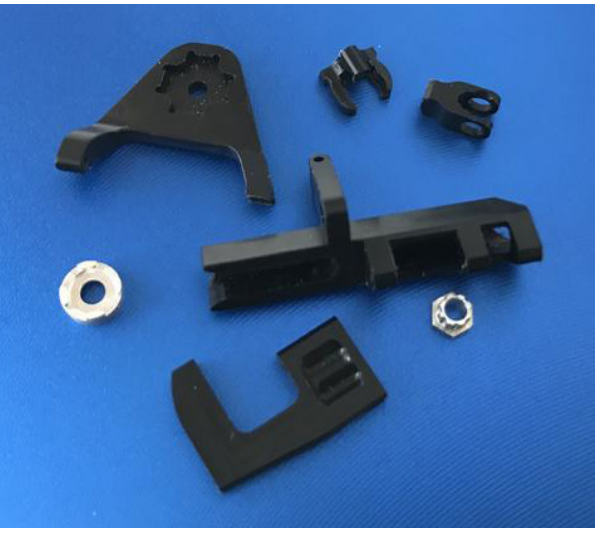
CASE STUDY

R&D CONSULTING FIRM

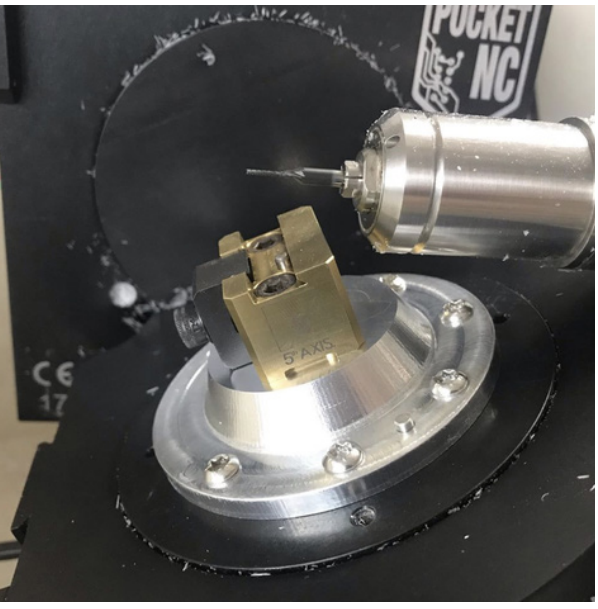
ESOTECHNIC

The Pocket NC machines find their way to many R&D consulting firms to reduce both time and costs associated with sending prototypes to machine shops. Several R&D firms across many industries have reported a large gain in efficiency and cost reduction when adding a Pocket NC to the business. Here we have a case study from an R&D consulting firm in the UK, Esotechnic and Graham, the founder and director. Some of you may recognize Graham as an active member of the Pocket NC Forum.

Esotechnic takes on contracted R&D work in the areas of electronic, mechanical and optical engineering. Esotechnic has a suite of additive, subtractive, and electronic capabilities which includes the Pocket NC V2-50 machine. Graham shared what led him to procure a Pocket NC was that "A recent customer working on micro drones frequently needed "odd-shaped plastic widgets" and that is what inspired me to get the Pocket NC."



Some of the parts made on the Pocket NC, image courtesy of Esotechnic



Pocket NC V2-50 with 5th axis workholding and custom fixture, image courtesy of Esotechnic Instagram

ORIGINAL WORKFLOW

Prior to acquiring a Pocket NC Esotechnic's workflow was as follows:

"My workflow was generally to do a first op from stock, then machine a fixture to accept this half finished part in the tooling board or aluminium and glue the part in place before the second op. Often dowels would be added to help alignment and take some cutting forces. Initially this was done on a self-built CNC machine based on precision stages, tool changes were all manual. Then typically there would be some additional cross-holes to drill which would tend to be done on a manual mill. For one-offs this was fine, but they might take a whole afternoon for a single small part."

ON CHOOSING AND LEARNING THE POCKET NC

"The main things that drew me to the V2-50 machine were its spindle and the ability to do positional 5-axis work. A high-speed spindle is essential for small cutters and that is what I use most of the time. I love the lever operated tool change as well, compared to a collet and nut it is amazing. Built in tool measurement is also excellent. Overall, it is closer in speed to a machine with ATC than a manual machine, add collars to the tools and pre-measure and you can be faster than some ATC machines with practise!"

THE 5-AXIS POSITIONING MEANS ONE SET-UP IS ENOUGH FOR MOST OF THE PARTS I MAKE AND THIS SAVES A HUGE AMOUNT OF TIME AND REDUCES THE MARGIN FOR ERROR A GREAT DEAL.

Graham has a background in manual mills and lathes, and additionally has retrofitted and scratch built several CNC machines. To program the Pocket NC he uses HSMWorks since it offers a plugin with Solidworks. HSMWorks is supported by the same post as Fusion 360, since both are Autodesk products. To learn the Pocket NC he went through the basic first part tutorial and utilized Titans of CNC 5-axis tutorials to get going.

WORKING WITH THE POCKET NC

"The key to the work I have done with the Pocket NC has been rapid turn-around, I can make one-off complex parts without tooling and without soft jaws in one go. If I need to run a small batch I can, especially if the tools are pre-measured. I have added a 5th Axis dovetail fixture and by keeping tool lists and stock together I can make replacement parts very quickly. Overall, it has been a better value for my clients for me to make parts than conventional prototyping services and the parts are often better."

ON MULTIPLE OCCASIONS WE DISCOVER A DESIGN ISSUE AT 5PM AND I AM FITTING A NEW VERSION OF THE PART AT 10AM THE NEXT MORNING, THIS MAKES A BIG DIFFERENCE IN R&D AND MY CLIENTS APPRECIATE THAT.

You can find more of how Esotechnic uses the Pocket NC and their variety of other machines on Instagram (@esotechnic) and the company website (http://www.esotechnic.co.uk).