

3 The CNC-Editor in CoDeSys

3.1 Overview

The CNC-Editor in CoDeSys allows to program multi-dimensional motions graphically and textually in parallel, following the CNC language DIN66025. For the CNC language see chapter 3.2, concerning the text editor see chapter 0, programming examples you find in chapter 11.

Basically up to 9-dimensional motions can be realized, whereby only two dimensions are not interpolated linearly. Thus in two dimensions lines, circles, circular arcs, parabolas and splines can be programmed; the other directions merely get interpolated linearly.

For each programmed path CoDeSys automatically creates a global data structure (**CNC Data**), which can be used by the IEC program.

This can be done in different ways:

- The CNC program is stored as an **array of G-Code-Words** and will be decoded during runtime of the PLC program with the aid of a decoder module. Thus for the particular path objects GEOINFO structure objects will be available. path-preprocessing modules (see SM_CNC.lib, e.g. Tool Radius Correction), afterwards interpolated, transformed and returned to the Drive Interface for the communication with the hardware. (see command 'Create program variable on compile')
- The CNC program is written as a **list (OUTQUEUE-Structure)** of GEOINFO structure objects to a data structure and thus can directly be fed to the interpolator. In comparison to a) by this method you can avoid calling the Decoder and the Path Preprocessing Modules. But in exchange you do not have the possibility to change the program during runtime. (see command 'Create OutQueue file on compile')
- The CNC program is written as described in a resp. b to the **file system** of the controller and is read and executed at runtime step by step. This method particularly is suitable for big programs, which cannot be kept completely in the memory.

