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Case study

ALPHACAM helps prevent spread of COVID-19

Programming rotary dies for mask production slashed by 30 per cent

FineTech Case Study

Demand for rotary dies from protective facemask manufacturers "skyrocketed" following a mask shortage in Korea, as the COVID-19 pandemic continued to spread.

Specialist engraving and rotary die contractor FineTech had recently invested in an additional ten licences of ALPHACAM CAD/CAM software, from Hexagon Manufacturing Intelligence, so was well-equipped to meet the challenge, especially as it slashed programming time for rotary dies by up to 30 per cent, and total machining time by ten per cent.

Kim Min-wook, Deputy Director of FineTech's Technology Research operation, says in the case of general mask dies, CAM programming has been reduced from more than an hour to 40 minutes maximum. But the biggest benefit ALPHACAM gives, is in the production of engraving and rotary dies, of the sort used in the production of face masks such as KF94 and N95 to help combat COVID-19.

"The CAM system we were using previously, wasn't optimised for those dies. But ALPHACAM is equipped with capabilities for engraving three-dimensional relief shapes, which means it readily meets the strict requirements for knife height, and the gaps between the knives. Height gaps should be applied simultaneously to the same flat plate with a different height and depth. ALPHACAM is the only CAM system able to implement this toolpath simultaneously – and that was the decisive factor for purchasing it."

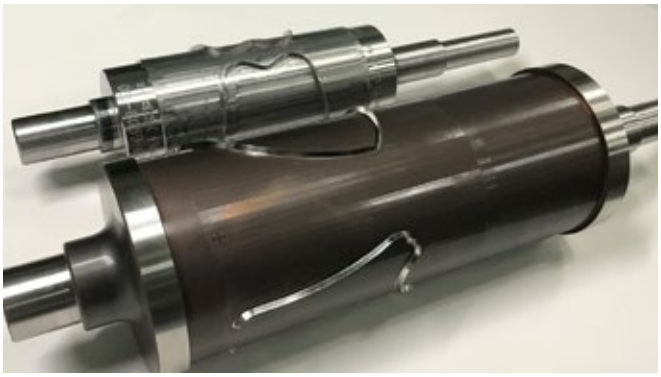
He says the 3D engraving feature is used more than any other during their production process. In the case of milling with engraving dies, relatively thin and narrow spaces are needed within the same plate. "In those sections, other CAM software creates toolpaths, but can't produce it for the narrow areas, so I had no choice but to create that part of the toolpath again, with different cutting depths in the excluded areas.

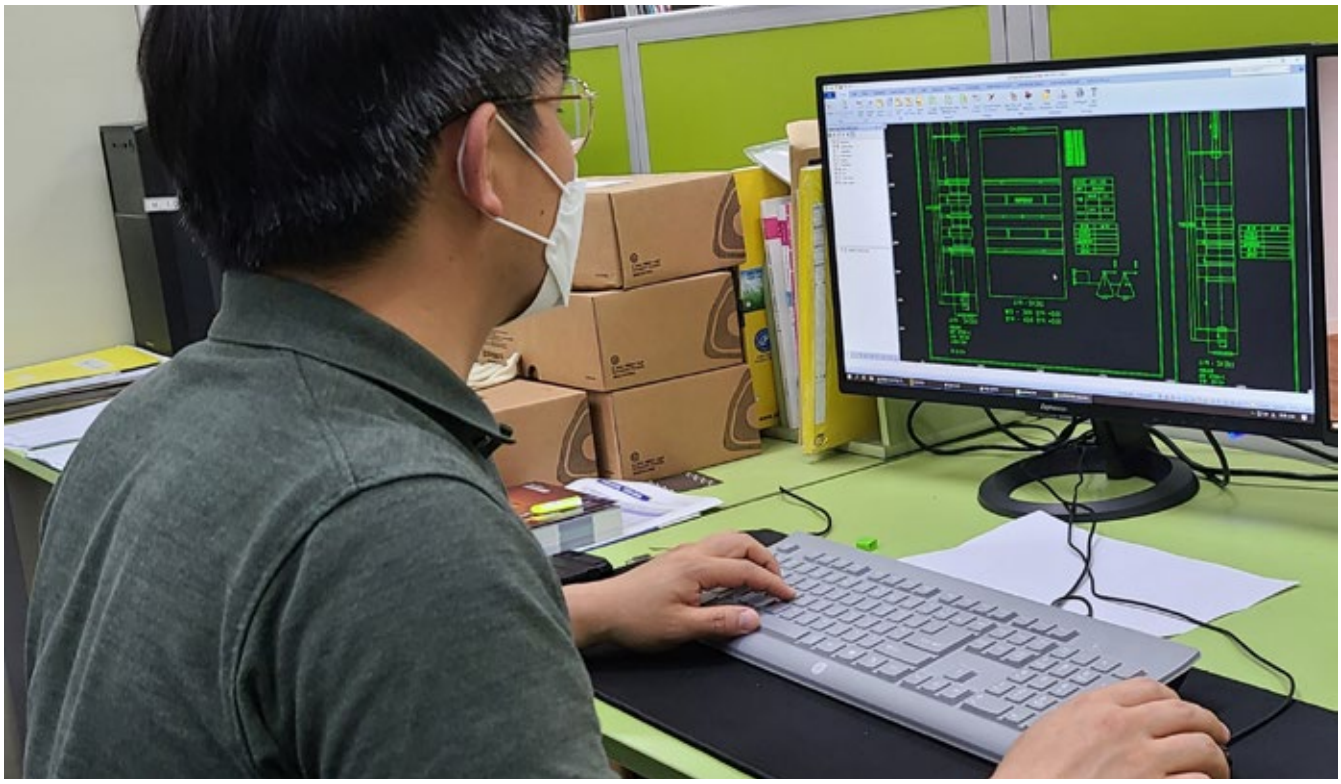
"But ALPHACAM substantially increases efficiency by automatically generating the complete toolpath all at once, through setting the maximum depth of the tool, even if the gap is narrow. ALPHACAM is the only CAM software with this capability," says Kim Min-wook.
In particular, rotary dies can be cut using cylindrical dies in rotary presses, and can be cut continuously in various shapes, so applying them to mask production increased productivity and improved the quality of cutting surfaces more precisely than stamping tools. The main advantage of rotary and embossed moulds is that they can achieve a variety of shapes, by changing the height of the knife on the same steel plate.

FineTech operate with around 100 staff at their headquarters in Hwaseong, Korea, and a branch in Vietnam. They mainly produce rotary and engraving dies on a range of ten CNC milling centres, and usually manufacture dies after etching thin sheet metal (from 0.6 to 3T thicknesses) according to part designs.

Their rotary and engraving die moulds are used for more sophisticated and stable cutting than conventional dies such as wood, or press-blanking dies. This means that FineTech's dies can be utilised by industries such as consumer electronics, mobile phones, cars, electronic circuits, medical services, food, and clothing sectors.

Kim Min-wook is also a firm believer in using ALPHACAM's powerful built-in simulator to ensure that the program has produced completely collision-free toolpaths.
"Once I'd seen for myself that the problems visualised in the simulation actually occurred, I became fully confident that once it had proved out the toolpaths, there wouldn't be any expensive collisions."





About the company

Name: FineTech Co. Ltd

Website: www.finedie.co.kr/

Business: Die Maker

Key Benefits achieved:

- Rotary die CAM programming time slashed by 30 per cent
- Knife height toolpaths implemented simultaneously with the rest of the program
- Ensured “skyrocketing” customer demands were met in the battle against COVID-19

Categorisation:

Industry sector: Tool and die
Industry segment: Sheet metal stamping

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