CAD/CAM SYSTEMS

Benefits, methods and techniques

3D MODEL MANIPULATION TO PREPARE FOR CAM PRODUCTION

What is it?

During the manufacturing process, production engineers will use the models and CAD drawings that have been produced by the draughtsperson. For this to work correctly, the CAD technician will be required to follow strict protocols when producing the models so that all the data required is set to the same layer. For shafts that are going to be turned in a CNC lathe, a half profile is required. This half profile will be used to produce the tool path or the lathe. All the sizes must be drawn to mid tolerance. 3D CAD models must also be drawn to mid tolerance; once again, there must be a clean shape without any additional features such as text or borders. This model will be used by the production engineer to convert the model into the required tool paths for the specific machine that will be used.

3D MODEL MANIPULATION TO PREPARE FOR CAM PRODUCTION

How does it work?

The model that is produced during the design process is used for the purpose of producing the CNC program to save on time and the reproduction of work. By producing the original model to mid tolerance, the production department can ensure that the finished model will be produced at the desired size.

COMMUNICATING SURFACE FINISH AND DATUMS

What is it?

During the production process it is necessary to ensure that the tolerance between features remains within prescribed limits. To ensure this happens, a working drawing will have additional features added along with the original dimensions. These are datum features and control boxes as well as surface finish symbols.

COMMUNICATING SURFACE FINISH AND DATUMS

How does it work?

The datum feature such as concentricity, parallel, flatness and perpendicularity can be added to a dimensioned surface then the corresponding surface has a control box that has the values and tolerance connected to that face.

GATHERING MODEL INFORMATION ON VOLUME, CENTRE OF MASS AND MASS OF THE MODEL

What is it?

Within the engineering industry, there will be occasions when the mass of a finished assembly or volume of a casting is required. This will allow the weight of this object to be determined. If the assembly is a large piece of equipment, the manufacturer may require the total mass for shipping purposes or handling

GATHERING MODEL INFORMATION ON VOLUME, CENTRE OF MASS AND MASS OF THE MODEL

How does it work?

CAD software allows us to quickly establish the total mass of irregular shapes once the specific material has been established.

The software will also determine the centre of gravity for an irregular shape which will allow the fixing of lifting eyes and also informs engineers if a particular assembly requires a counter balance weight.