Servo motor performance tests

Test environment

Tested on Thursday 8th of September 2005

Defined parameters:

Motor:	MAC050	
Firmware:	v7.2	
Parameters:	v1.06	
Power supply:	24,0	V
Stage:	Y-axis	
Spindle pitch:	2,5	mm
Gear ratio:	3,125	
Encoder:	4096	counts
Sample time:	0,002	s

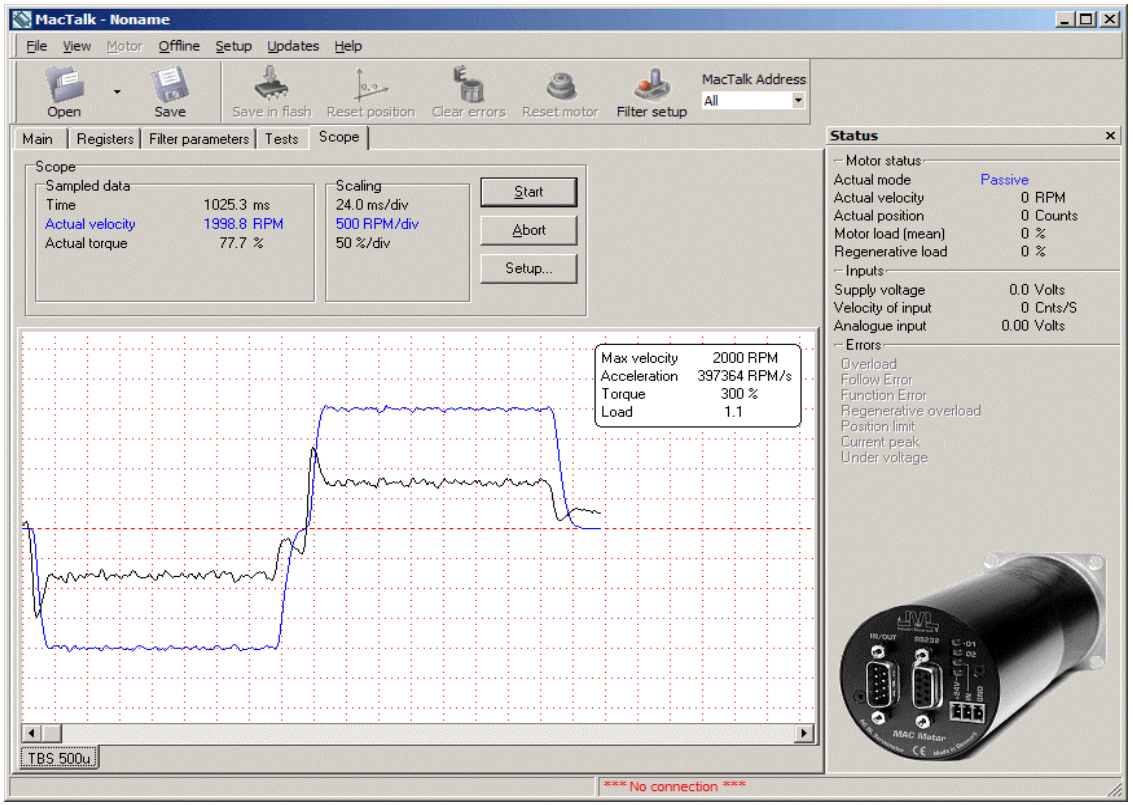
Test parameters:

Motor speed:	2000,0	rpm
Motor count:	100000	counts

Calculated values:

Motor ratio 1:	1,25	R > mm
Motor ratio 2:	75	RPM > mm/s
Sample frequency:	520,8	Hz
Test speed:	26,7	mm/s
Test distance:	19,5	mm

Following servo motor performance tests were made with a computer connected to the MAC050 motor using the serial interface cable RS232-9-1-MAC. The software used for obtaining the sampled data was MacTalk v1.34B8 as provided by JVL - the servo motor manufacturer. The equipment used was a Condor 100-3-Y20.



Servo motor performance tests

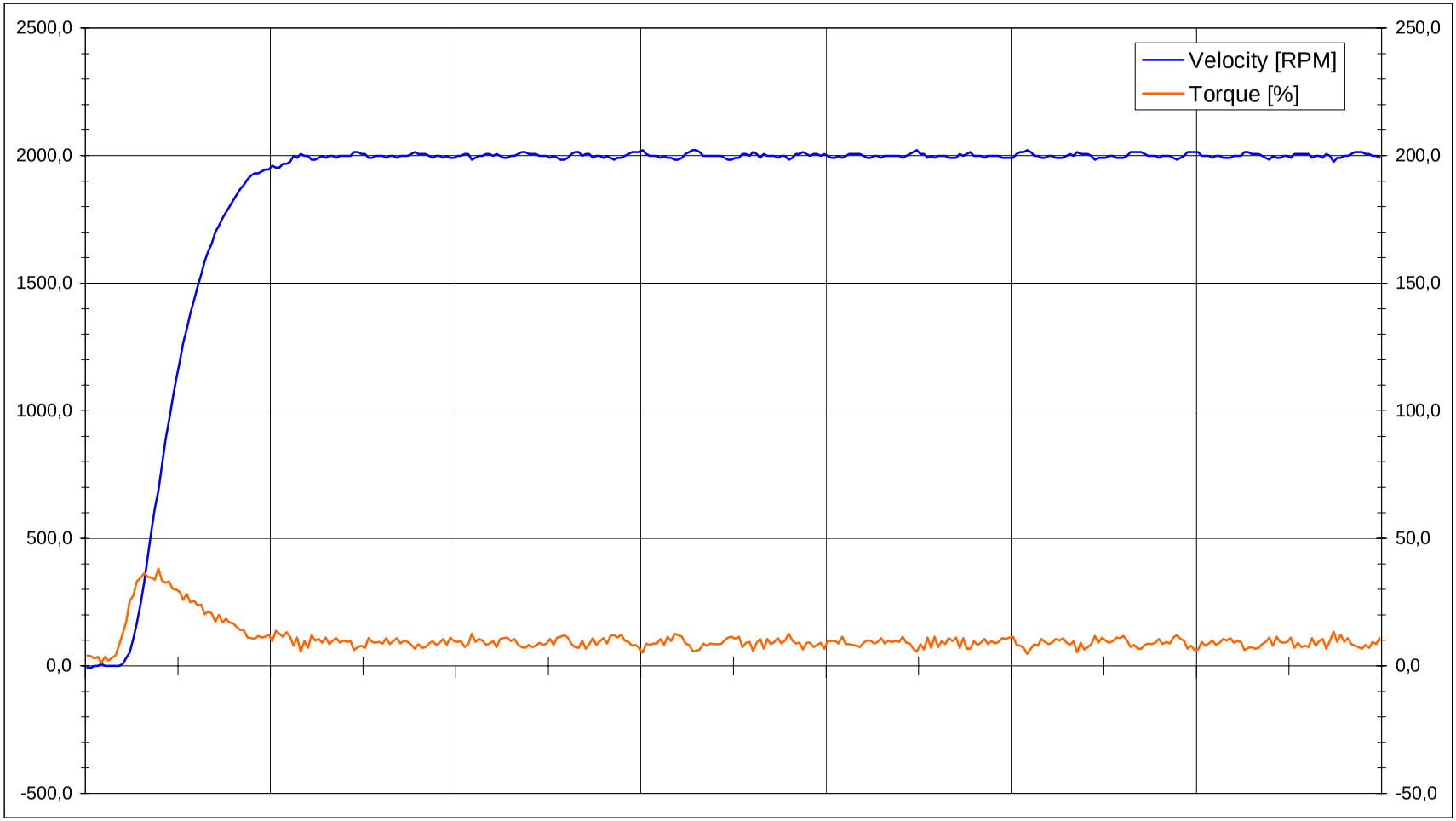
Test results for:

Motor unloaded

Full speed variation: -1,2% 1,1% Velocity

8,8% Torque

Graph:



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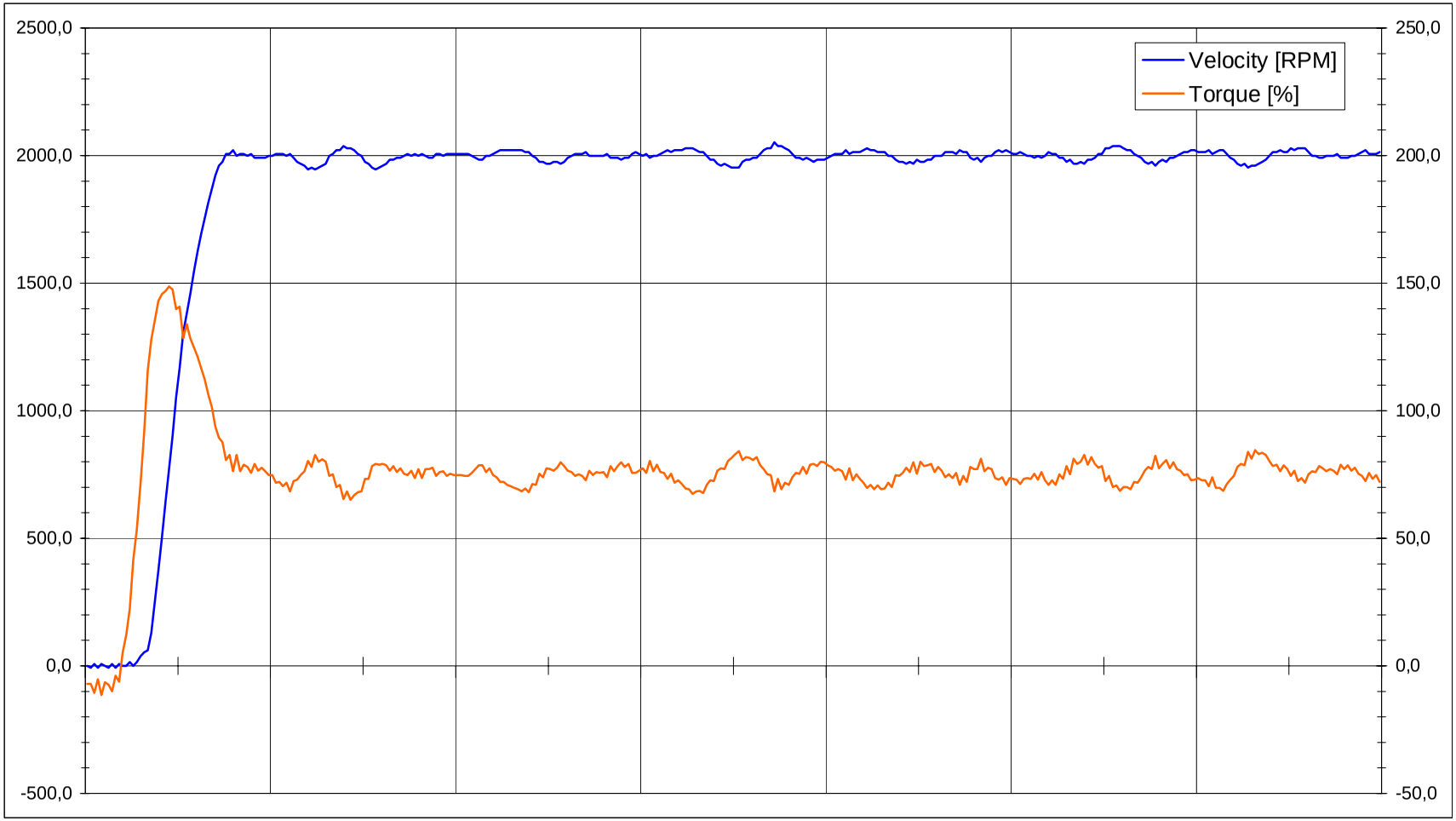
Test results for:

Motor inside Condor (connected to Y-axis)

Full speed variation: -2,4% 2,6% Velocity

17,0% Torque

Graph:



Servo motor performance tests

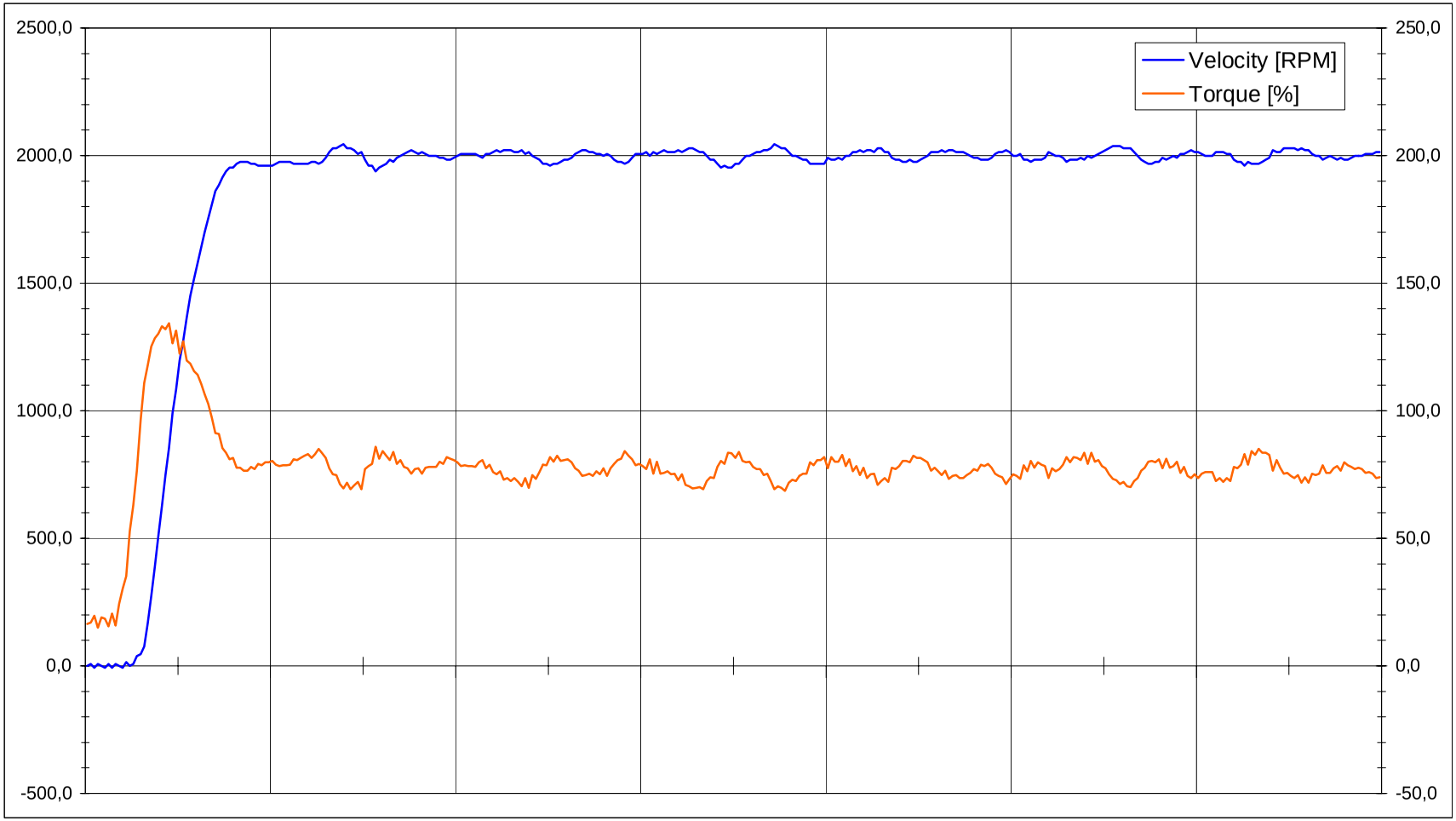
Test results for:

Total Ball Shear, 300µm balls (approx. 9kgf)

Full speed variation: -2,4% 2,2% Velocity

16,4% Torque

Graph:



Servo motor performance tests

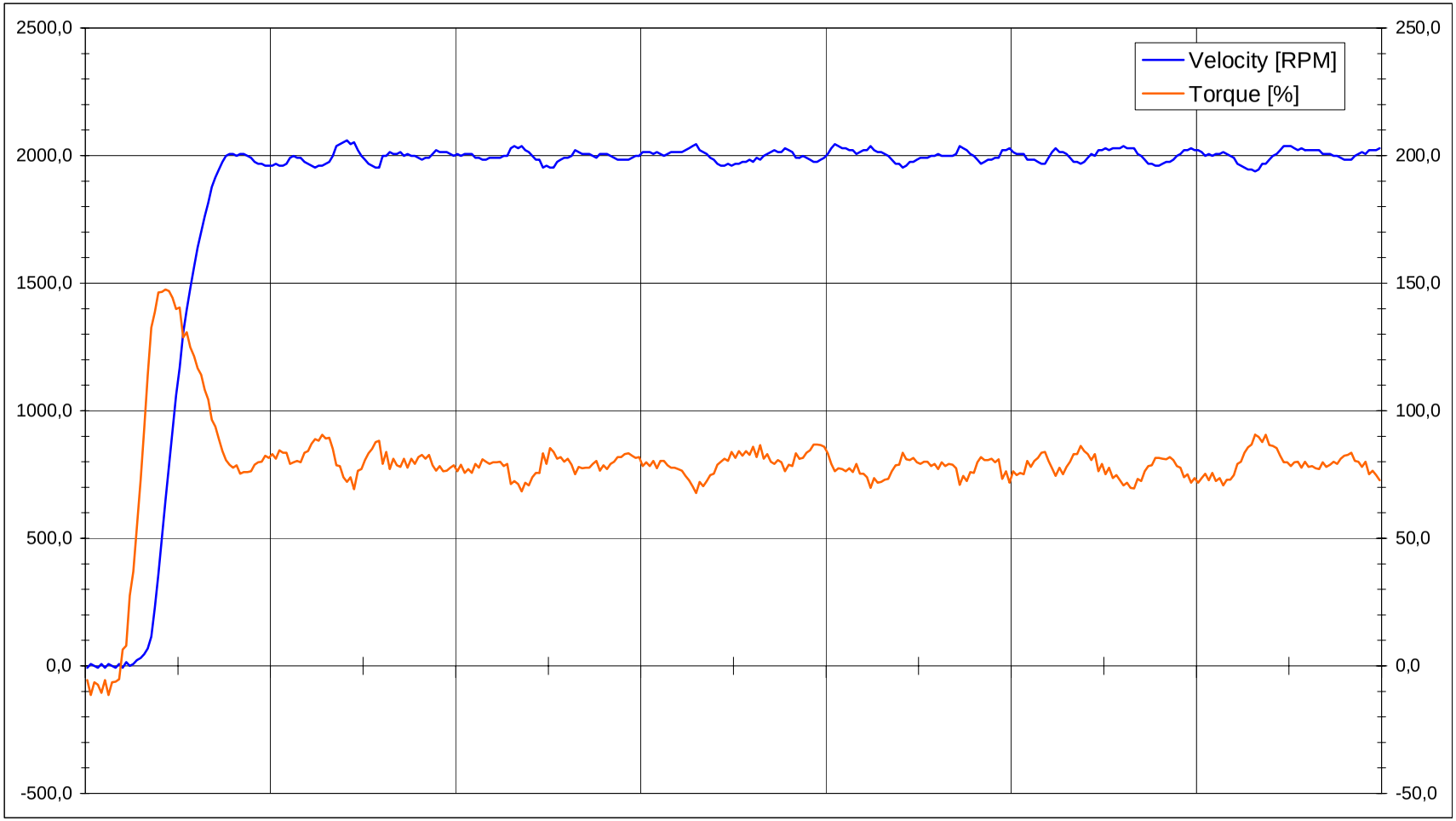
Test results for:

Total Ball Shear, 500µm balls (approx. 12kgf)

Full speed variation: -3,1% 2,2% Velocity

22,9% Torque

Graph:



Servo motor performance tests

Test results for:

Die Shear, 6mm (approx. 60kgf)

Full speed variation: -4,6% 14,8% Velocity
80,6% Torque

Graph: