt Ltd.

Industry:

Automotive

Challenge:

Accurately maintain wall thickness of pump bodies and reduce part setting time when manufacturing steering worm shafts.

Solution:

An optimised part setting and inspection process using the Renishaw Primo™ system.

Maintaining the wall thickness of pump bodies and reducing the part setting time for manufacturing steering worm shafts is an important task for SuMax Enterprises Pvt Ltd, situated in Pune, India. It was made easy following installation of a Renishaw Primo™ system with Primo Radio Part Setter and Primo Radio 3D Tool Setter which has helped the company reduce part set-up time by 90% and eliminate scrap (previously 12%) caused by machining.

SuMax Enterprises was established in 1979 to facilitate additional capacity to manufacture different products for its parent company, Vijay Engineering, a manufacturer of tooling systems and high-precision parts. Initially using conventional lathes and milling machines, SuMax supplied tooling, fixtures and gauges for checking components which directly contributed to Vijay's product development cycle. In 1998, as a result of customer demand, SuMax started manufacturing components for tractor manufacturer John Deere. Today, SuMax has 65 machines, of which 35 are CNC machines used to produce high-precision parts for automotive, machine tool and other industries. The company has the capacity to manufacture 100,000 components per month.

The big partnership

SuMax has always been considered a premium supplier of quality components focussing only on the manufacture of precision parts where a machining accuracy of ± 10 microns is required. Manufacturing capabilities include turning, milling, broaching, cylindrical grinding and surface grinding. Inspection is carried out using a co-ordinate measuring machine (CMM).

Primo is worth recommending to other SMEs as it is worry-free probing because of the warranty available and the credit token system. It helped us in reducing our part setting time and scrap on our components. The manufacturing sector will definitely benefit with this product.

SuMax Enterprises Pvt Ltd (India)

"During evaluation of a CNC machine, a trial on one of our critical components was conducted at a machine tool supplier's facility and there for the first time we saw part setting being done using one of the Renishaw probes. We found it very useful and were convinced to adopt this technology while manufacturing our parts," said Managing Director of SuMax Enterprises, Mr Rajesh Suttatti. Renishaw engineers advised which probe would be suitable for SuMax based on the application requirement.



The Primo™ system, including Radio Part Setter and Radio 3D Tool Setter

Using a Primo system has helped SuMax to increase machine utilisation time, eliminate scrap and reduce the time consuming tool setting process. SuMax was attracted to the Primo system's 'pay-as-you-probe' concept with a low initial investment and a unique credit token system. Moreover, the Primo Total Protect cover provides complete peace of mind and safeguards the Primo system against any accidental damage by providing a comprehensive warranty.

Worry-free probing

The Primo system is available at an affordable price and aimed at providing a fast return on investment. Consisting of a Radio Part Setter and a Radio 3D Tool Setter, the system enables automated on-machine part setting, part inspection and tool setting. It helps to eliminate manual setting errors, improves accuracy and part conformance, and reduces non-productive time and scrap. All of which increase productivity, improve quality and increase profits. The system is easy to use, simple to install and represents a low initial financial outlay. Its exclusive, enhanced warranty offers users complete peace of mind.

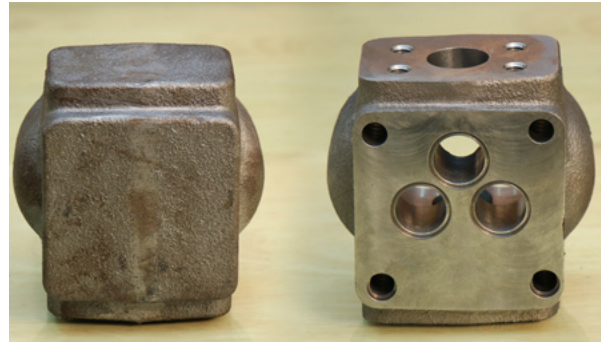
The innovative Primo Credit Token system offers users the flexibility to 'pay-as-you-probe'. Its 6-month renewable tokens allow unlimited use of the Radio Part Setter and the Radio 3D Tool Setter within this period of time. The credit tokens are also available as an upgrade to enable unrestricted continuous use.

A Primo system was installed at SuMax in just one hour and as the system is so easy to use, it took the company only 15 minutes to get started. With the Primo training kit and pocket guide, it is very easy to learn and implement the system.

A key benefit is the elimination of the need for extensive G-code knowledge. The system is supplied with GoProbe, an innovative 'all-in-one' software package that simplifies part setting, tool setting and calibration. Simple, single-line commands are used instead of multiple lines of code which further eliminates the need for any special training.

Tangible returns

The Primo system was installed on a machine used for the precision machining of pump body castings and steering worm shafts. In the case of the pump body casting, establishing a datum edge accurately to avoid wall thickness variation was



Pump body casting before and after machining

critical. Previously the rejection rate due to variations in wall thickness had been 12%. Using the Primo system provided an automated part setting capability that was accurate and reliable, completely eliminating rejections of this kind.

This part setting used to take 15 to 20 minutes whereas the actual machining time was five minutes. By establishing the orientation automatically, the Primo system eliminated a complex manual setting operation and reduced setting time to just two minutes.

For both of these applications, inspection following the machining process indicates that process variation has been eliminated – a major advantage of the Primo system.

"Without the probe the operator has to find edges and calculate the mean value to come to the centre. It is a process in itself and is a job which can be done by an experienced person only. If it has to be done with a trainee or inexperienced person, then there is no alternative to Primo. He has to just call a code to find out the width of the part so as to come to the centre. It is a very simple process which any operator could pick up within 10 minutes," said Mr Suttatti.

No additional investment

The Primo system also includes a Radio 3D Tool Setter which saves even more valuable time and eliminates the need for investment in off-line manual tool setting equipment.

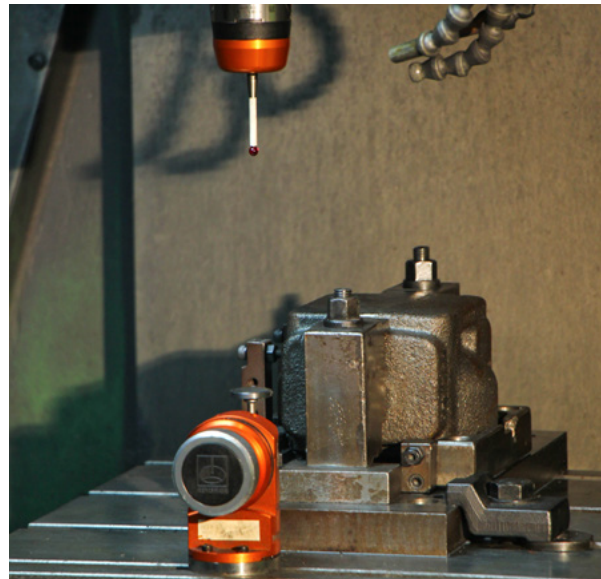
Prior to installation of the Primo system at SuMax, tool pre-setting operations had to be carried out off-line in a tool crib by a skilled engineer. The operator would have to remove



The Primo system helps in setting the steering worm shaft accurately for slot milling on a vertical machining centre

the tool from the machine, put it in a trolley and carry it to the tool crib, where inserts would be replaced or indexed. The engineer would measure the tool offset and enter it into the offset chart. The tool would then have to be taken back to the operator, who would replace it in the machine and manually enter the offset values into the machine's controller before machining could take place. This method carried the risk of introducing errors when entering this data into the machine's controller.

"This entire process is eliminated by the Primo tool setter as now the operator has to just call a code and assign the tool to the code. Through a simple one-line program, the tool is called from the magazine to the spindle, the spindle then goes above the tool setter, travels down at a particular speed, touches the pre-setter probe and measures the offset. This process is carried out twice. In this process, all setting is done by the machine and the operator has to just change the insert on the tool. This saves lot of time and no additional investment is required like the material handling cost, manpower cost etc," said Mr Suttatti.



Pump body casting being probed for wall thickness variation with the Primo system



Mr. Rajesh Suttati, Director, feels that other SME engineering companies should consider the Primo system

For more information and to watch the video visit,
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