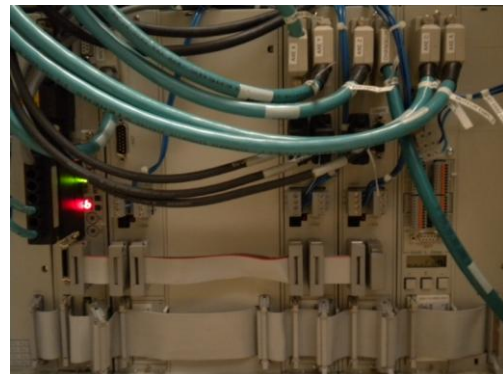


Description of the experimental setup

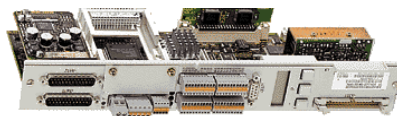


The installation of the open CNC system started in spring 2011 on our 5-axis Mikron UCP710 milling machine. The machine is originally driven by a Siemens 840D with 611D control board. The kinematical characteristics are given in the following table:

	X	Y	Z	A	C
V_{\max} (m/min - rpm)	30	30	30	15	20
A_{\max} (m/s ² - rev/s ²)	2.5	3	2.1	0.83	0.83
J_{\max} (m/s ³ - rev/s ³)	5	5	50	5	100

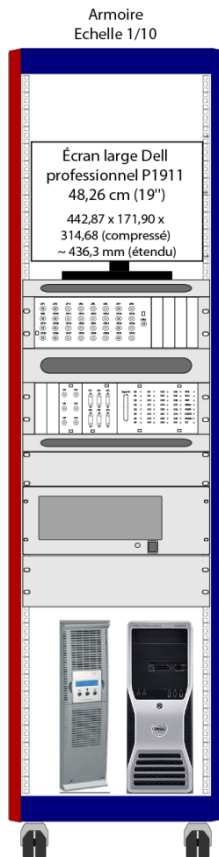


Siemens 840D CNC with
2 x 611D and 1 x 611U control board



To have an open access to the machine, the 611D control boards are replaced by the equivalent 611U control board. Thus, the motor speed is controlled by a $\pm 10V$ analog signal.

PREMIUM Project - Description of the experimental setup



The $\pm 10V$ command signal is generated by a real time DSpace system.

Description of the DSpace modular system:

DS1006: AMD Opteron_QC processor board (2.8 GHz)

DS3002: Incremental Encoder Interface Board 6-channel

DS4003: Digital I/O board 96 x digital I/O

DS2002: Multi Channel A/D board 32-channel 16-bit

DS2102: High Resolution D/A board 6-channel 16-bit

Software: ControlDesk Next Generation, Real Time Interface, Matlab & Simulink

Other equipments allow to measure different parameter on the machine tool.

Heidenhain

Interpolation and Digitizing Electronics -

IBV 6072 SINUS 1VCC 2 X
which can duplicate the signal of the encoders



Siemens DMP Compact Module

to catch the information from the Siemens Profibus.

16 Digital Input, 16 Digital Output,
4 Analog Output (14 bits)

