WorkNC - Nissan Motor Co

CAD/CAM eliminates excessive programming costs

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September 1999 saw the simultaneous release of six new models by Nissan Motor Co This was part of the 'Ghosn Revolution' led by Carlos Ghosn, president/CEO, and was an unprecedented event. It led to a continuous rise in business, and was made possible by Nissan's history of technical excellence. Part of this drive was a re-evaluation of its CAM systems.

Fumio Matsumoto, of Nissan's Powertrain production engineering Division, Die Manufacturing section, explained their previous strategy for CAM, 'Around four years ago, when we first considered introducing **WorkNC**, we used an in-house developed CAM system, but the development speed did not meet our needs and the development costs were escalating.

We decided to evaluate other efficient CAM packages in the market.

Our objective then was to improve productivity, particularly to reduce CNC programming, as more than half of our production time was occupied by tasks such as toolpath setup and calculation.

In order to cut down on programming time, automated NC data generation was necessary hence, the 'Automation' concept of **WorkNC** was very appealing.

In addition, we were developing much needed functions such as automatic detection of flat area/rest material, Z-level toolpath for rest material, and stock model recognition.

WorkNC already had it all.' His colleague Kimio Honma, continued, 'The key factor in our choice was calculation time - **WorkNC** calculation was 20% faster on average compared to other packages and the operation was the simplest of all the packages, enabling us to achieve a drastic reduction in the total man-hours.' The Nissan Namamugi Plant, Japan, manufactures major components in-house, such as engine parts, chassis, and bumpers, and also supplies dies and moulds to all the company's production lines, making the Namamugi Plant of crucial importance.

Nissan Motor Co now has 19 **WorkNC** licences in Japan, split between the Namamugi Plant, the Iwaki Plant, and the Atsugi Technical Centre.

Nissan also has three licences in the UK at Nissan Design Europe, including the **WorkNC** 5-axis module.

Close collaboration between Sescoi and Nissan ensured that **WorkNC** was tailored to suit its needs.

Fumio Matsumoto said, 'Here at the Namamugi Plant we wanted to utilise **WorkNC** not as a stand alone system but as a part of Nissan's production process.

Key challenges were the adoption of our existing tool database by **WorkNC**, the regulation and automation of CAD data import and the automation of data transfer to DNC.

WorkNC's flexibility and expandability were key factors in our decision-making, contributing to the benefits accrued from installing **WorkNC** as part of the entire production process.' In the casting section, all of the geometry for machining is presented as CAD data, so incomplete information is unacceptable.

Honma said, ' We would rather send our skilled programmer to the design section to complete the CAD data for our use.' Machining conditions are standardised within the company, for example colours are used to indicate hole types, and tolerances are included as numbers.

Casting engineers and design engineers frequently work together from an early stage in the production process.

Applying rules efficiently within the company is another crucial factor in cost reduction.' Honma elaborated, 'We quickly recognised **WorkNC**'s ease of use.

It was surprisingly easy and simple to learn and our man-hours immediately reflected the installation.

It dropped to 1/3 instantly, which was a remarkable improvement.

Delivery dates now are less than half those of three years ago.

Cost wise?

Way lower than half.

As you see, man-hour and cost reduction are our never ending challenges.' Matsumoto and Honma concluded, '**WorkNC** is easy to operate and guaranteed to shorten lead-times.