

# **FRIENDLYNESS OF CATIA SOFTWARE ON AEROSPACE DOMAIN**

## **Dynamatic Technologies uses CATIA for Designing, Manufacturing and Sheet metal fabrication in the field of Aerospace**

In the present day business, aerospace has a very important role to play. Defense, plays a main role in building of a country. For building an aircraft, CATIA has a leading role. From the development phase to the manufacturing and assembly, CATIA plays a significant role.

## **PROJECT ON CATIA V5 R18 + ADVANCE MANUFACTURING 2**

RESPOSIBILITY: MODELLING + MANUFACTURING + VERIFING USING CATIAV5 R18

### **MODELLING:**

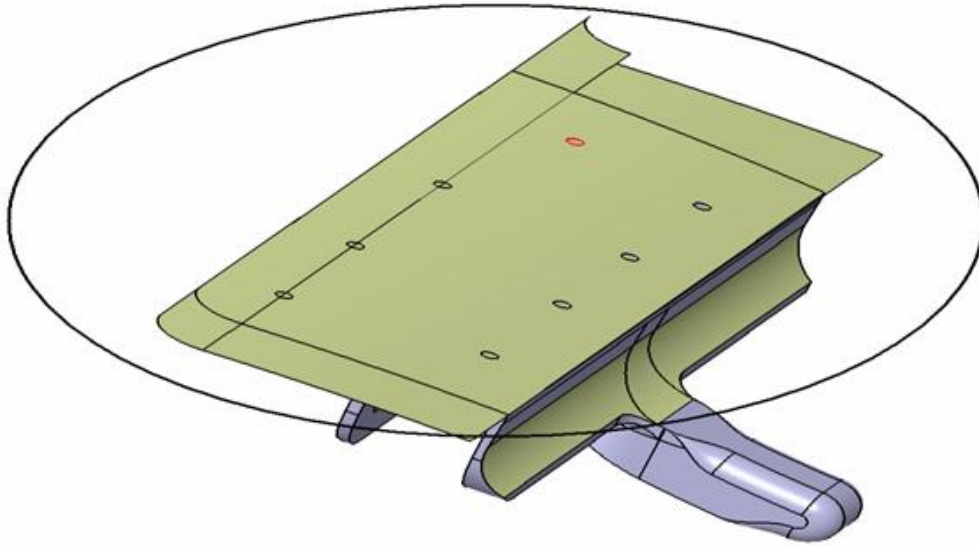
Modules Used:

- SKETCHER WORKBENCH
- PART WORKBENCH
- SURFACE WORKBENCH

Modeling of the part was initially started up in SKETCHER WORKBENCH were the sketch has to be constrained which is indicated with definite color, in turn arrests the degree of freedom of the sketch....

SURFACE WORK BENCH offers excellent support in building complex surfaces as shown. The image shows the profile infinitely varying. The surface was achieved with the commands such as: SWEEP, MULTI SECTION SURFACE, EXTRACT, etc.

These options play vital role in producing complex profiles and large radii surfaces. The below image shows the profile built using **sweep & loft options**.



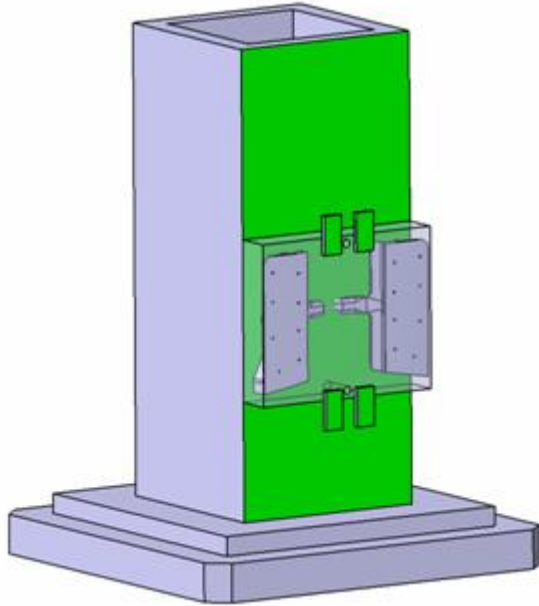
### **MANUFACTURING:**

CATIA plays an excellent role in manufacturing of parts related to aerospace & automobile industries.

The following part was programmed using CATIA V5 R18 ADVANCE MANUFACTURING MODULE...

Building of blank (raw material), fixtures, clamps, etc which are related to machining aspects can be easily done with constructing different **BODIES** with relevant names assigning to them within CATIA for easy selection.

The below image shows how the real time setup is made before loading on to the machine



All these can be done by just switching over from manufacturing workbench to part workbench by a click of mouse button.

Supportive options like **ROUGHING**, **SWEEP ROUGHING**, enables one to just select the part with limiting boundary specified - we can almost achieve the part with the value of offset specified

Options such as **PROFILE CONTORING**, **ISO PARAMETRIC MC**, **SWEEPING**, **SPIRAL MILLING** etc. are widely used to finish the part to the dimension required. Each of the options mentioned have their own relevance in generating the tool path.

### **P.P.R TREE:**

An excellent classification in manufacturing module to easily select the parameters.

Classification goes as follows:

**P=Process:**

Includes all the parameters regarding manufacturing like - generation of programs, tool paths, etc...

SETUP-includes the input parameters to be given such as part definition, blank, fixturing, limiting planes, references, machines, post processor etc. All these parameters can be defined in a single dialogue box.

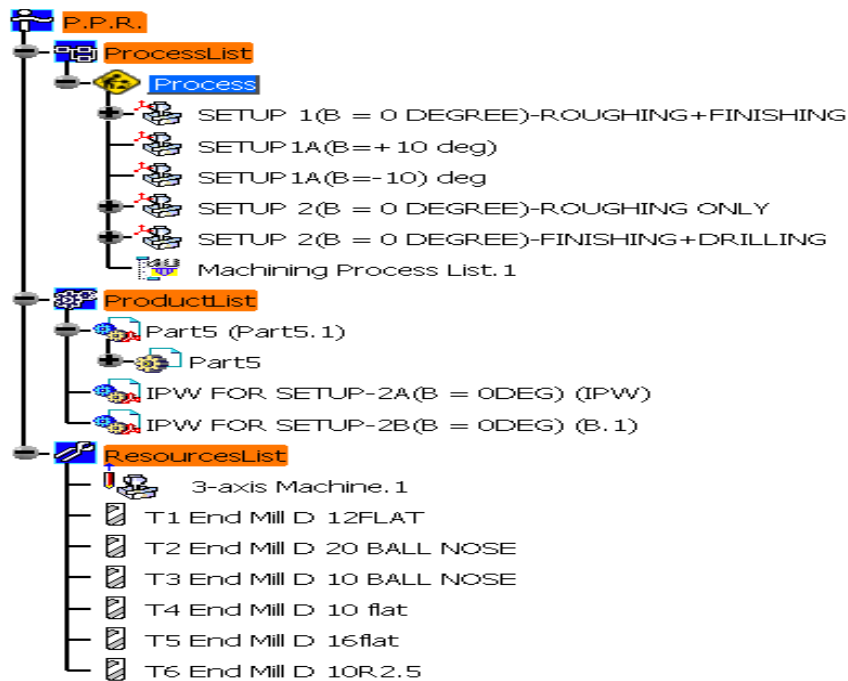
P=Product:

This class of parameters contains all the information about the part/assembly with regard to the way it is constructed. Any modification in the model after commencement of programming will be reflected on to the programming by just recomputing the tool path without generating new program.

R=Recourses:

This class of parameters contains all the information about cutting tools used during programming. Any type of modification on tools, tool numbers, tool holders, etc can be modified here itself rather than entering into the programming tab.

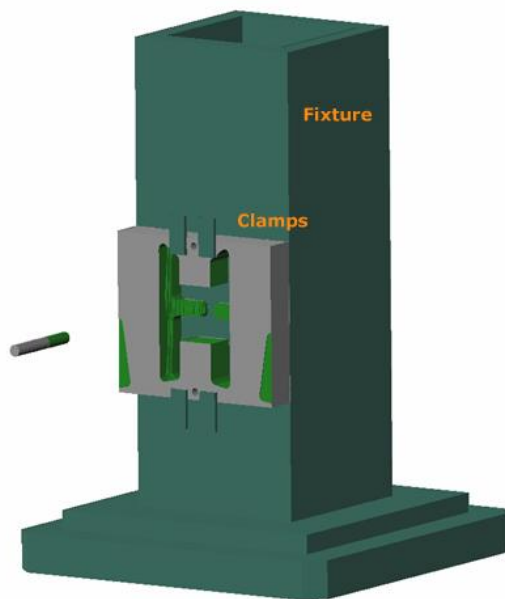
IMAGE BELOW SHOWS THE PPR TREE ARRANGEMENT



## VIDEO MODE IN CATIA

One of the major Highlight in CATIA manufacturing is the video mode of simulation of part cutting after generation of CNC program. Real-time arrangements can be seen on to the video mode which resembles the machine environment where the part has to be loaded.

The arrangements of blanks, fixtures, clampings etc. are seen on the screen. The machined component will exactly resemble the graphical representation on the simulation video mode. One can easily identify the minute cracks, lines, etc.



Lastly, we would like to thank EDS Technologies team for their excellent consultation and technical support on CATIA V5. They are preferred technology partners for Dynamatic Technologies.



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