Predator Virtual CNC™ - KBA #2300005

Knowledge Base Article for improving CNC verification and simulation

Issue

How can Virtual CNC be configured to support a head attachment?

Solution

Head attachments can be simulated just like a CNC machine if Predator Virtual CNC is configured correctly. This functionality is only available in Predator Virtual CNC v5.1.9 or greater. Step through the following to begin the process:

1. Completely define a working machine within Predator Virtual CNC without the head attachment. Often these machines are 4 axis machines with the 5th axis only being used when the head attachment is used. If this is the case, define the machine as a 5 axis VMC or HMC. Typically, the 5th axis rotary head, often the A axis will have a pivot point and direction that is common with the spindle when the head attachment is not used. These details are defined within the Rotary tab.
2. Copy the machine so there are now two .MCH files.
3. Within the second machine replace the appropriate spindle without the head attachment .STL file with the spindle with the head attachment .STL file. This is done in the Moving Parts tab.
4. Within the second machine change the spindle orientation. Typically, this is from vertical to horizontal or whatever is appropriate. Also update the gage line position with the head attachment. This is done in the Spindles tab.
5. Both machines need to utilize the same reverse post. Within the reverse post make sure the the following lines have been added to the parameters and miscellaneous sections:

```
[PARAMETERS]
MCH_FILE=5axis_KGK_WRAH.MCH       ; With Right Angle Head

$MISCELLANEOUS:#11
"M155"          :       LoadMachine             ; Switch to 2nd Machine
"M156"          :       RestoreMachine          ; Restores 1st Machine
```

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NOTE: M155 and M156 can be substituted for any G & M code. Predator Virtual CNC now knows that when it sees the appropriate G & M code to switch from one machine definition to another. Since the only difference between the two .MCH files is the head attachment, the machine simulation will smoothly load and unload the head attachment as it processes the CNC program.

Before running any jobs or simulating any G code, jog both of the virtual machines within the Moving Parts tab. This can be done by grabbing one of the slider bars and dragging it with the mouse. Remember, there is no point in running an actual job until the machine kinematics are correct for both machines.

References

Should additional details be required, contact Predator Software via the following:

support@predator-software.com

The information in this article applies to:

- Predator Virtual CNC v5.1.9
- Predator Virtual CNC v6.x

Last Reviewed: 09/29/04