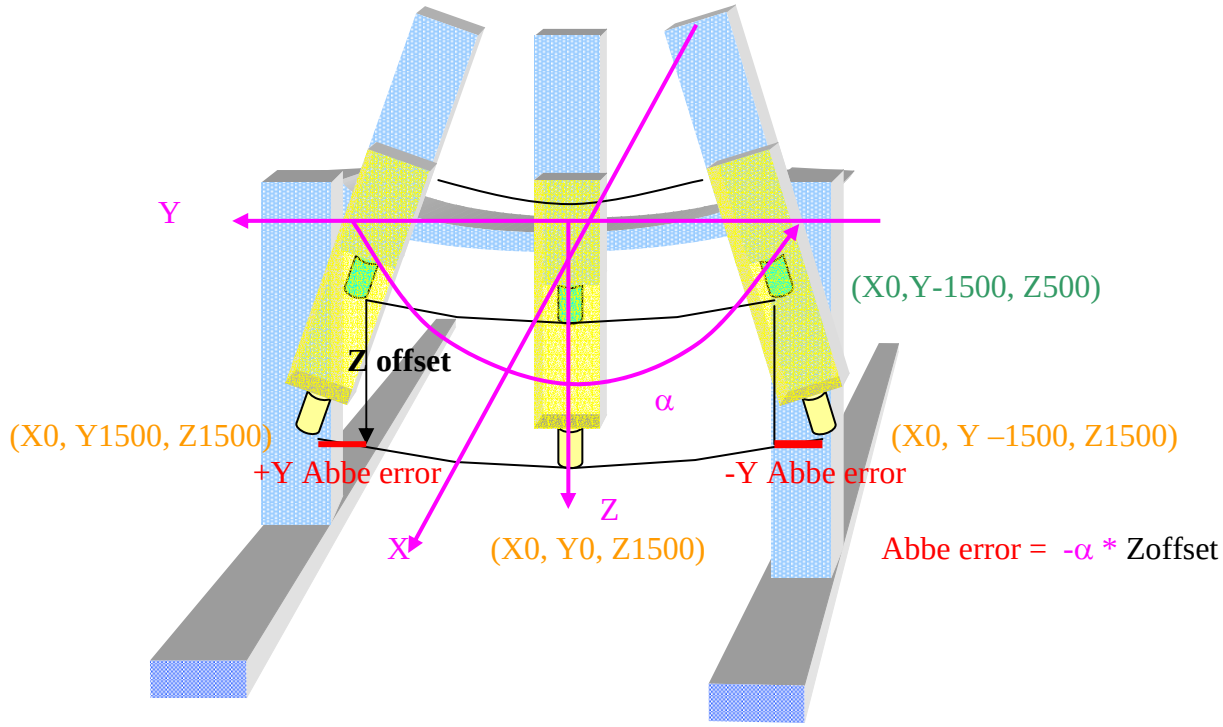
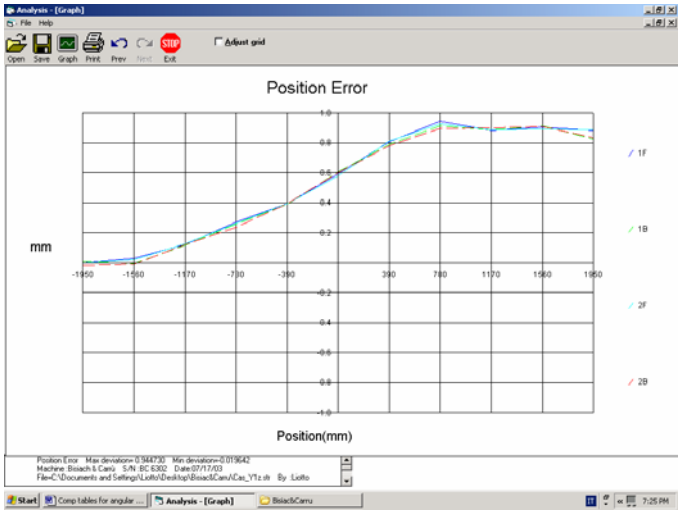
Sinumeric 840D CNC Angular Error Compensation using SAG compensation tables (DRAFT)



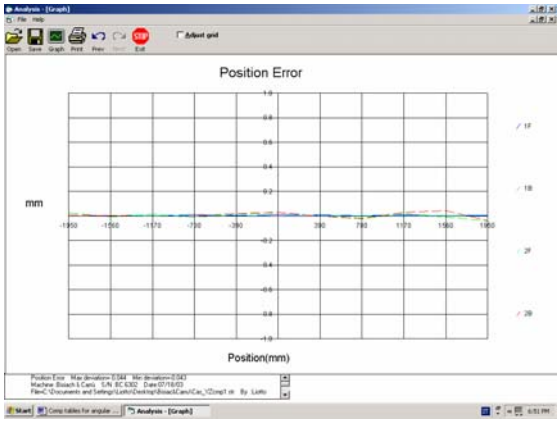
The task is to compensate the position error of Y axis in all the Y and Z positions in a machine affected by a large Abbe offset due to the bending of the transversal axis Y.

Error is depending by angular error moving along Y multiplied by Abbe offset along Z.
It needs a minimum of 3 Tables to be compensated. The first table contains the angular error along the axis that is to be compensated and is moltiplied by the second table that contains the indication of the lenght of the perpendicular axis, zero is at the position in where pitch error is compensated by the third table. Third table contains the pitch error.

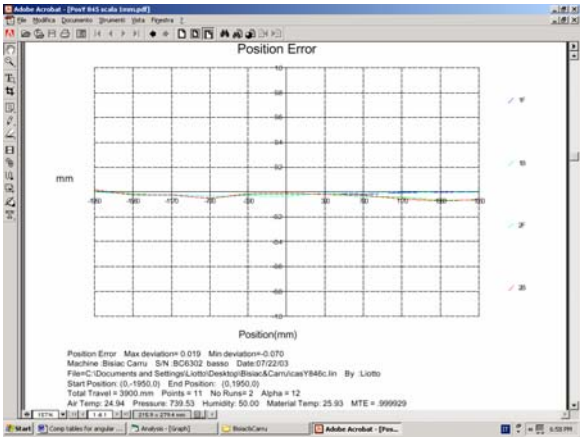


Position Error before compensation at Z= 500mm

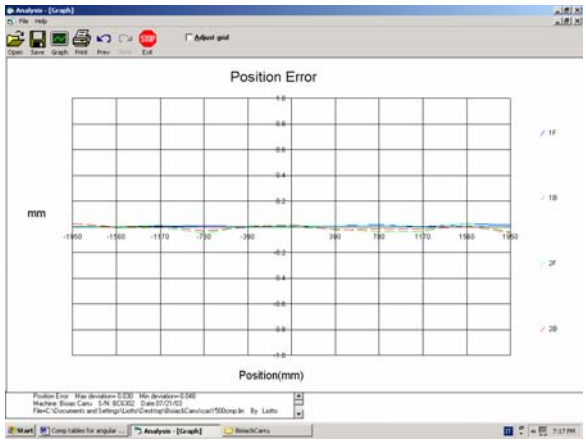
RESULTS OF COMPENSATION of linear error on Yaxis at different positions of Z axis



Y position error (Z= 500 X = -2000mm)



Y position error (Z =500 X= 2700mm)



Y position error (Z =850 X= 2700mm)

CONCLUSION

The angular (SAG) compensation of the Y axis in the XY plane has been implemented after a singular laser measurement performed by a dual beam LDDM™ (Laser Doppler Displacement Meter) along the Y axis. The positioning error of the Y axis in the working volume is improved more than 1000 % after angular compensation.