

Regression test

Test run started 2025-08-26T23:50:22Z

Ashes version: 3.32.0

Decay			
Decay test with uniform wind and a load applied at the top of the tower released after 30 sec			
Load case	Time series	Error score	
2 ms	Power (aero)	0.000000	PASS
	Torque (aero)	0.000000	PASS
	Thrust (aero)	0.000000	PASS
	RPM	0.000000	PASS
	TSR	0.000000	PASS
	Representative demanded pitch angle	0.000000	PASS
	Power coef. (CP)	0.000000	PASS
	Thrust coef. (CT)	0.000000	PASS
	Torque coef. (CQ)	0.000000	PASS
	Tip speed	0.000000	PASS
	1P (one revolution)	0.000000	PASS
	nP (blade passing)	0.000000	PASS
	Azimuth angle	0.000000	PASS
	Rotation per timestep	0.000000	PASS
	Wind speed at hub, magnitude	0.000000	PASS
	Wind angle at hub	0.000000	PASS
	Yaw angle relative to forward	0.000000	PASS
	Yaw angle to reference direction	0.000000	PASS
	Yaw error	0.000000	PASS
	Torque about yaw axis	0.000000	PASS
	Power (electrical)	0.000000	PASS
	Torque	0.000000	PASS
	Torque on main shaft	0.000000	PASS
	Torque diff. on main shaft	0.000000	PASS
	RPM	0.000000	PASS
	Filtered RPM	0.000000	PASS
	Electricity production	0.000000	PASS
	Region	0.000000	PASS
	Demanded collective pitch angle	0.000000	PASS
	Cumulative demanded collective pitch angle	0.000000	PASS
	Demanded collective pitch angle rate	0.000000	PASS
	Set point	0.000000	PASS
	RPM error	0.000000	PASS

	P term	0.000000	PASS
	I term	0.000000	PASS
	D term	0.000000	PASS
	Gain scheduling factor	0.000000	PASS
	Root force (magnitude)	0.000000	PASS
	Root moment (magnitude)	0.000000	PASS
	Root moment (out-of-plane)	0.000000	PASS
	Root moment (in-plane)	0.000000	PASS
	Root moment about shaft	0.000000	PASS
	Pitch angle	0.000000	PASS
	Tip deflection (out-of-plane)	0.000000	PASS
	Tip deflection (in-plane)	0.000000	PASS
	Root torque	0.000000	PASS
	Position (x)	0.000000	PASS
	Position (y)	0.000000	PASS
	Position (z)	0.000000	PASS
	Displacement (u)	0.000000	PASS
	Displacement (v)	0.000000	PASS
	Displacement (w)	0.000000	PASS
	Displacement magnitude	0.000000	PASS
	Speed	0.000000	PASS
	Acceleration, magnitude	0.000000	PASS
	Rotational displacement (ru)	0.000000	PASS
	Rotational displacement (rv)	0.000000	PASS
	Rotational displacement (rw)	0.000000	PASS
	Rotational displacement magnitude	0.000000	PASS
	Rotational speed	0.000000	PASS
	Rotational acceleration mag	0.000000	PASS
	Displacement period	0.000000	PASS
	Displacement logarithmic decrement	0.000000	PASS
	Displacement damping ratio	0.000000	PASS
6 ms	Power (aero)	0.000000	PASS
	Torque (aero)	0.000000	PASS
	Thrust (aero)	0.000000	PASS
	RPM	0.000000	PASS
	TSR	0.000000	PASS
	Representative demanded pitch angle	0.000000	PASS
	Power coef. (CP)	0.000000	PASS
	Thrust coef. (CT)	0.000000	PASS
	Torque coef. (CQ)	0.000000	PASS
	Tip speed	0.000000	PASS
	1P (one revolution)	0.000000	PASS

	nP (blade passing)	0.000000	PASS
	Azimuth angle	0.000000	PASS
	Rotation per timestep	0.000000	PASS
	Wind speed at hub, magnitude	0.000000	PASS
	Wind angle at hub	0.000000	PASS
	Yaw angle relative to forward	0.000000	PASS
	Yaw angle to reference direction	0.000000	PASS
	Yaw error	0.000000	PASS
	Torque about yaw axis	0.000000	PASS
	Power (electrical)	0.000000	PASS
	Torque	0.000000	PASS
	Torque on main shaft	0.000000	PASS
	Torque diff. on main shaft	0.000000	PASS
	RPM	0.000000	PASS
	Filtered RPM	0.000000	PASS
	Electricity production	0.000000	PASS
	Region	0.000000	PASS
	Demanded collective pitch angle	0.000000	PASS
	Cumulative demanded collective pitch angle	0.000000	PASS
	Demanded collective pitch angle rate	0.000000	PASS
	Set point	0.000000	PASS
	RPM error	0.000000	PASS
	P term	0.000000	PASS
	I term	0.000000	PASS
	D term	0.000000	PASS
	Gain scheduling factor	0.000000	PASS
	Root force (magnitude)	0.000000	PASS
	Root moment (magnitude)	0.000000	PASS
	Root moment (out-of-plane)	0.000000	PASS
	Root moment (in-plane)	0.000000	PASS
	Root moment about shaft	0.000000	PASS
	Pitch angle	0.000000	PASS
	Tip deflection (out-of-plane)	0.000000	PASS
	Tip deflection (in-plane)	0.000000	PASS
	Root torque	0.000000	PASS
	Position (x)	0.000000	PASS
	Position (y)	0.000000	PASS
	Position (z)	0.000000	PASS
	Displacement (u)	0.000000	PASS
	Displacement (v)	0.000000	PASS
	Displacement (w)	0.000000	PASS
	Displacement magnitude	0.000000	PASS

			PASS
	Speed	0.000000	PASS
	Acceleration, magnitude	0.000000	PASS
	Rotational displacement (ru)	0.000000	PASS
	Rotational displacement (rv)	0.000000	PASS
	Rotational displacement (rw)	0.000000	PASS
	Rotational displacement magnitude	0.000000	PASS
	Rotational speed	0.000000	PASS
	Rotational acceleration mag	0.000000	PASS
	Displacement period	0.000000	PASS
	Displacement logarithmic decrement	0.000000	PASS
	Displacement damping ratio	0.000000	PASS
10 ms	Power (aero)	0.000000	PASS
	Torque (aero)	0.000000	PASS
	Thrust (aero)	0.000000	PASS
	RPM	0.000000	PASS
	TSR	0.000000	PASS
	Representative demanded pitch angle	0.000000	PASS
	Power coef. (CP)	0.000000	PASS
	Thrust coef. (CT)	0.000000	PASS
	Torque coef. (CQ)	0.000000	PASS
	Tip speed	0.000000	PASS
	1P (one revolution)	0.000000	PASS
	nP (blade passing)	0.000000	PASS
	Azimuth angle	0.000000	PASS
	Rotation per timestep	0.000000	PASS
	Wind speed at hub, magnitude	0.000000	PASS
	Wind angle at hub	0.000000	PASS
	Yaw angle relative to forward	0.000000	PASS
	Yaw angle to reference direction	0.000000	PASS
	Yaw error	0.000000	PASS
	Torque about yaw axis	0.000000	PASS
	Power (electrical)	0.000000	PASS
	Torque	0.000000	PASS
	Torque on main shaft	0.000000	PASS
	Torque diff. on main shaft	0.000000	PASS
	RPM	0.000000	PASS
	Filtered RPM	0.000000	PASS
	Electricity production	0.000000	PASS
	Region	0.000000	PASS
	Demanded collective pitch angle	0.000000	PASS
	Cumulative demanded collective pitch	0.000000	PASS

	angle		
	Demanded collective pitch angle rate	0.000000	PASS
	Set point	0.000000	PASS
	RPM error	0.000000	PASS
	P term	0.000000	PASS
	I term	0.000000	PASS
	D term	0.000000	PASS
	Gain scheduling factor	0.000000	PASS
	Root force (magnitude)	0.000000	PASS
	Root moment (magnitude)	0.000000	PASS
	Root moment (out-of-plane)	0.000000	PASS
	Root moment (in-plane)	0.000000	PASS
	Root moment about shaft	0.000000	PASS
	Pitch angle	0.000000	PASS
	Tip deflection (out-of-plane)	0.000000	PASS
	Tip deflection (in-plane)	0.000000	PASS
	Root torque	0.000000	PASS
	Position (x)	0.000000	PASS
	Position (y)	0.000000	PASS
	Position (z)	0.000000	PASS
	Displacement (u)	0.000000	PASS
	Displacement (v)	0.000000	PASS
	Displacement (w)	0.000000	PASS
	Displacement magnitude	0.000000	PASS
	Speed	0.000000	PASS
	Acceleration, magnitude	0.000000	PASS
	Rotational displacement (ru)	0.000000	PASS
	Rotational displacement (rv)	0.000000	PASS
	Rotational displacement (rw)	0.000000	PASS
	Rotational displacement magnitude	0.000000	PASS
	Rotational speed	0.000000	PASS
	Rotational acceleration mag	0.000000	PASS
	Displacement period	0.000000	PASS
	Displacement logarithmic decrement	0.000000	PASS
	Displacement damping ratio	0.000000	PASS
14 ms	Power (aero)	0.000000	PASS
	Torque (aero)	0.000000	PASS
	Thrust (aero)	0.000000	PASS
	RPM	0.000000	PASS
	TSR	0.000000	PASS
	Representative demanded pitch angle	0.000000	PASS
	Power coef. (CP)	0.000000	PASS

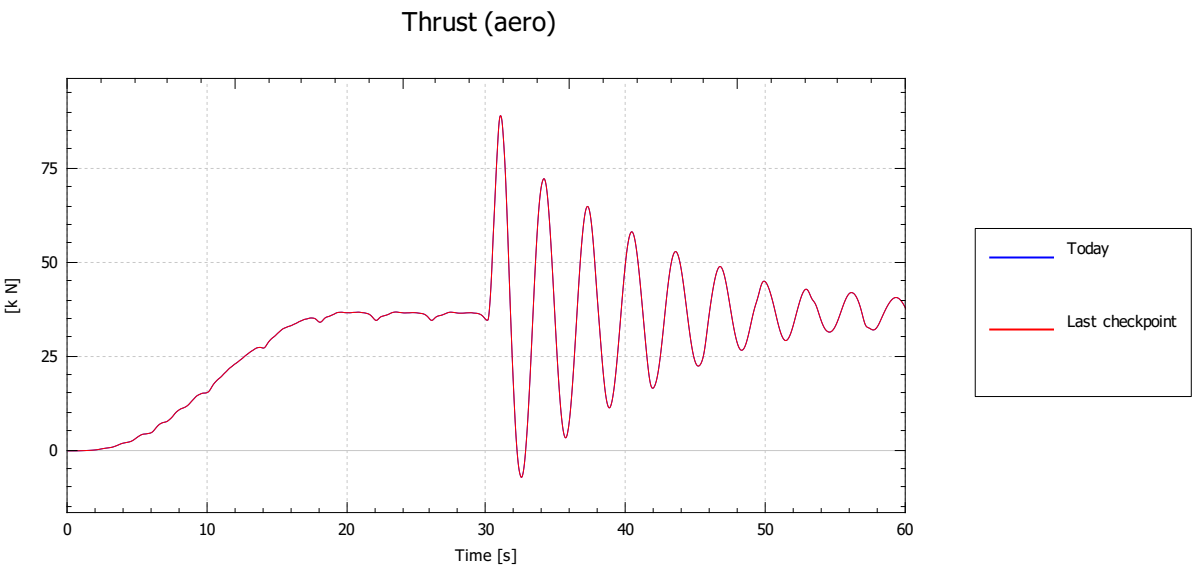
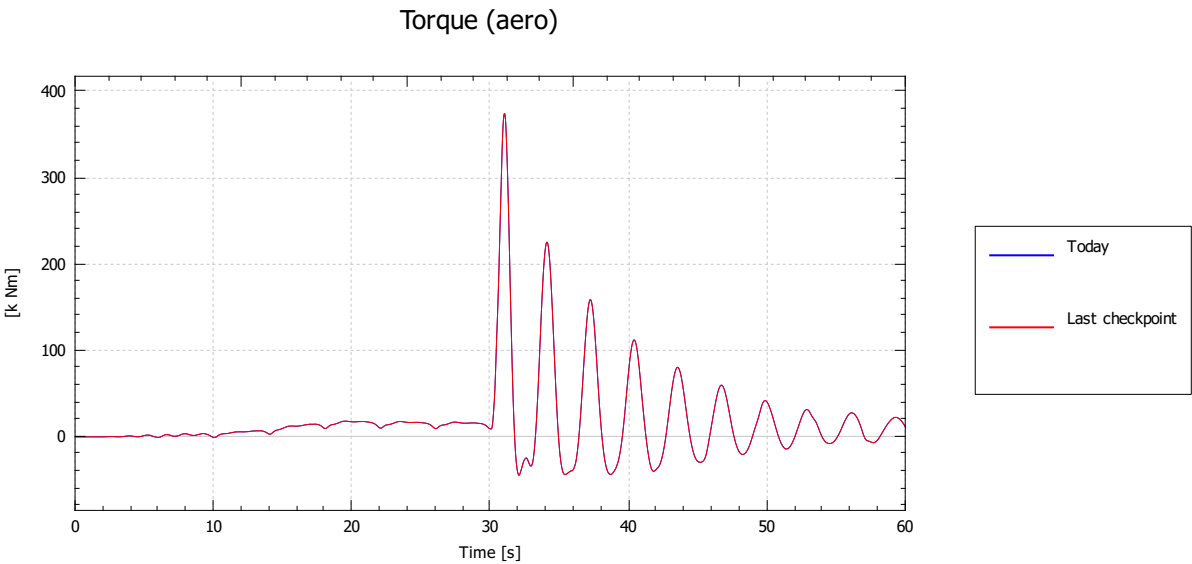
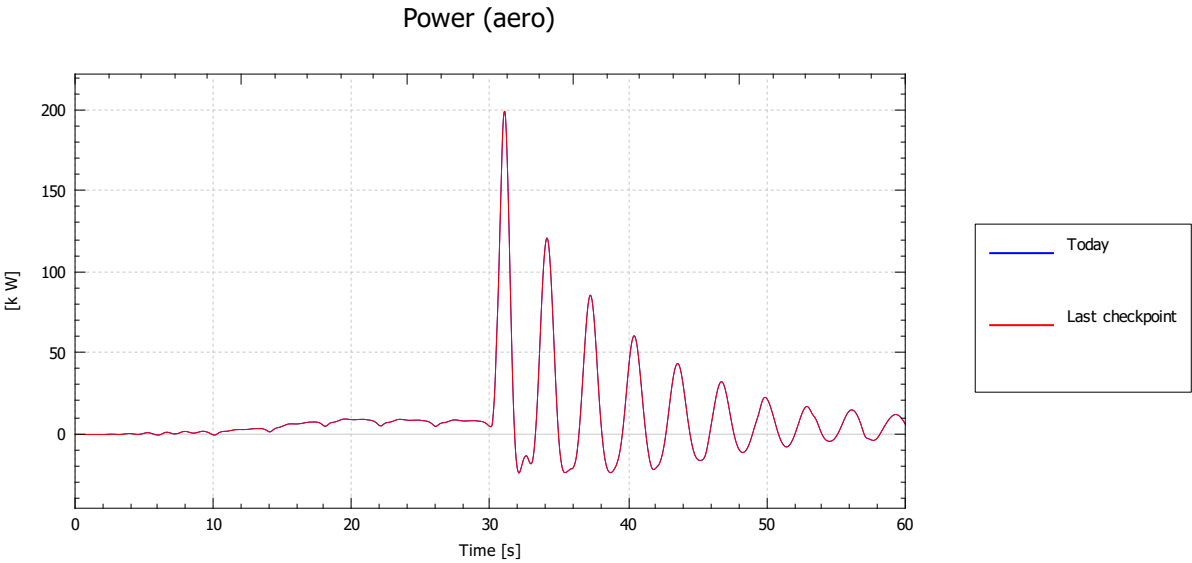
	Thrust coef. (CT)	0.000000	PASS
	Torque coef. (CQ)	0.000000	PASS
	Tip speed	0.000000	PASS
	1P (one revolution)	0.000000	PASS
	nP (blade passing)	0.000000	PASS
	Azimuth angle	0.000000	PASS
	Rotation per timestep	0.000000	PASS
	Wind speed at hub, magnitude	0.000000	PASS
	Wind angle at hub	0.000000	PASS
	Yaw angle relative to forward	0.000000	PASS
	Yaw angle to reference direction	0.000000	PASS
	Yaw error	0.000000	PASS
	Torque about yaw axis	0.000000	PASS
	Power (electrical)	0.000000	PASS
	Torque	0.000000	PASS
	Torque on main shaft	0.000000	PASS
	Torque diff. on main shaft	0.000000	PASS
	RPM	0.000000	PASS
	Filtered RPM	0.000000	PASS
	Electricity production	0.000000	PASS
	Region	0.000000	PASS
	Demanded collective pitch angle	0.000000	PASS
	Cumulative demanded collective pitch angle	0.000000	PASS
	Demanded collective pitch angle rate	0.000000	PASS
	Set point	0.000000	PASS
	RPM error	0.000000	PASS
	P term	0.000000	PASS
	I term	0.000000	PASS
	D term	0.000000	PASS
	Gain scheduling factor	0.000000	PASS
	Root force (magnitude)	0.000000	PASS
	Root moment (magnitude)	0.000000	PASS
	Root moment (out-of-plane)	0.000000	PASS
	Root moment (in-plane)	0.000000	PASS
	Root moment about shaft	0.000000	PASS
	Pitch angle	0.000000	PASS
	Tip deflection (out-of-plane)	0.000000	PASS
	Tip deflection (in-plane)	0.000000	PASS
	Root torque	0.000000	PASS
	Position (x)	0.000000	PASS
	Position (y)	0.000000	PASS
	Position (z)	0.000000	PASS

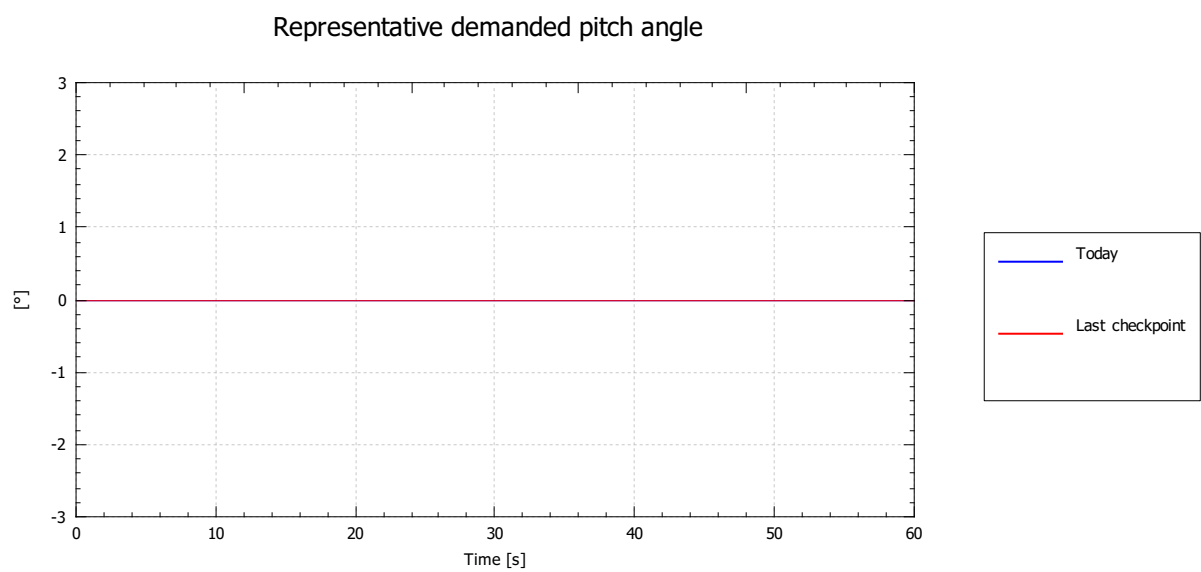
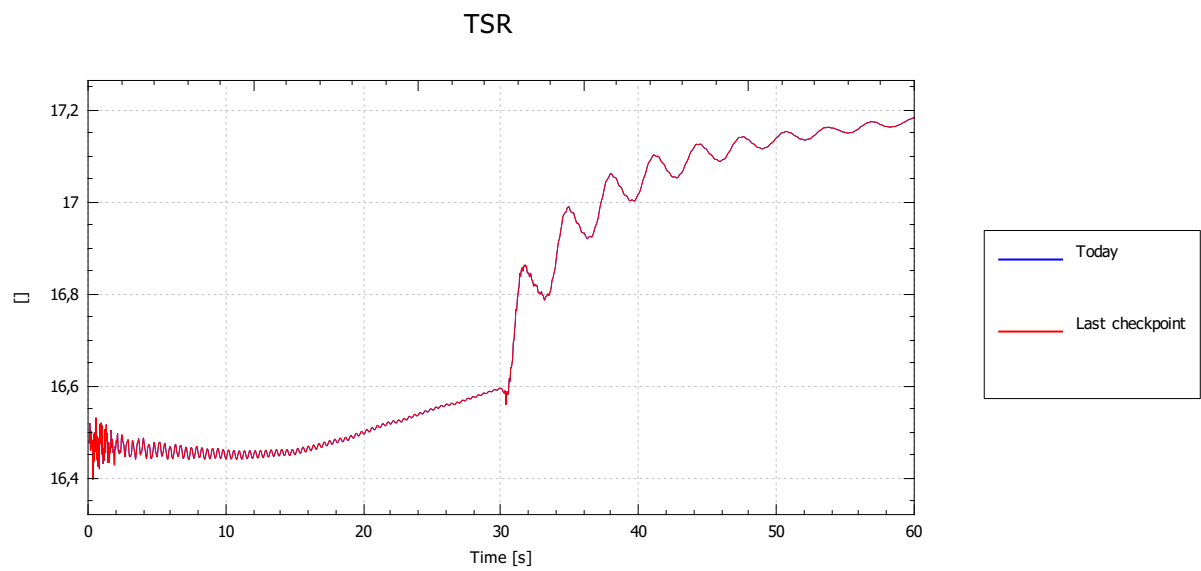
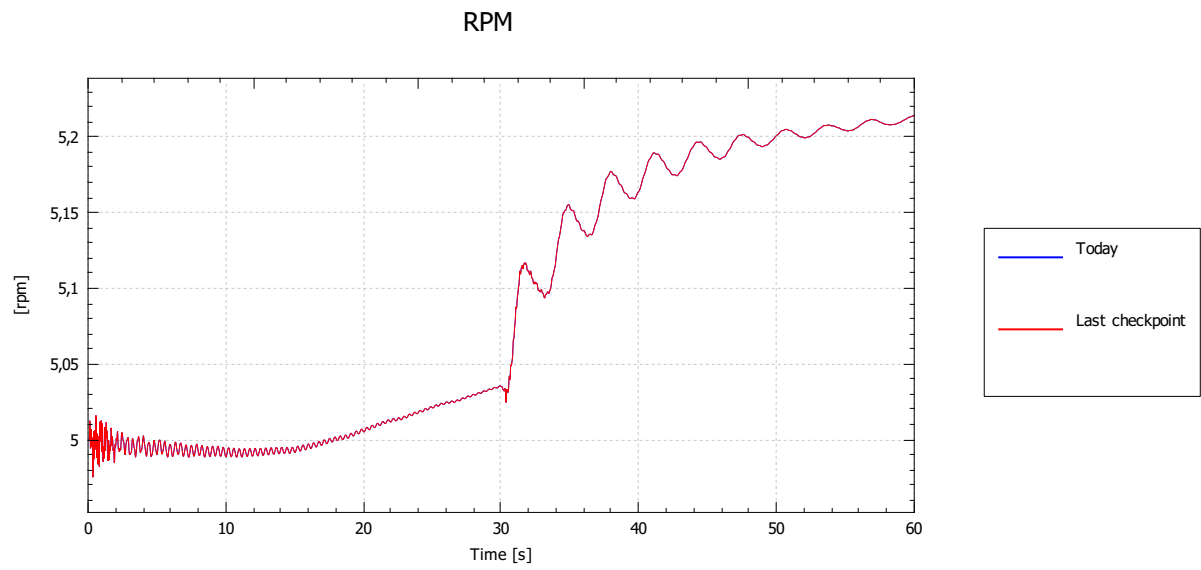
			PASS
	Displacement (u)	0.000000	PASS
	Displacement (v)	0.000000	PASS
	Displacement (w)	0.000000	PASS
	Displacement magnitude	0.000000	PASS
	Speed	0.000000	PASS
	Acceleration, magnitude	0.000000	PASS
	Rotational displacement (ru)	0.000000	PASS
	Rotational displacement (rv)	0.000000	PASS
	Rotational displacement (rw)	0.000000	PASS
	Rotational displacement magnitude	0.000000	PASS
	Rotational speed	0.000000	PASS
	Rotational acceleration mag	0.000000	PASS
	Displacement period	0.000000	PASS
	Displacement logarithmic decrement	0.000000	PASS
	Displacement damping ratio	0.000000	PASS
18 ms	Power (aero)	0.000000	PASS
	Torque (aero)	0.000000	PASS
	Thrust (aero)	0.000000	PASS
	RPM	0.000000	PASS
	TSR	0.000000	PASS
	Representative demanded pitch angle	0.000000	PASS
	Power coef. (CP)	0.000000	PASS
	Thrust coef. (CT)	0.000000	PASS
	Torque coef. (CQ)	0.000000	PASS
	Tip speed	0.000000	PASS
	1P (one revolution)	0.000000	PASS
	nP (blade passing)	0.000000	PASS
	Azimuth angle	0.000000	PASS
	Rotation per timestep	0.000000	PASS
	Wind speed at hub, magnitude	0.000000	PASS
	Wind angle at hub	0.000000	PASS
	Yaw angle relative to forward	0.000000	PASS
	Yaw angle to reference direction	0.000000	PASS
	Yaw error	0.000000	PASS
	Torque about yaw axis	0.000000	PASS
	Power (electrical)	0.000000	PASS
	Torque	0.000000	PASS
	Torque on main shaft	0.000000	PASS
	Torque diff. on main shaft	0.000000	PASS
	RPM	0.000000	PASS
	Filtered RPM	0.000000	PASS

	Electricity production	0.000000	PASS
	Region	0.000000	PASS
	Demanded collective pitch angle	0.000000	PASS
	Cumulative demanded collective pitch angle	0.000000	PASS
	Demanded collective pitch angle rate	0.000000	PASS
	Set point	0.000000	PASS
	RPM error	0.000000	PASS
	P term	0.000000	PASS
	I term	0.000000	PASS
	D term	0.000000	PASS
	Gain scheduling factor	0.000000	PASS
	Root force (magnitude)	0.000000	PASS
	Root moment (magnitude)	0.000000	PASS
	Root moment (out-of-plane)	0.000000	PASS
	Root moment (in-plane)	0.000000	PASS
	Root moment about shaft	0.000000	PASS
	Pitch angle	0.000000	PASS
	Tip deflection (out-of-plane)	0.000000	PASS
	Tip deflection (in-plane)	0.000000	PASS
	Root torque	0.000000	PASS
	Position (x)	0.000000	PASS
	Position (y)	0.000000	PASS
	Position (z)	0.000000	PASS
	Displacement (u)	0.000000	PASS
	Displacement (v)	0.000000	PASS
	Displacement (w)	0.000000	PASS
	Displacement magnitude	0.000000	PASS
	Speed	0.000000	PASS
	Acceleration, magnitude	0.000000	PASS
	Rotational displacement (ru)	0.000000	PASS
	Rotational displacement (rv)	0.000000	PASS
	Rotational displacement (rw)	0.000000	PASS
	Rotational displacement magnitude	0.000000	PASS
	Rotational speed	0.000000	PASS
	Rotational acceleration mag	0.000000	PASS
	Displacement period	0.000000	PASS
	Displacement logarithmic decrement	0.000000	PASS
	Displacement damping ratio	0.000000	PASS

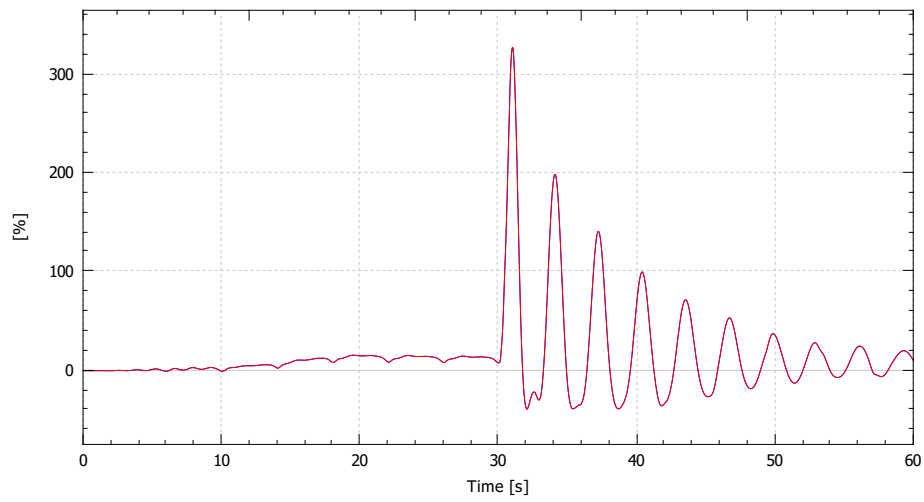
Load case: 2 ms

Rotor

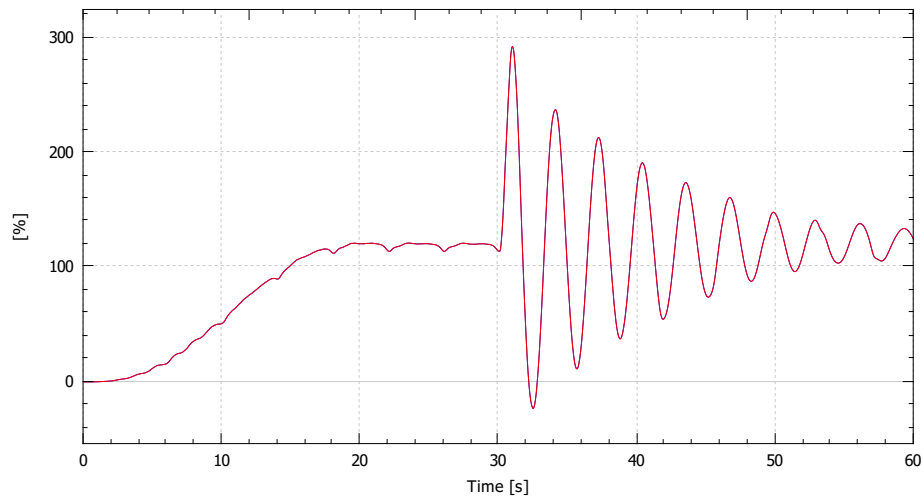




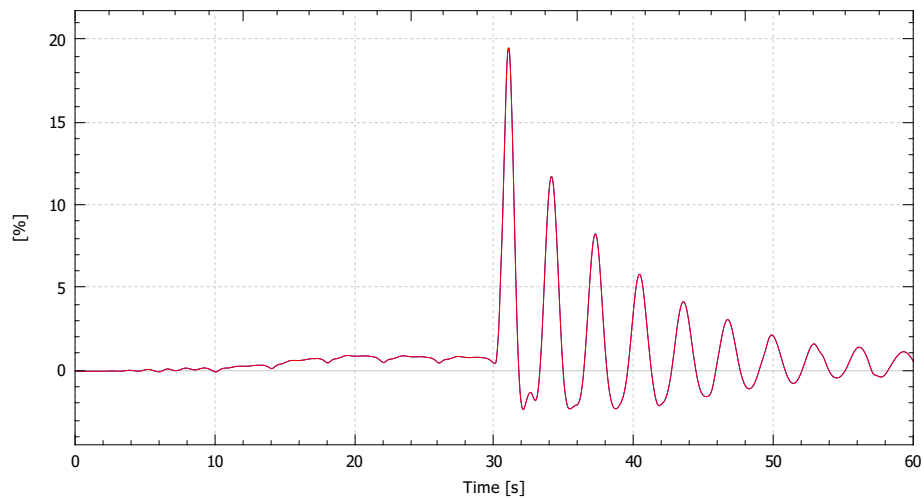
Power coef. (CP)



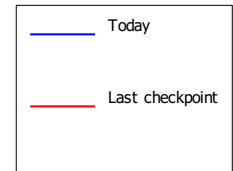
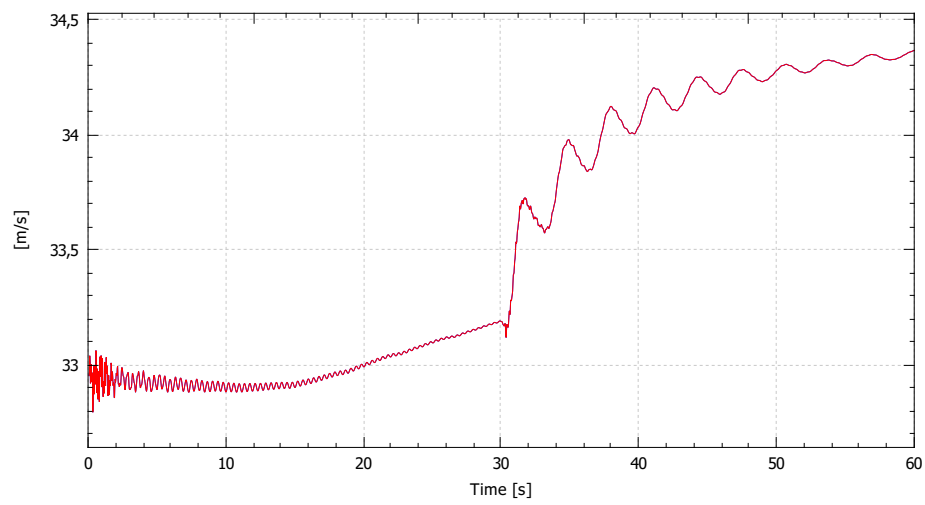
Thrust coef. (CT)



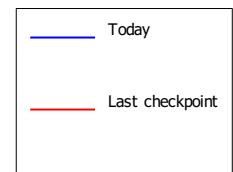
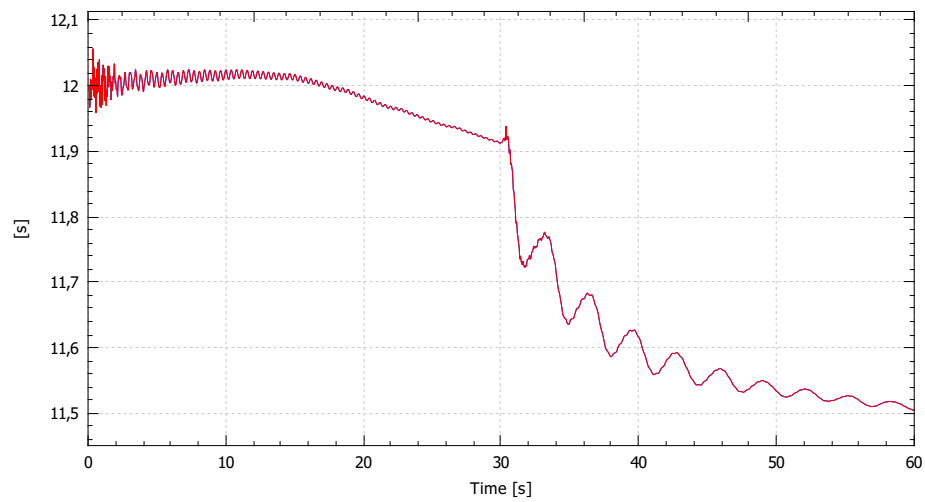
Torque coef. (CQ)



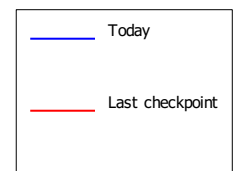
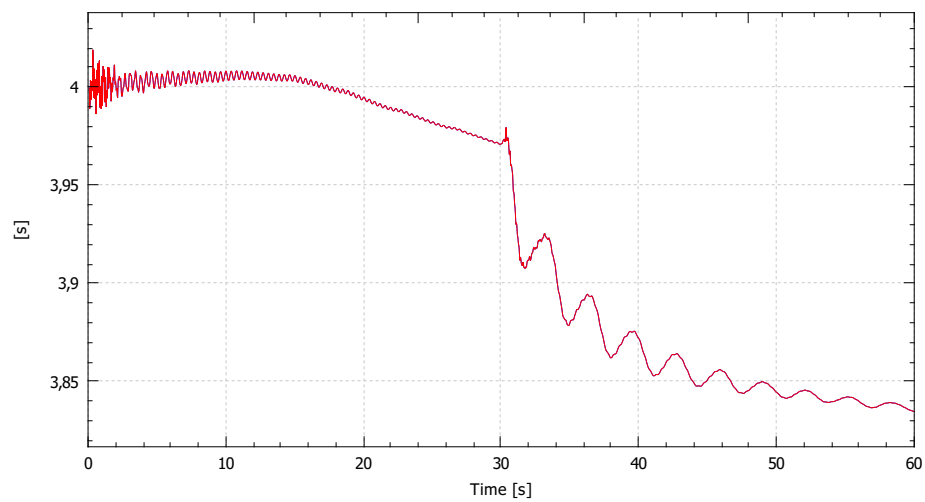
Tip speed



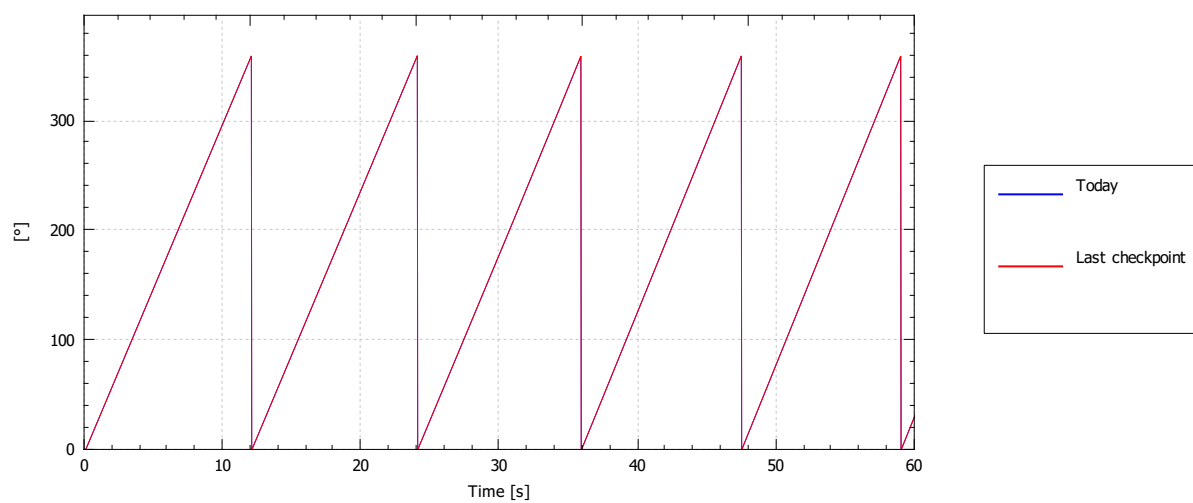
1P (one revolution)



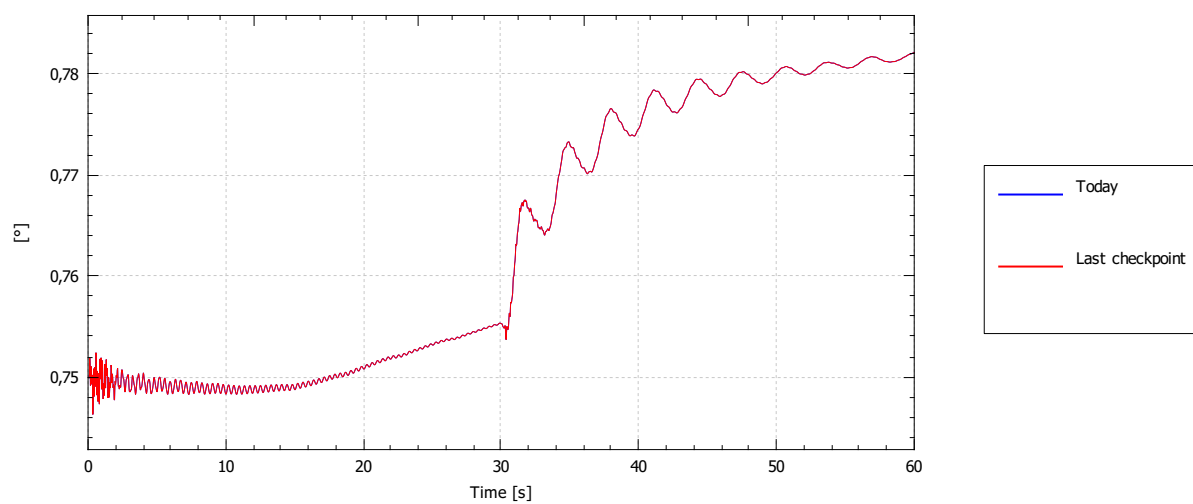
nP (blade passing)



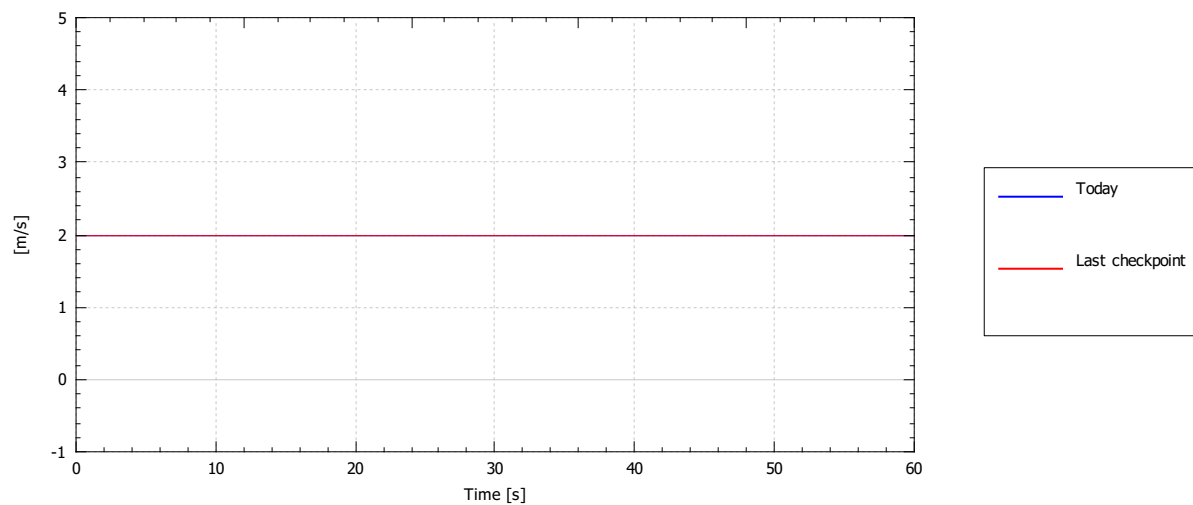
Azimuth angle



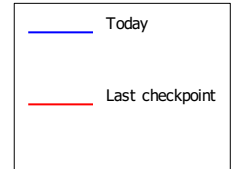
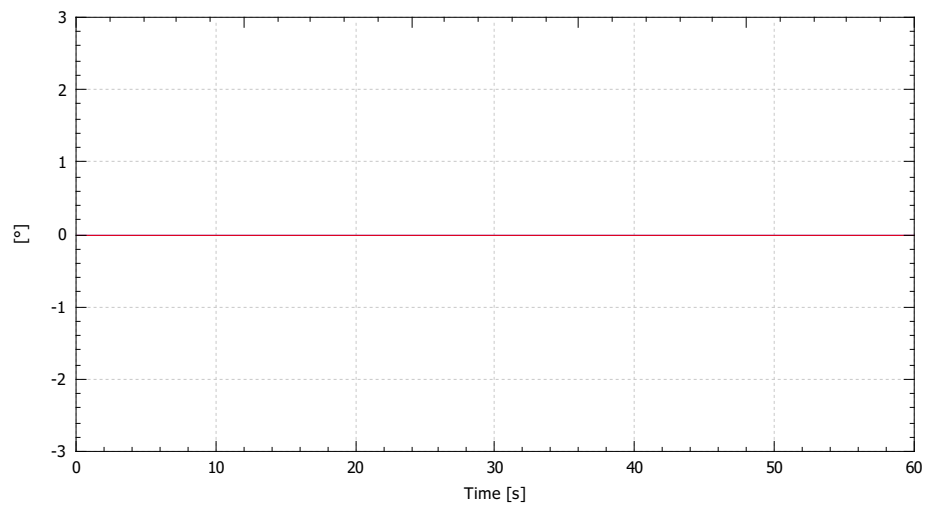
Rotation per timestep



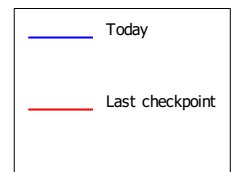
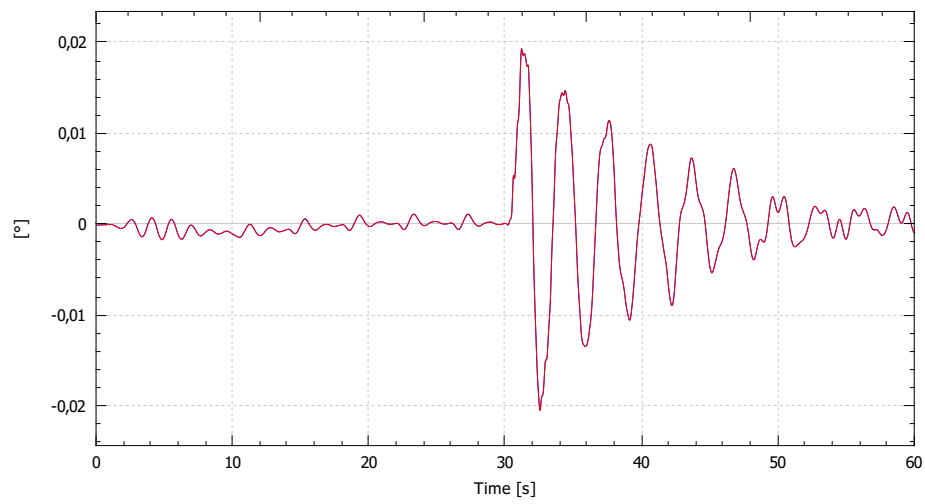
Wind speed at hub, magnitude



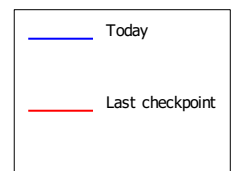
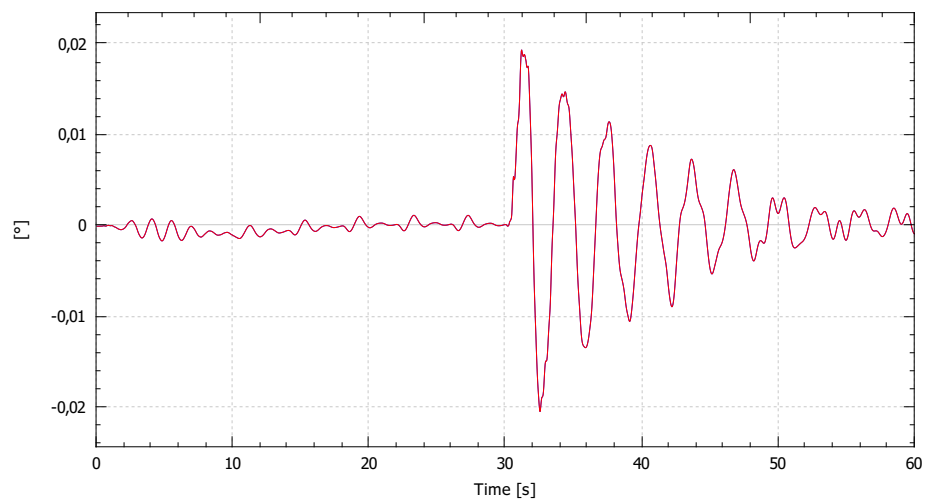
Wind angle at hub



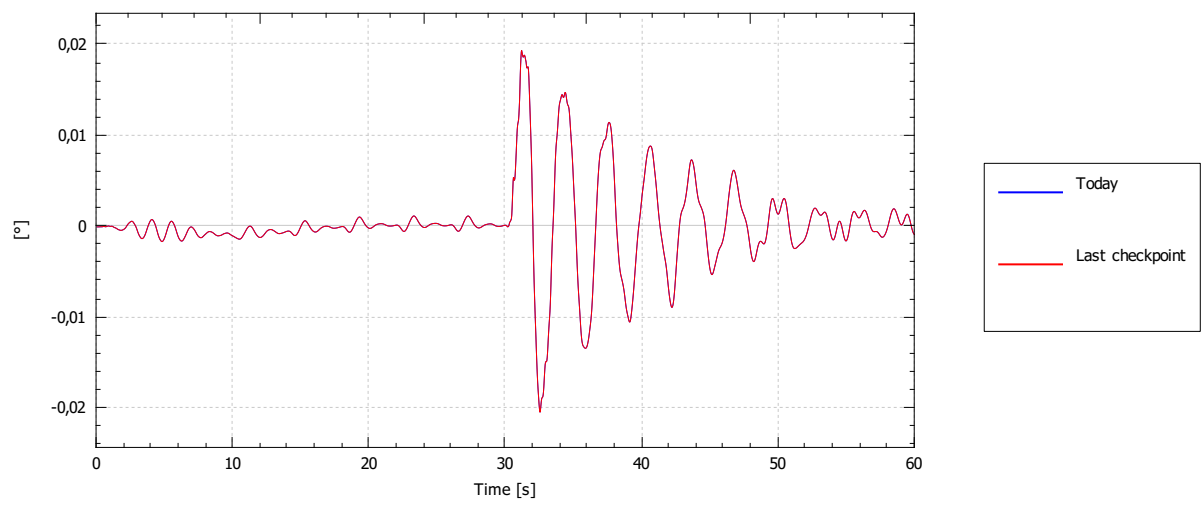
Yaw angle relative to forward



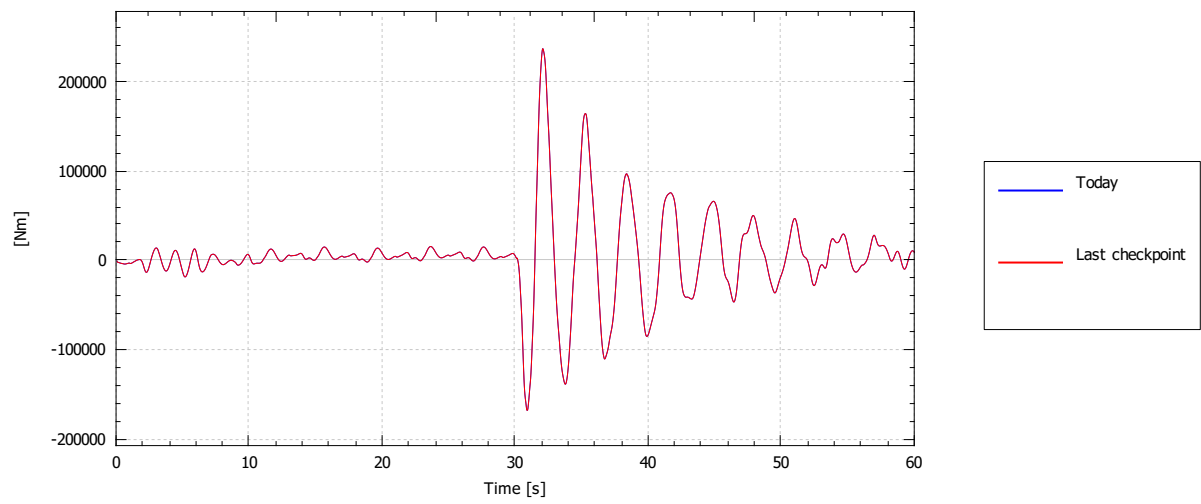
Yaw angle to reference direction



Yaw error

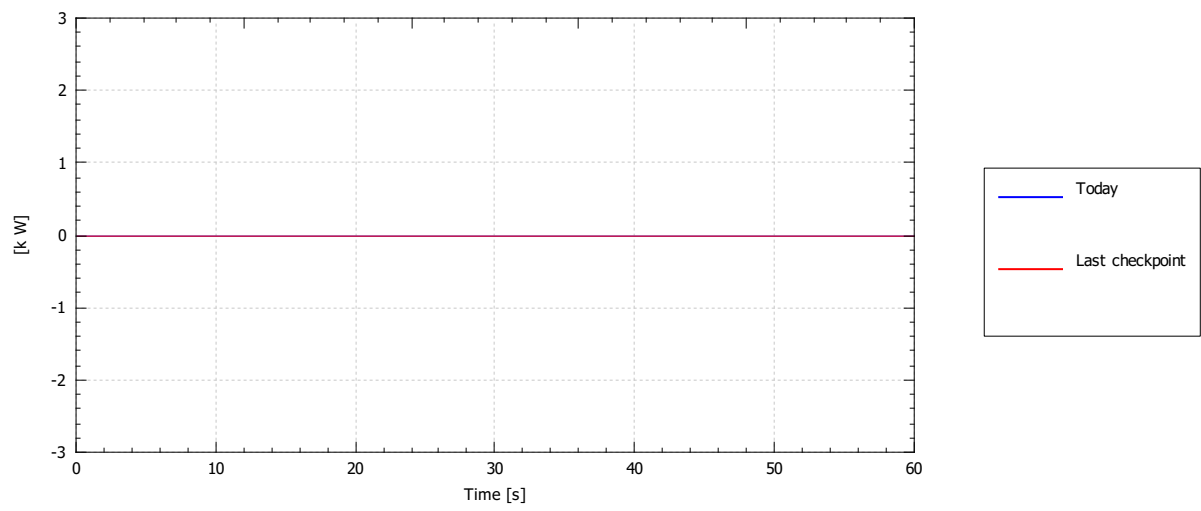


Torque about yaw axis

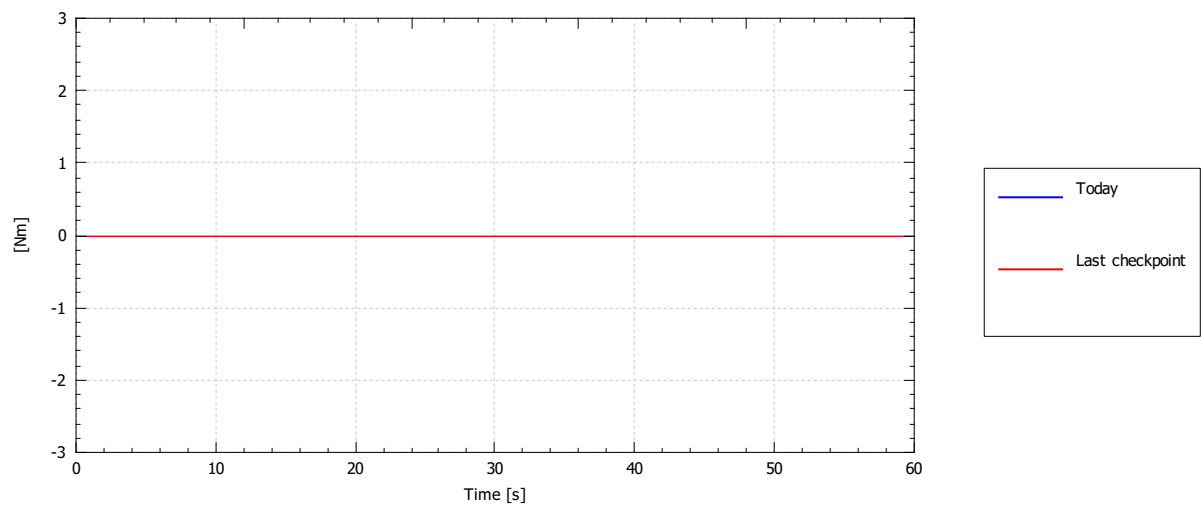


Generator

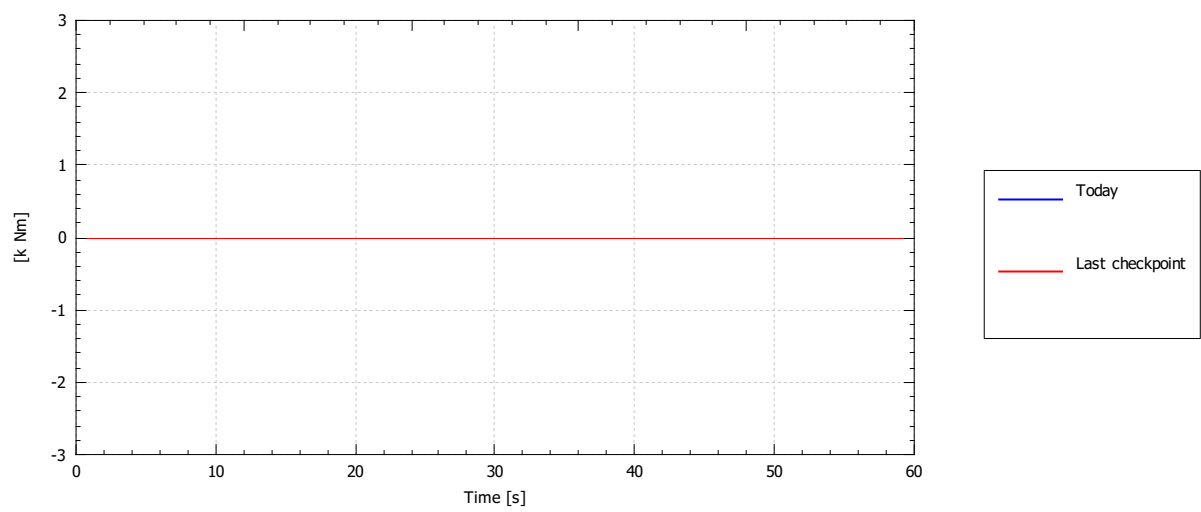
Power (electrical)



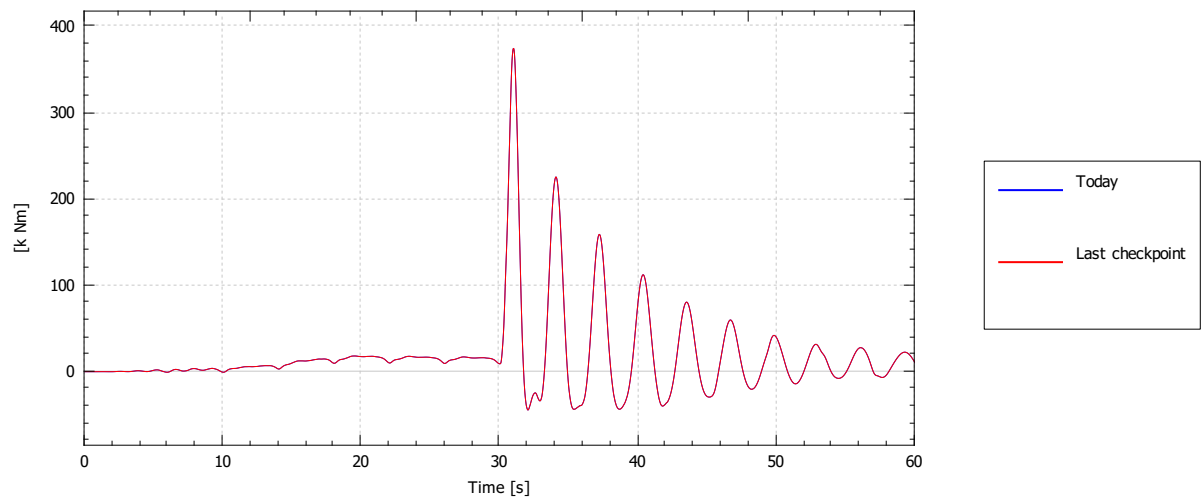
Torque



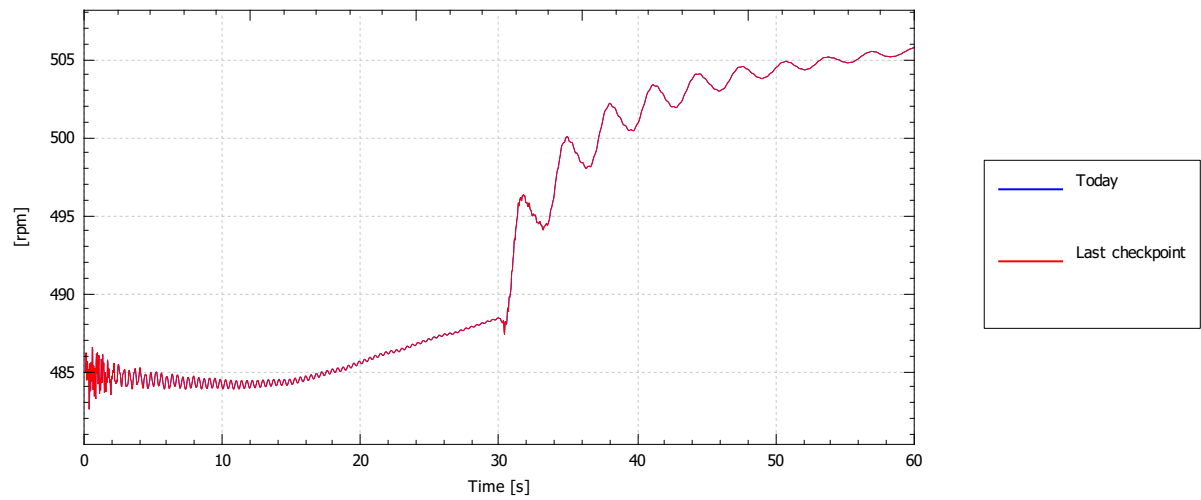
Torque on main shaft



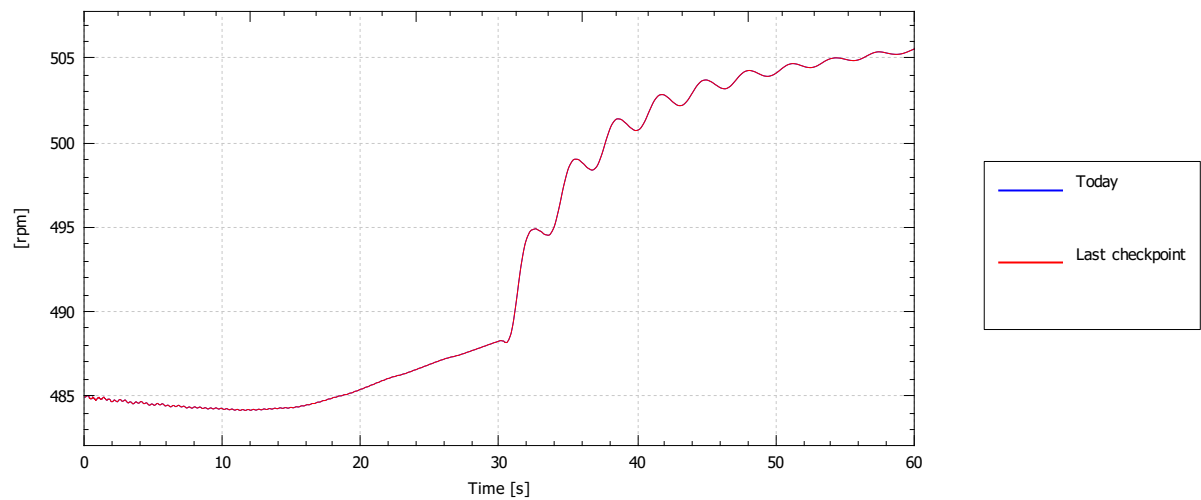
Torque diff. on main shaft



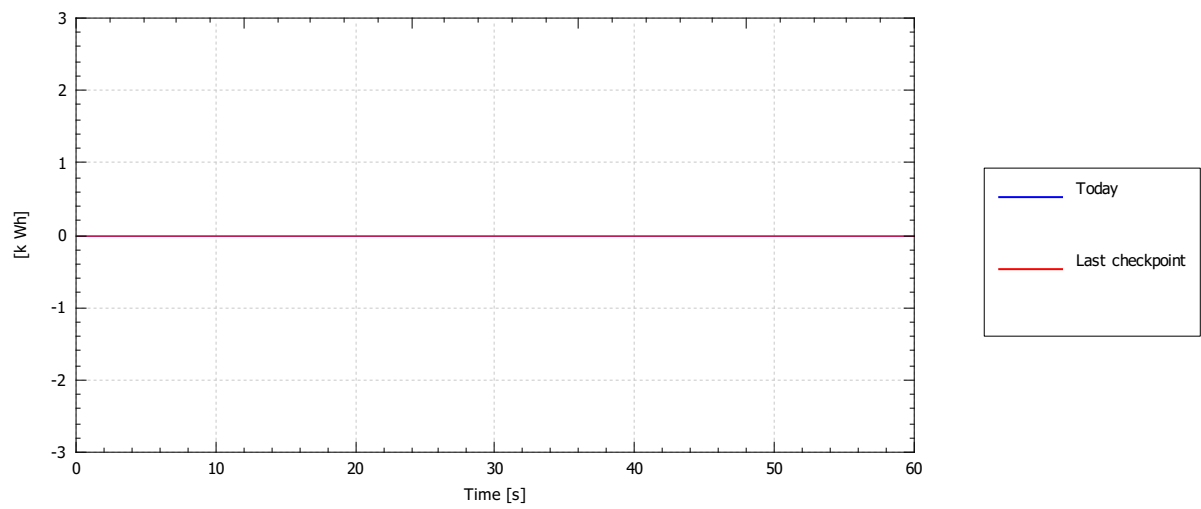
RPM



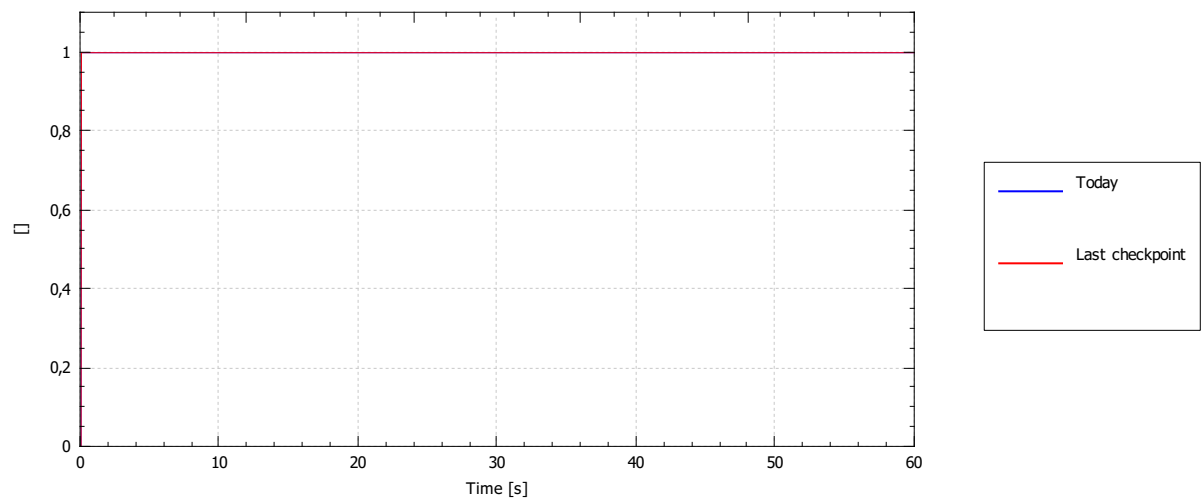
Filtered RPM



Electricity production

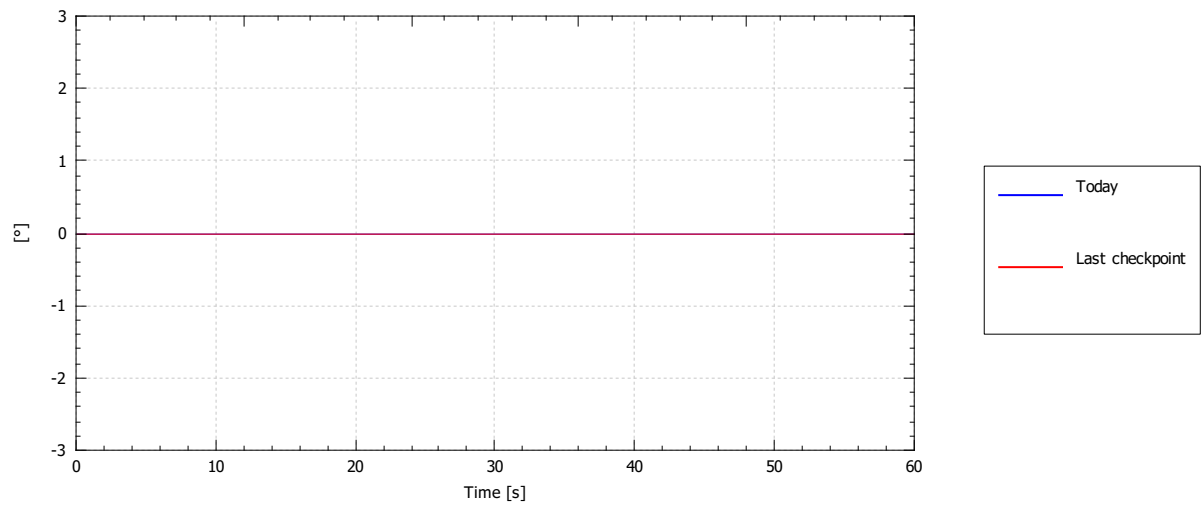


Region

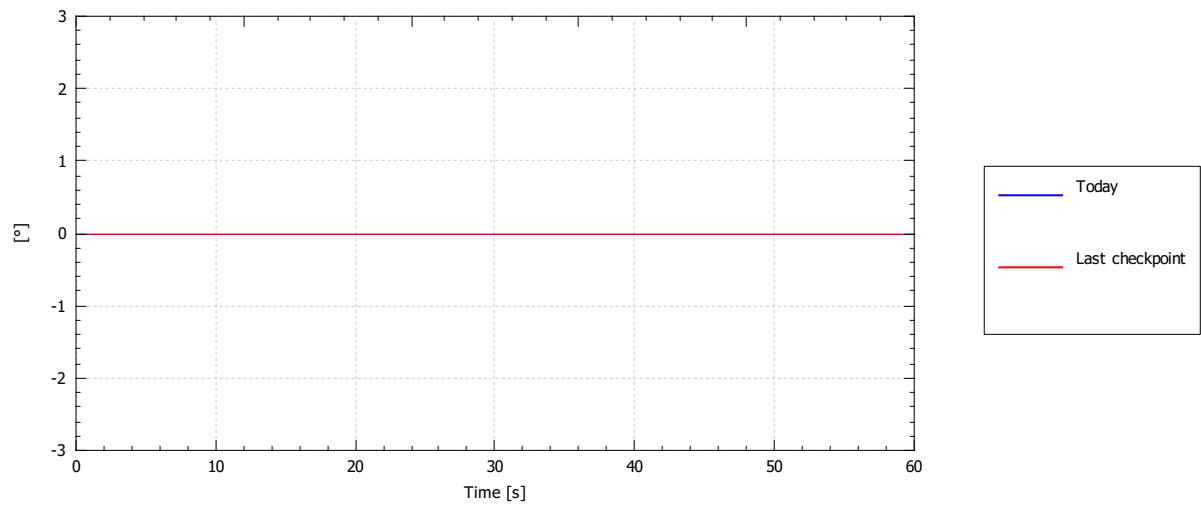


Demanded pitch controller

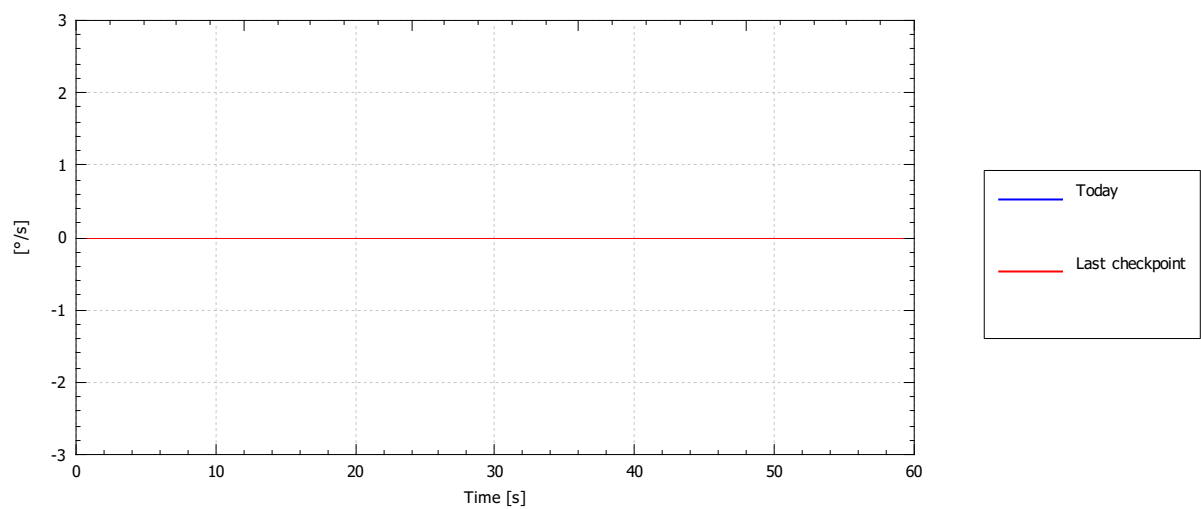
Demanded collective pitch angle



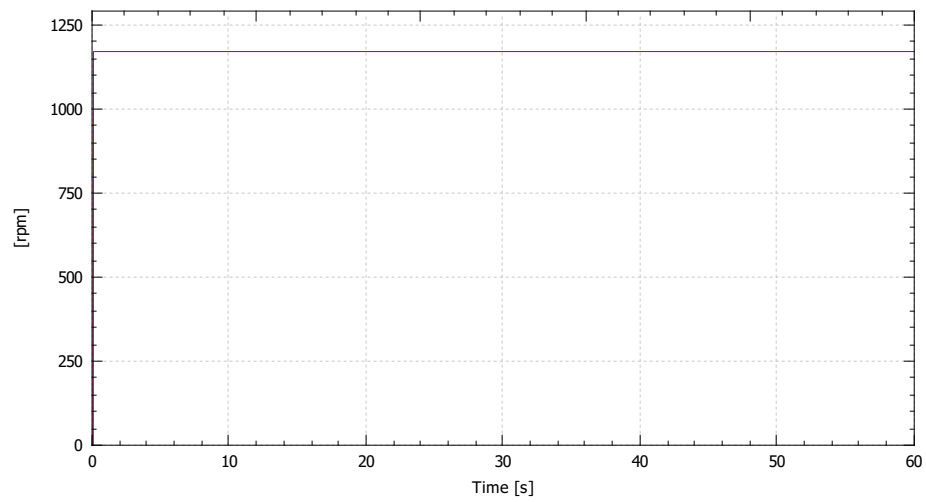
Cumulative demanded collective pitch angle



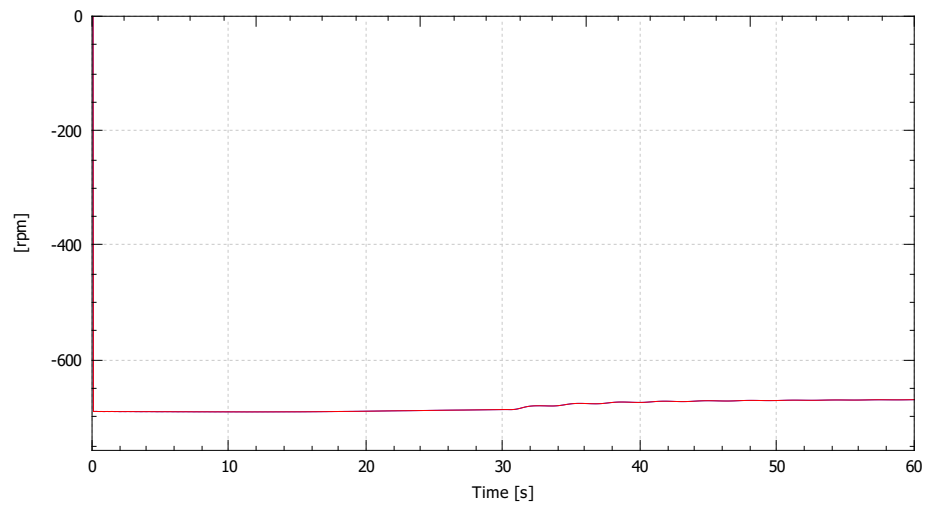
Demanded collective pitch angle rate



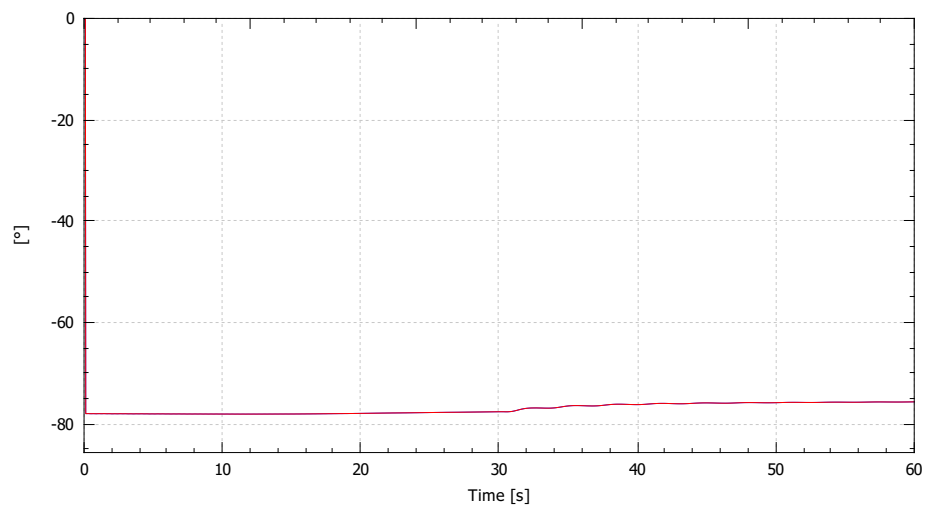
Set point

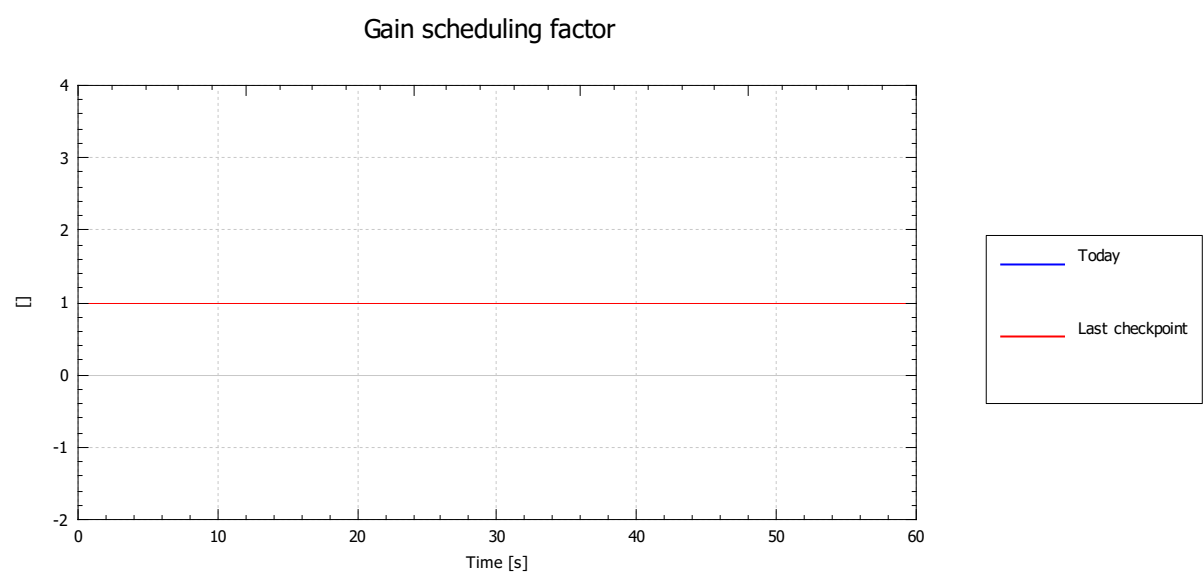
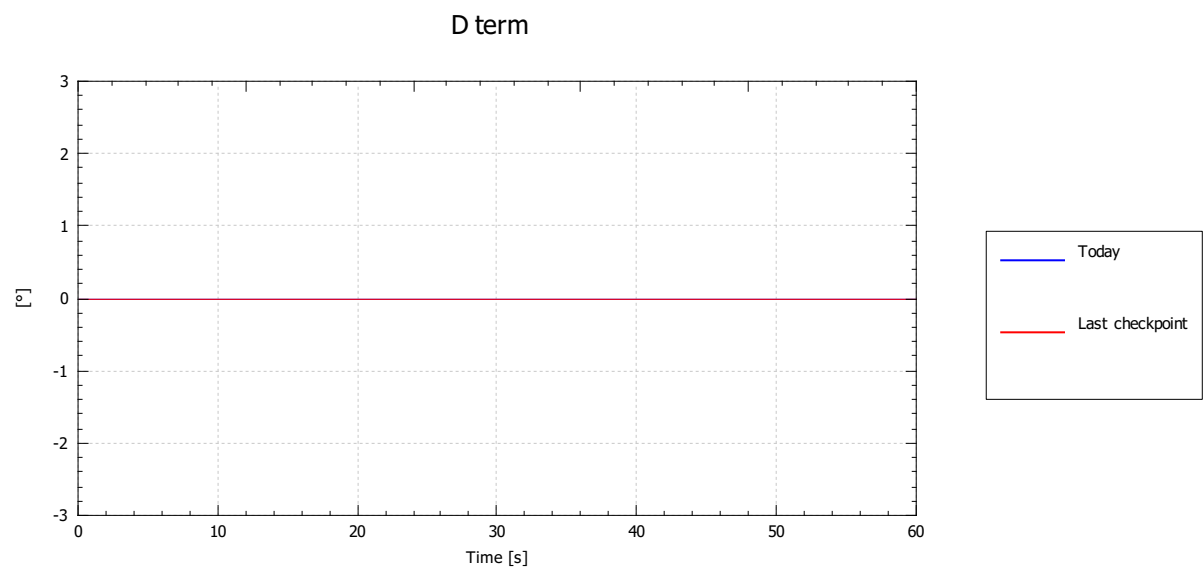
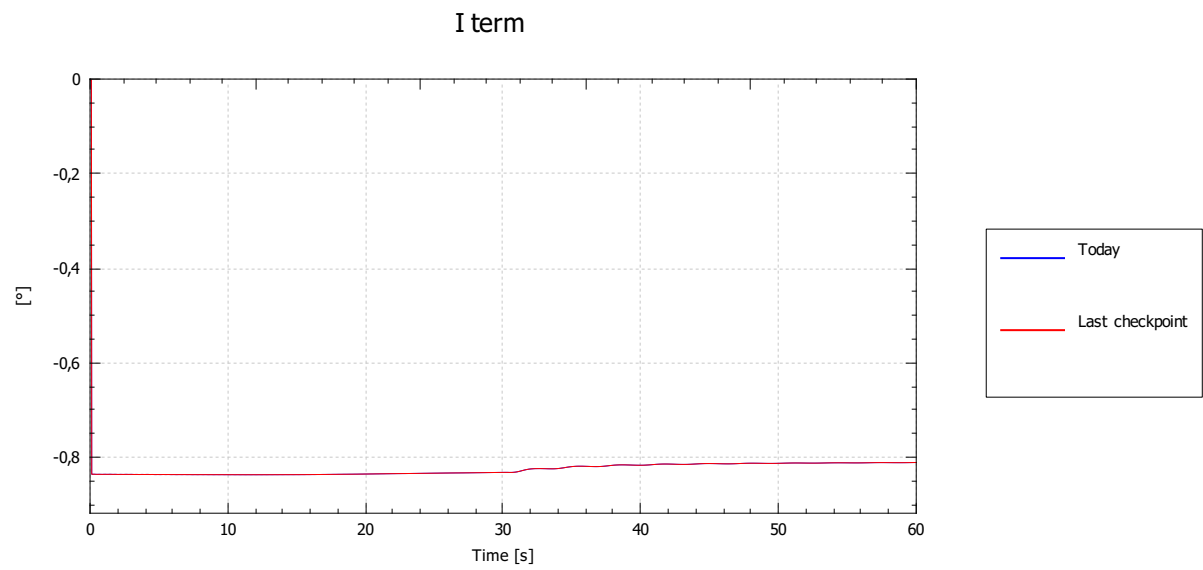


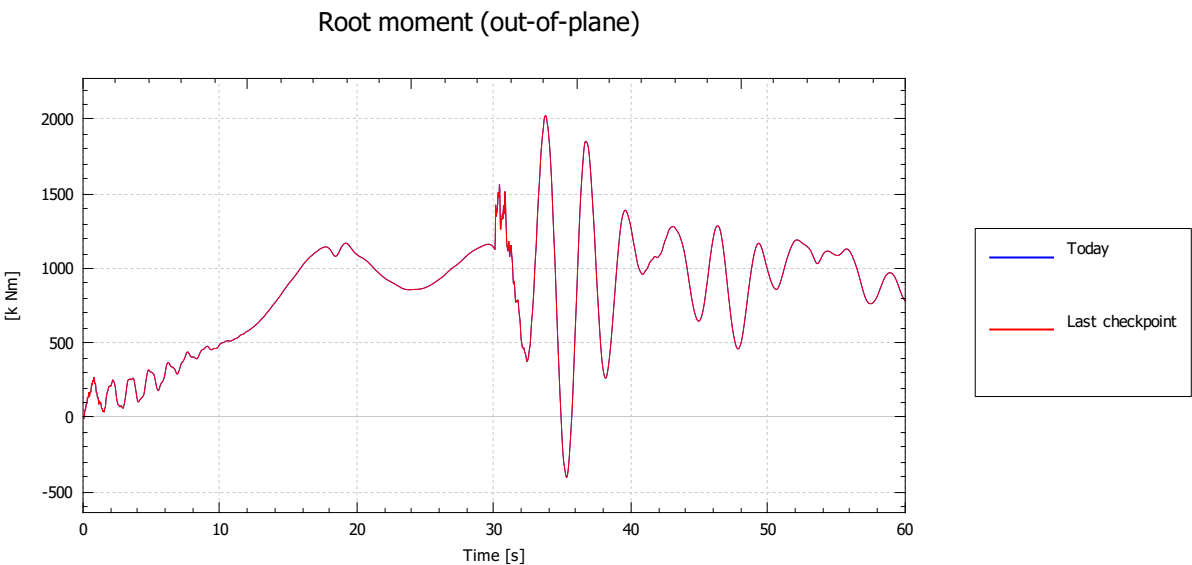
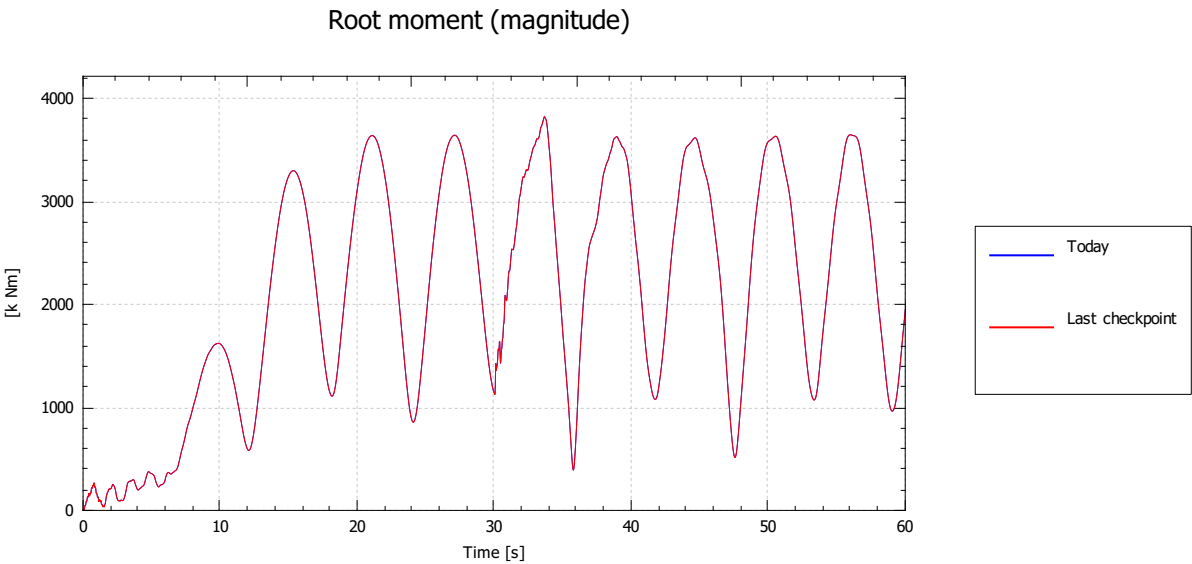
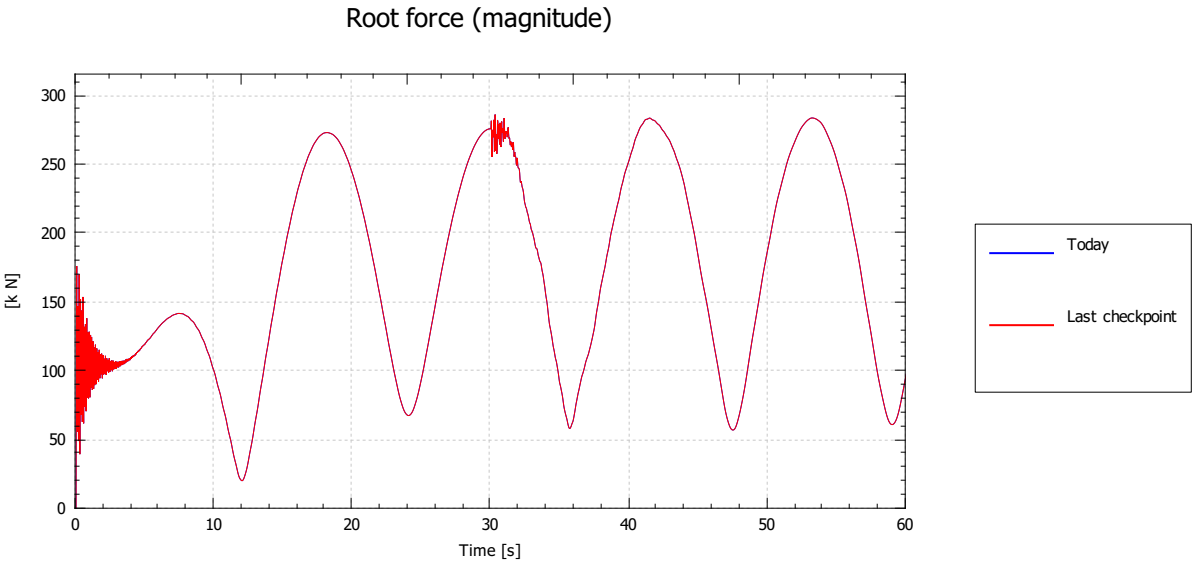
RPM error



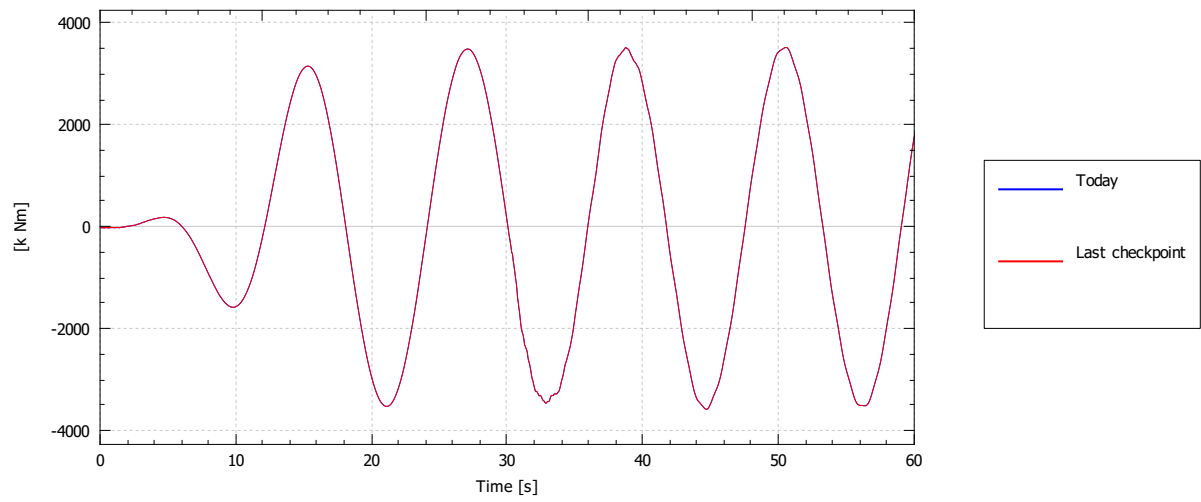
P term



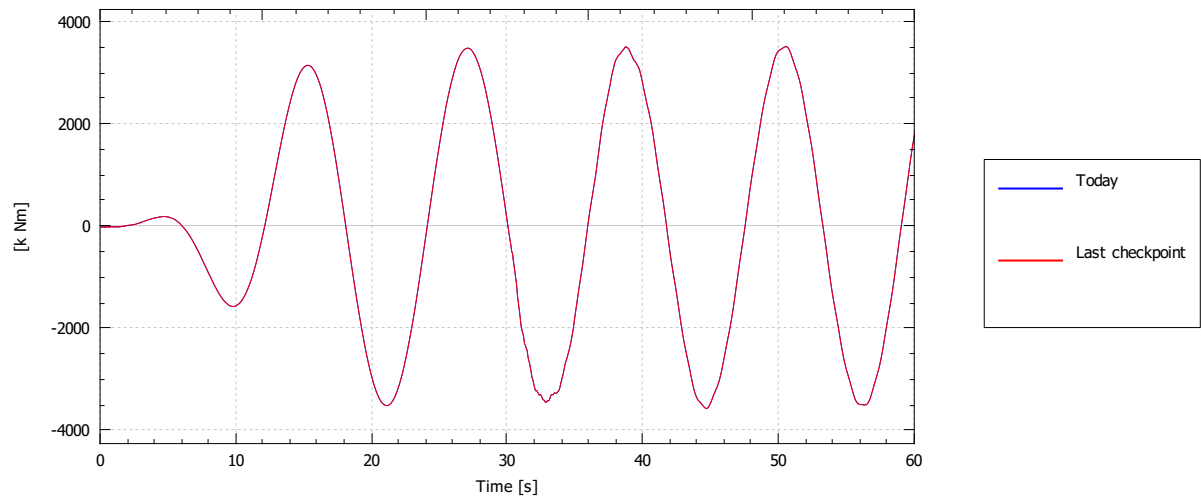




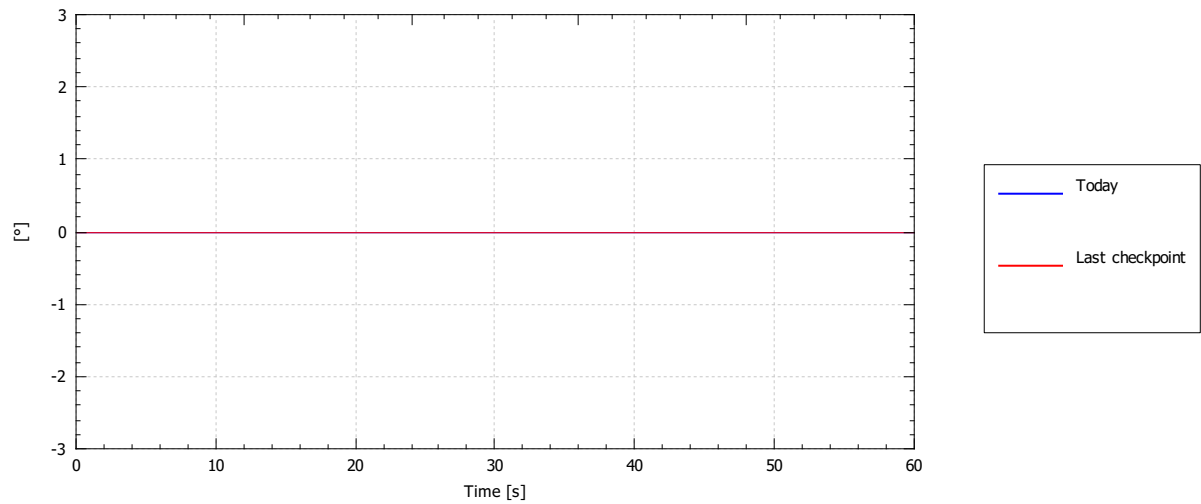
Root moment (in-plane)



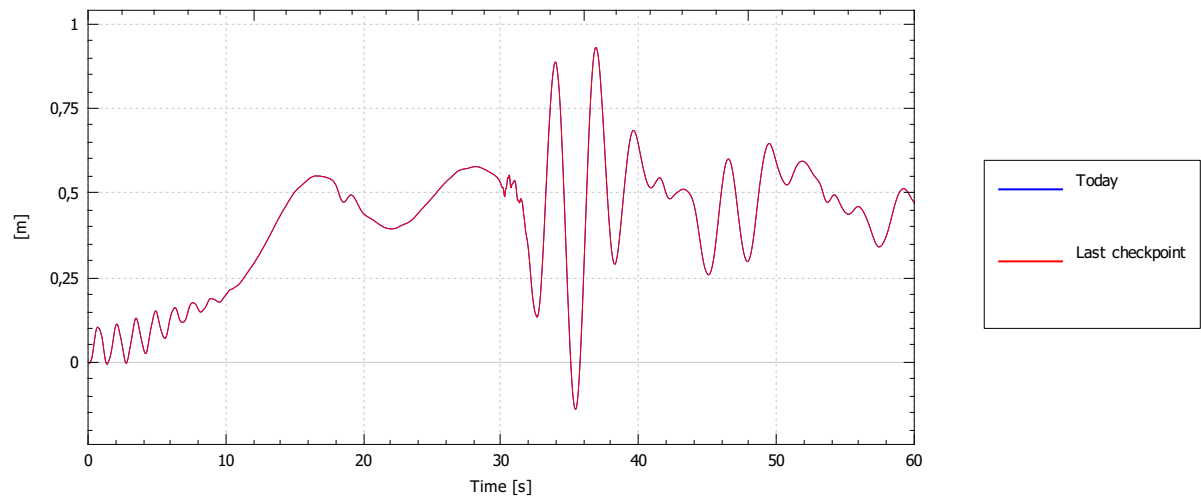
Root moment about shaft



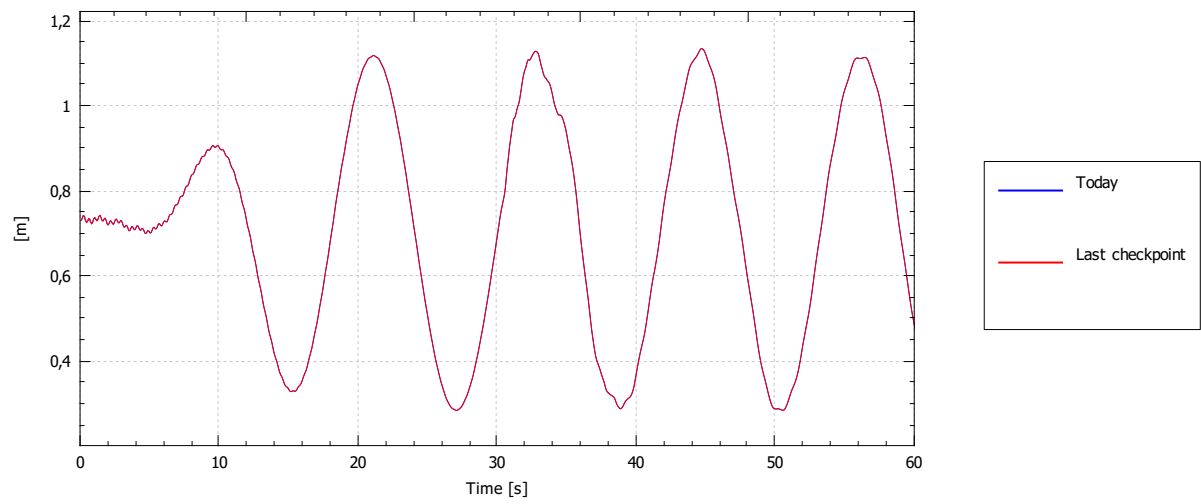
Pitch angle



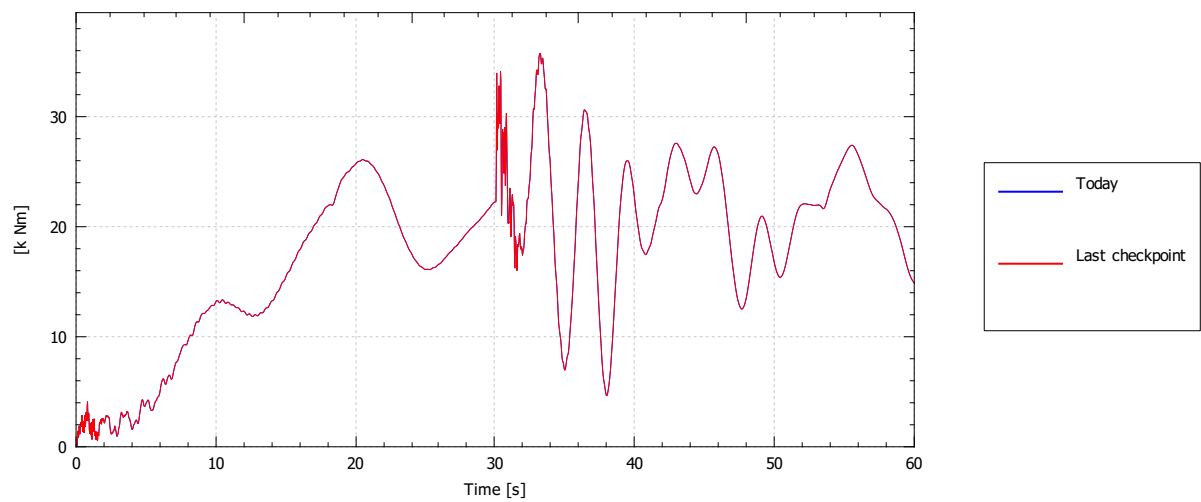
Tip deflection (out-of-plane)

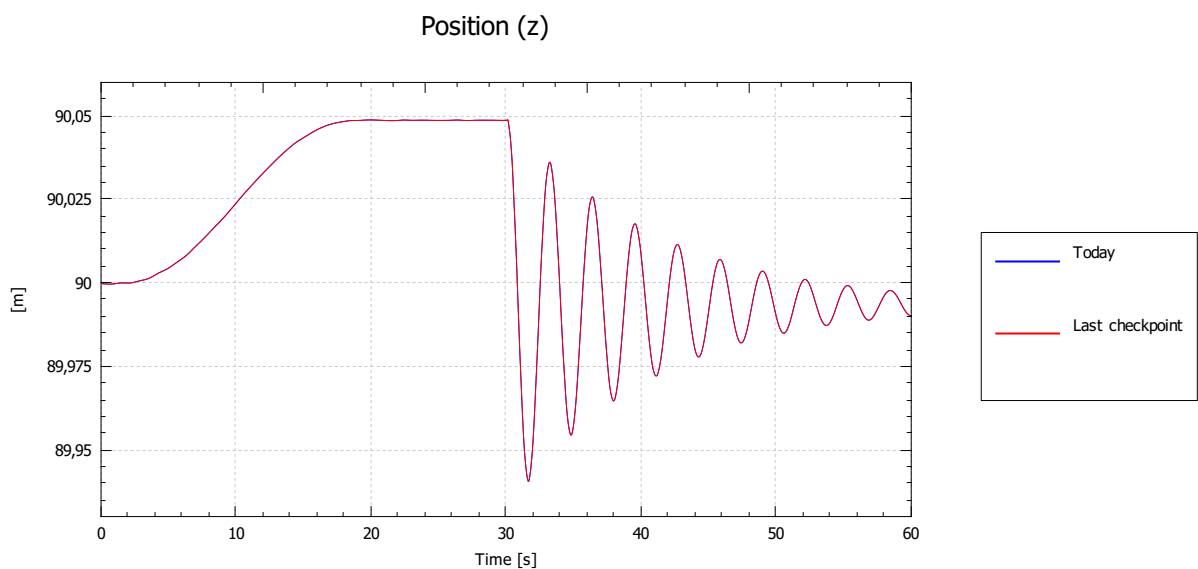
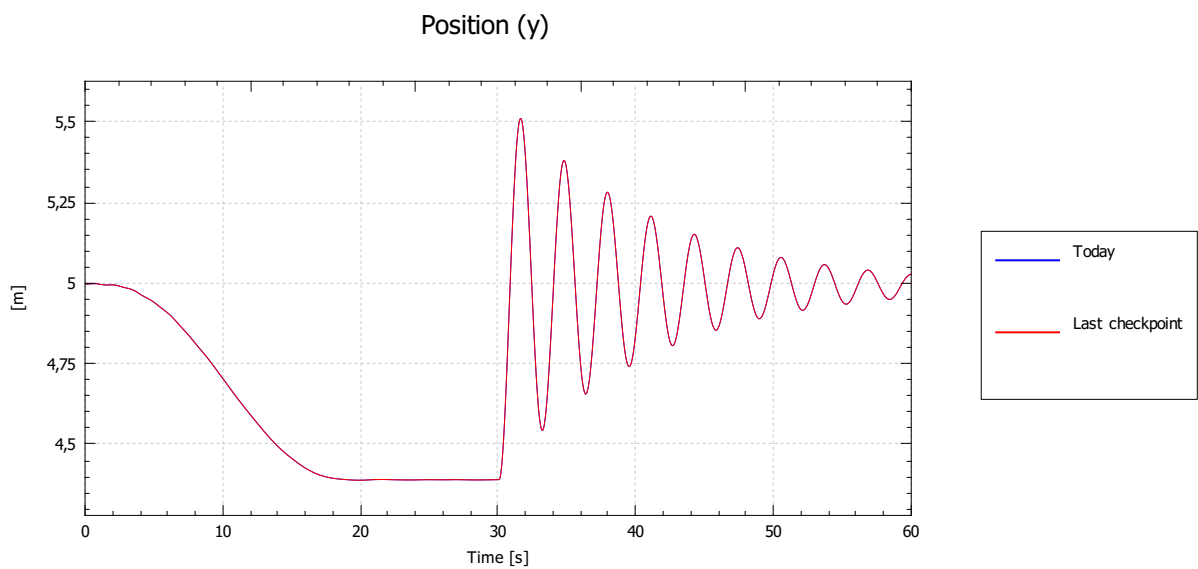
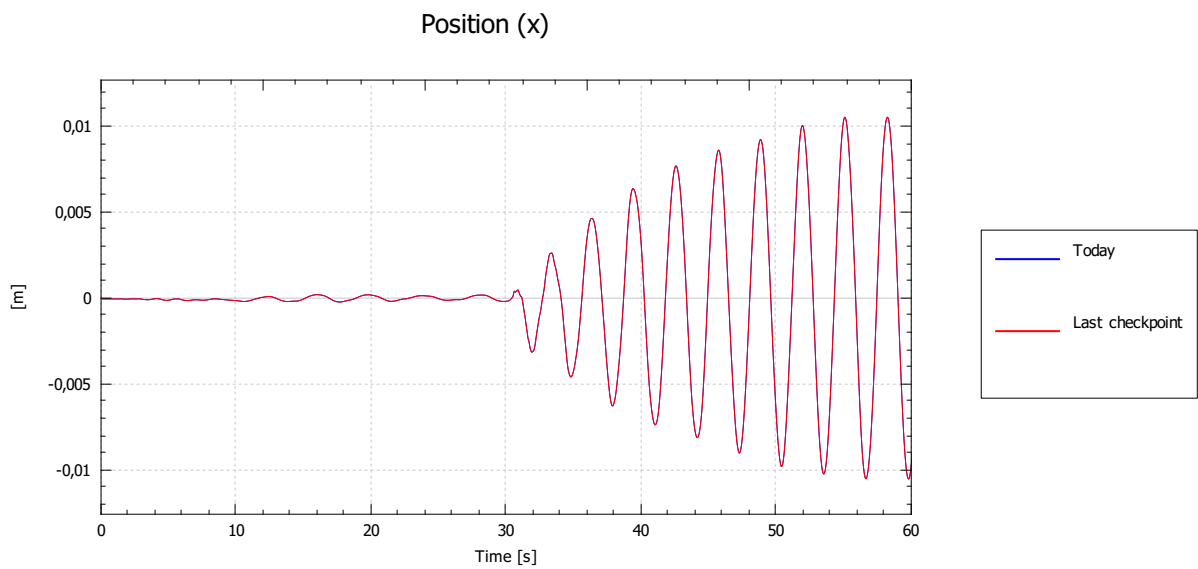


Tip deflection (in-plane)

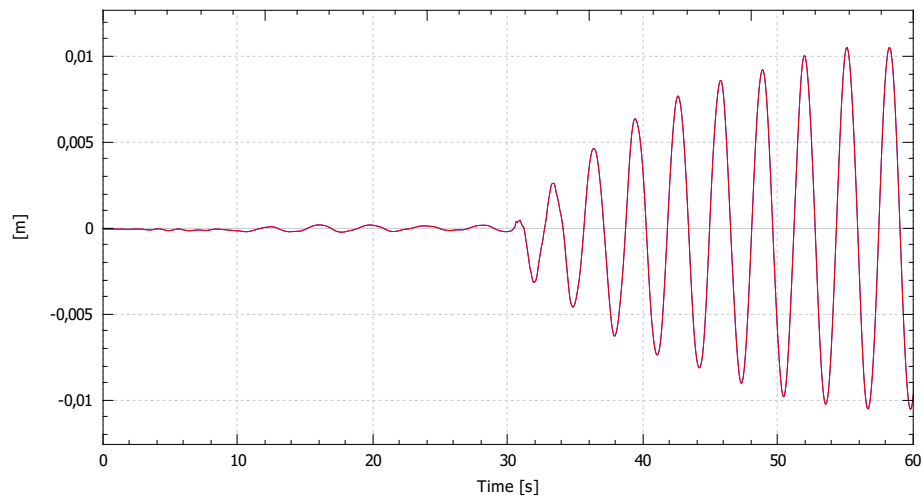


Root torque

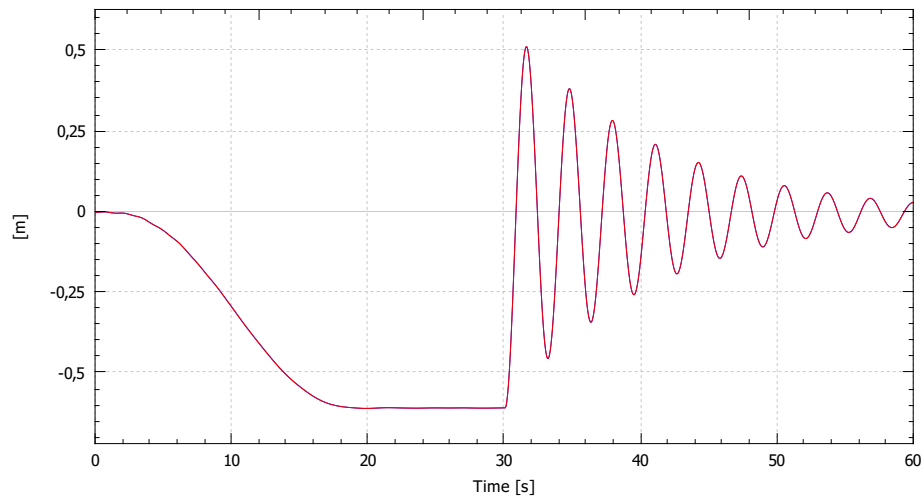




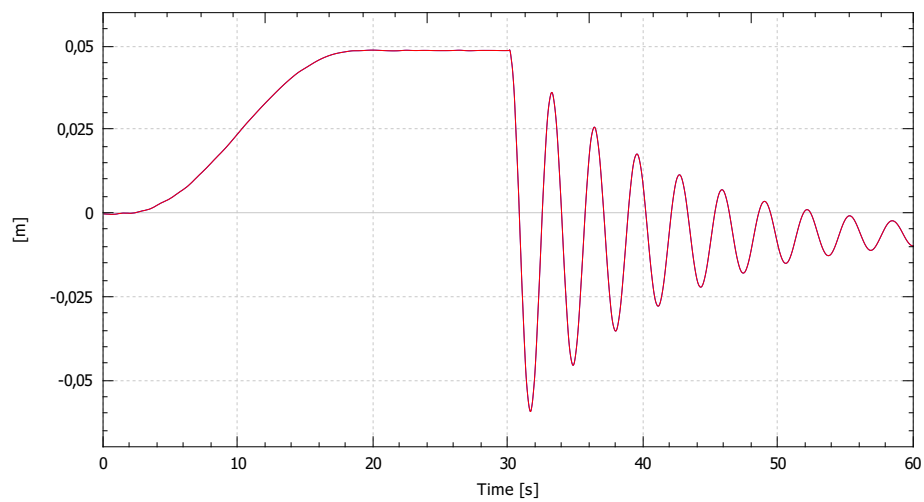
Displacement (u)



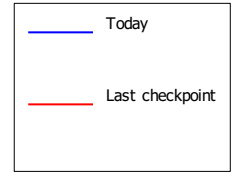
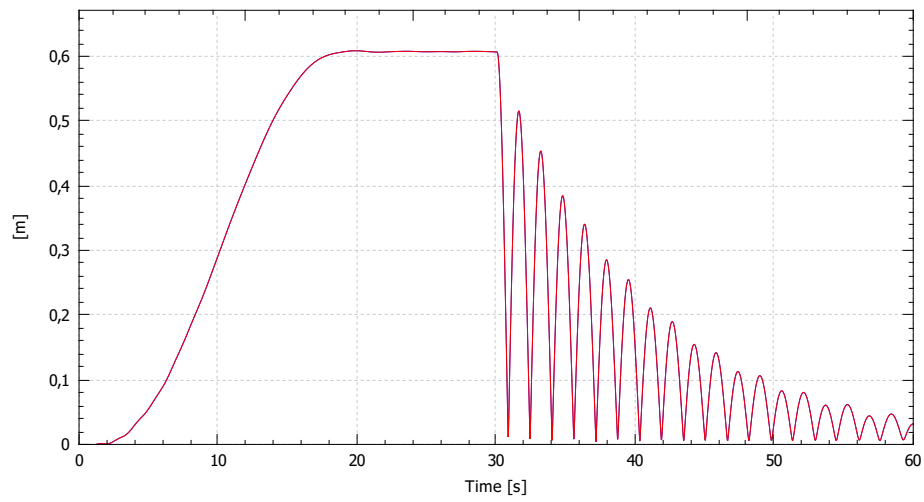
Displacement (v)



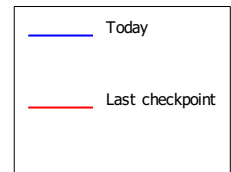
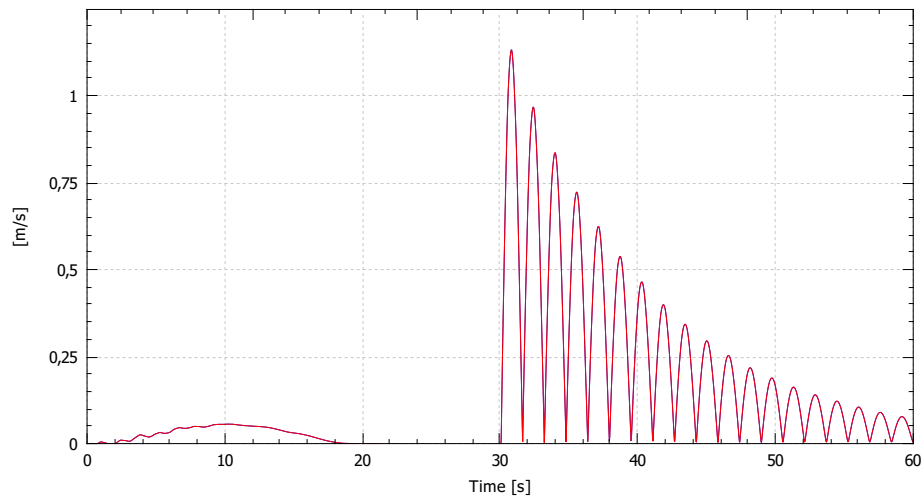
Displacement (w)



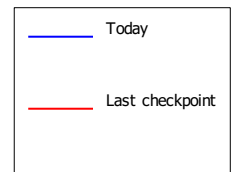
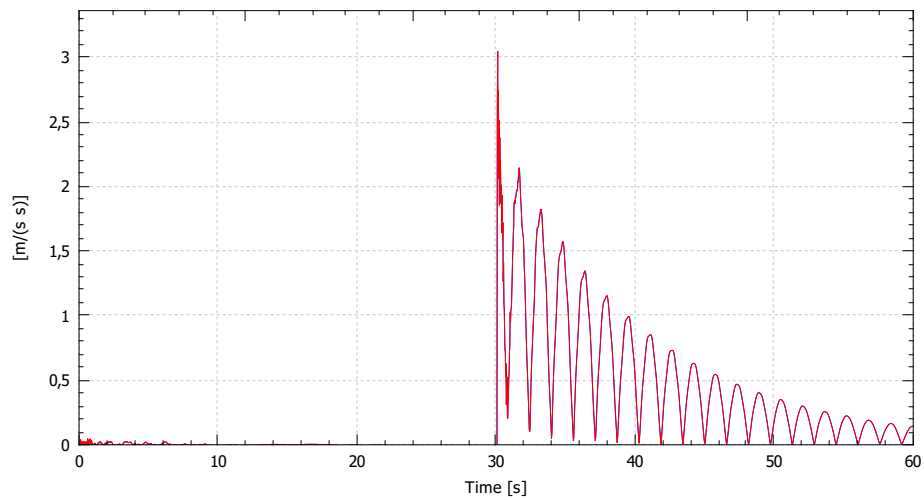
Displacement magnitude



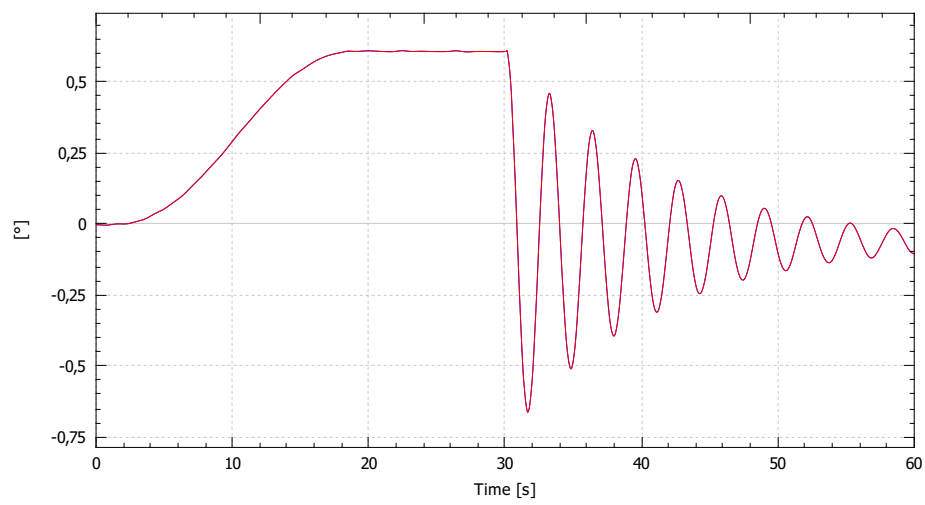
Speed



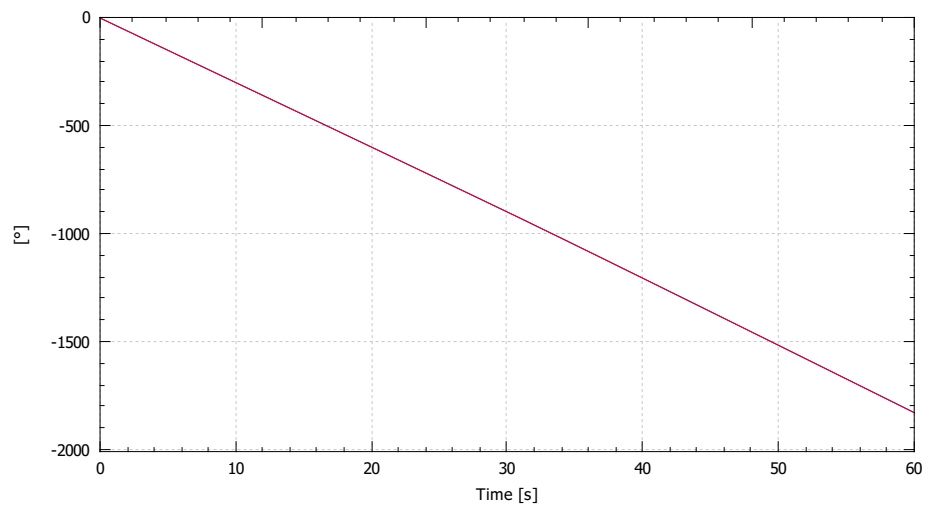
Acceleration, magnitude



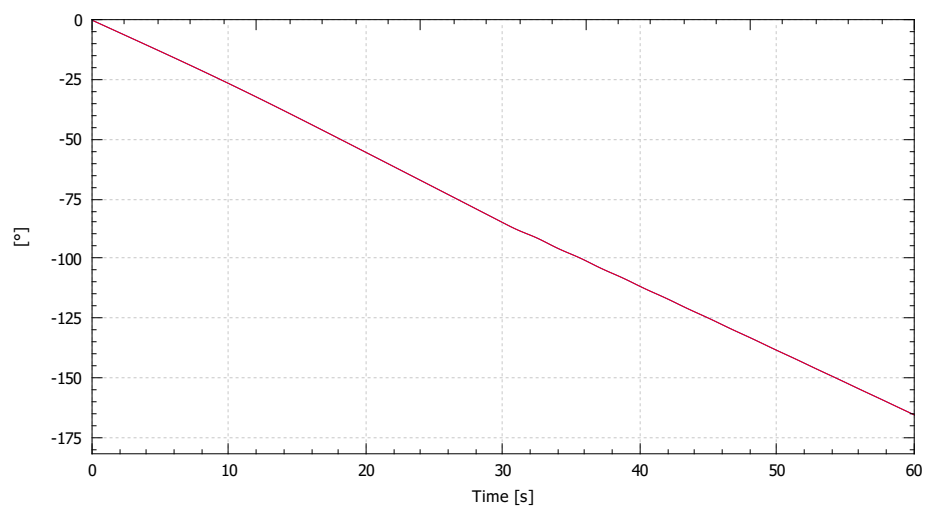
Rotational displacement (ru)



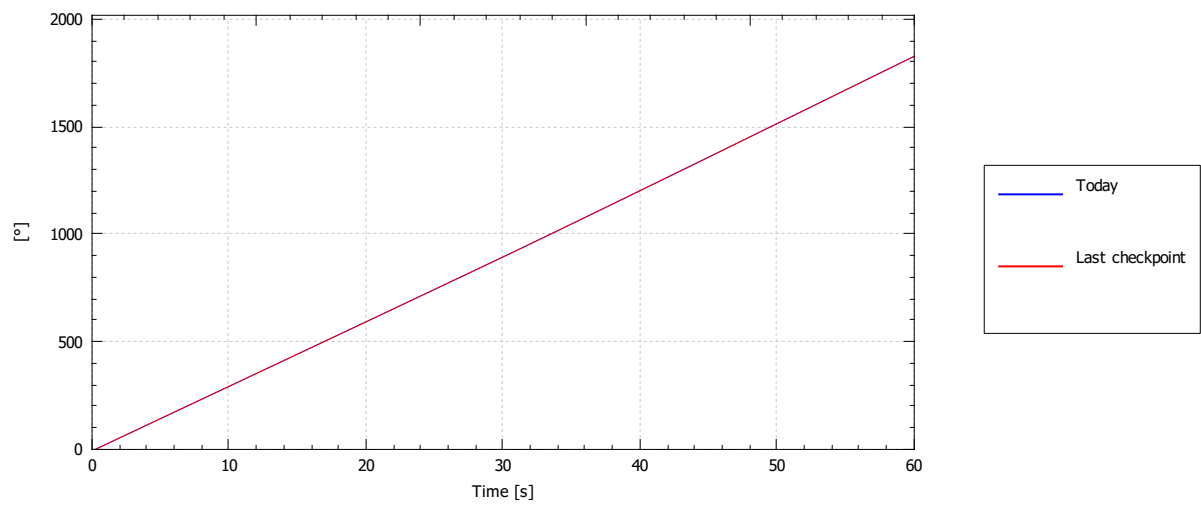
Rotational displacement (rv)



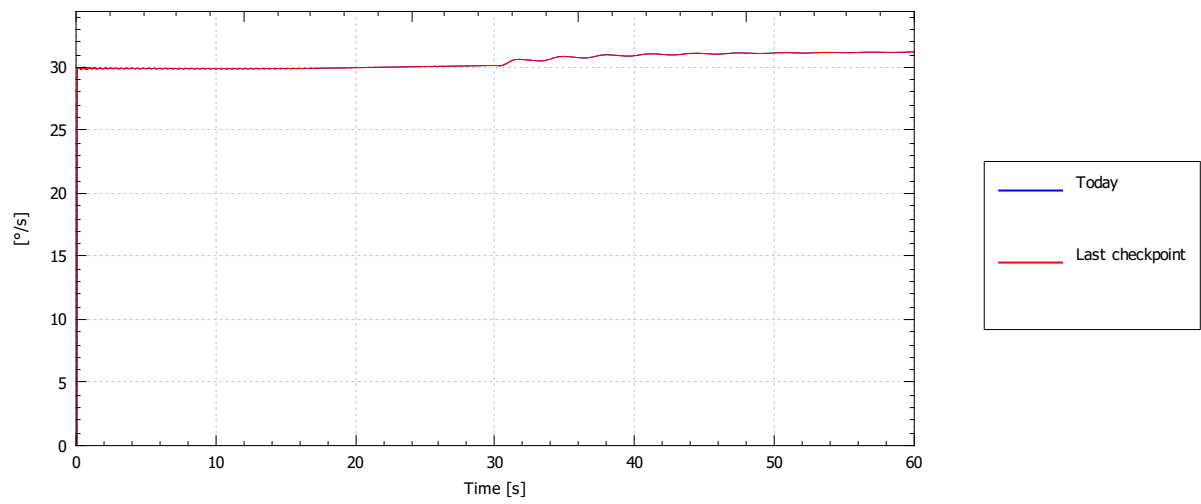
Rotational displacement (rw)



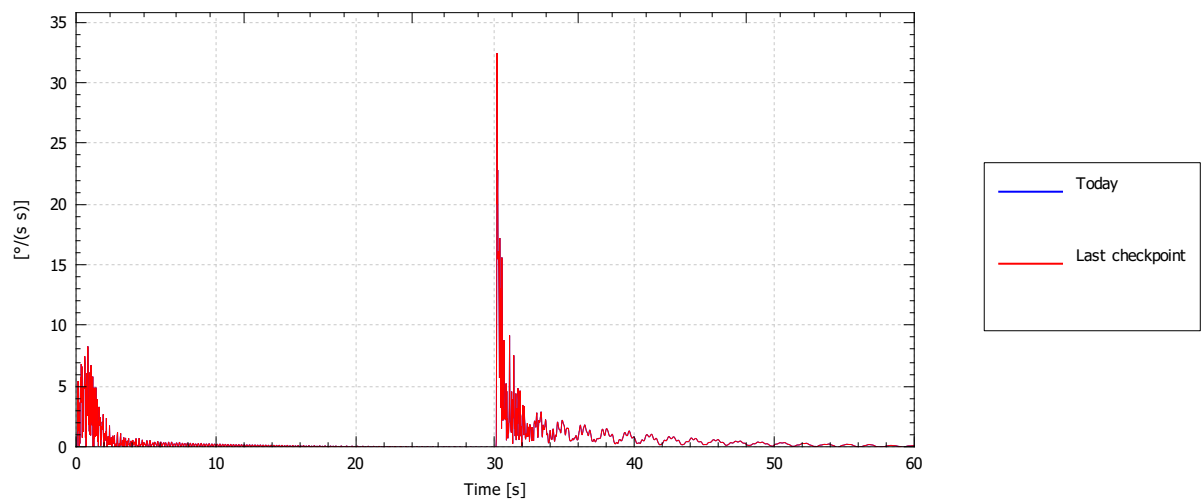
Rotational displacement magnitude



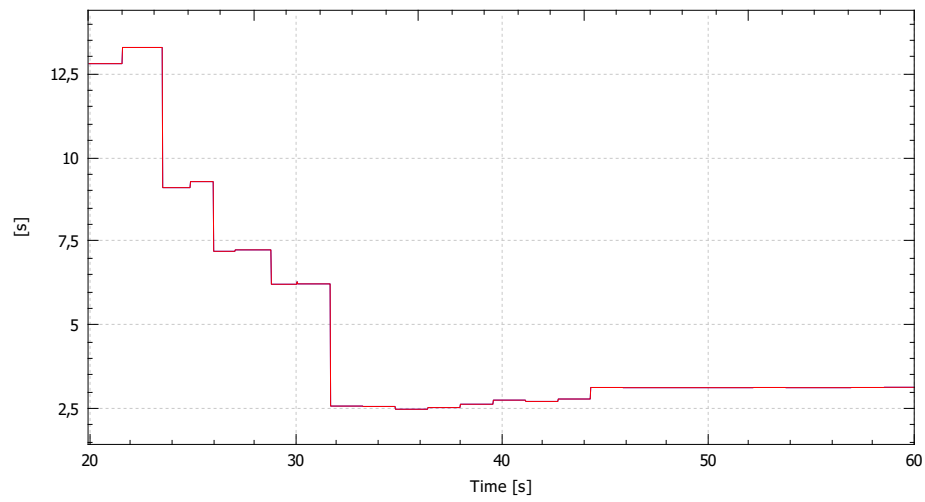
Rotational speed



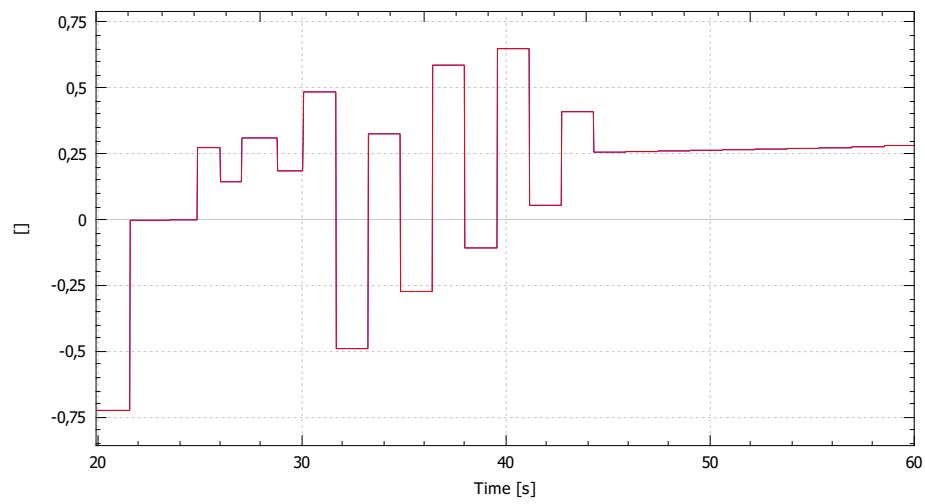
Rotational acceleration mag



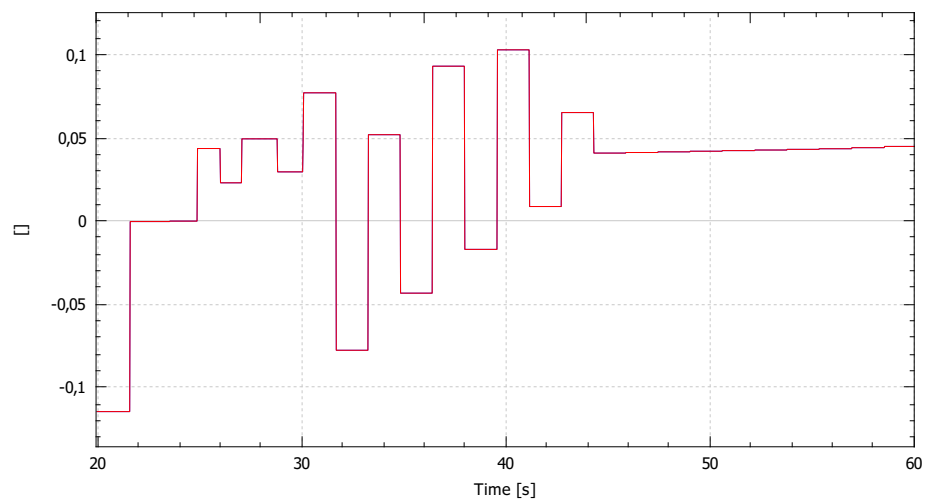
Displacement period



Displacement logarithmic decrement

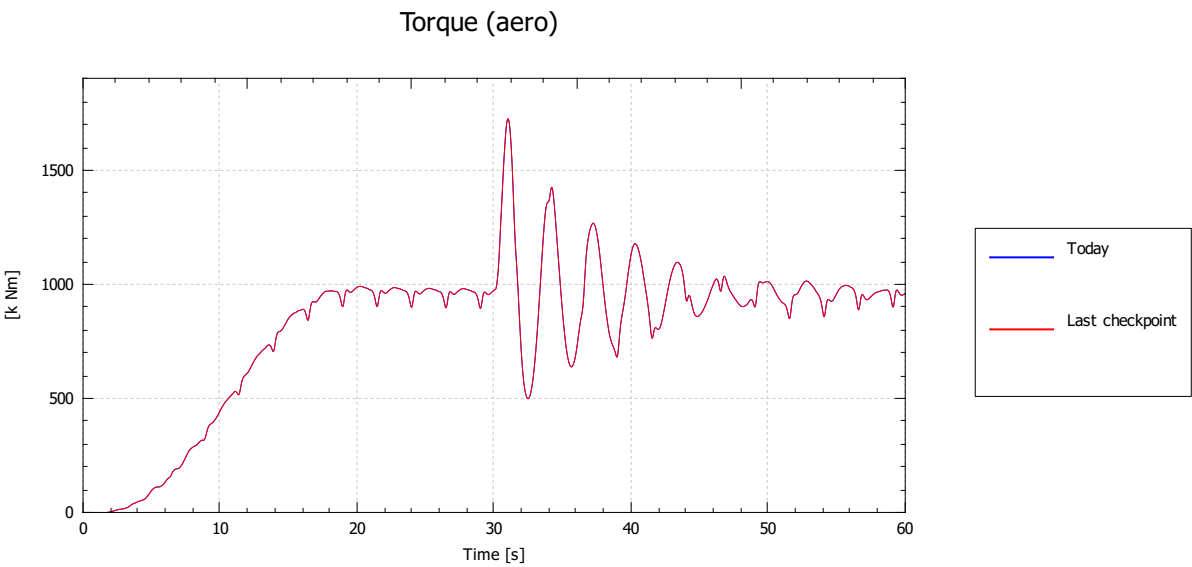
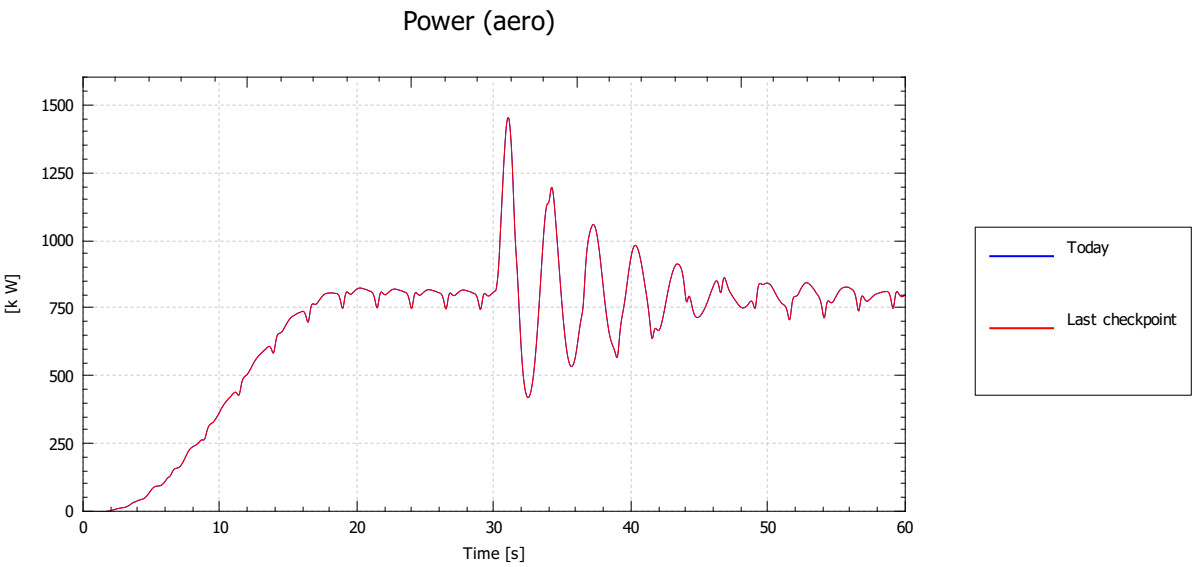


Displacement damping ratio

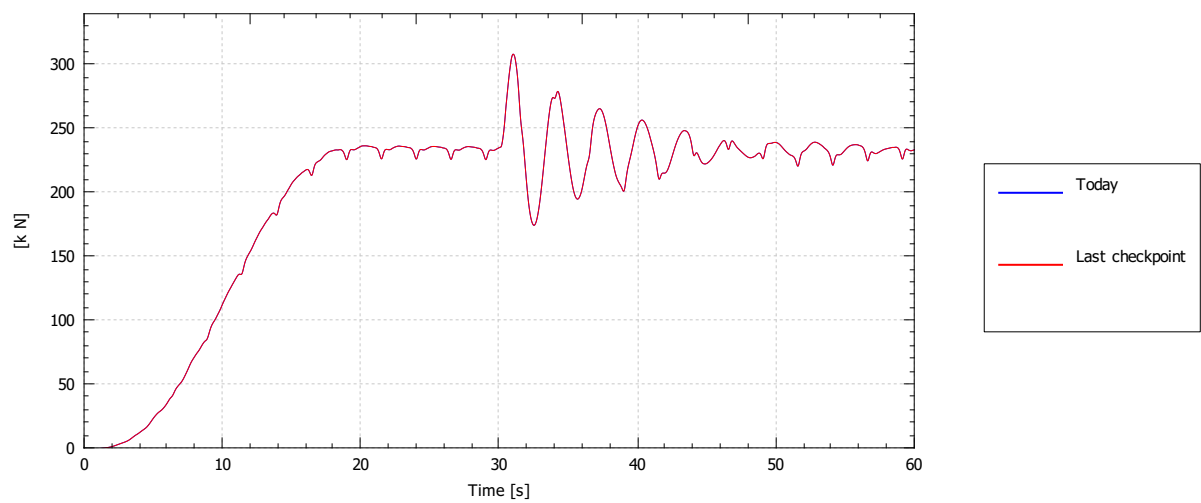


Load case: 6 ms

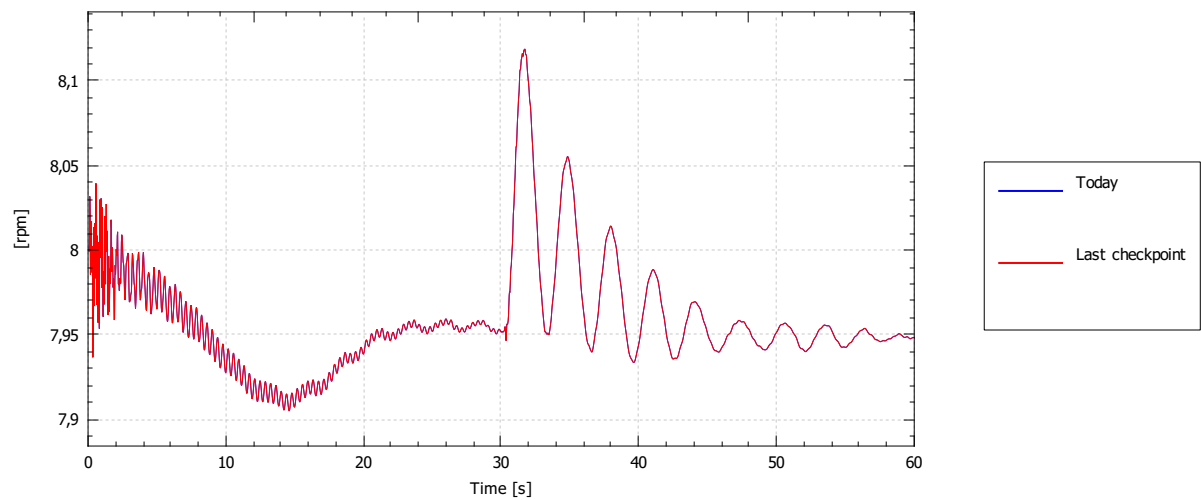
Rotor



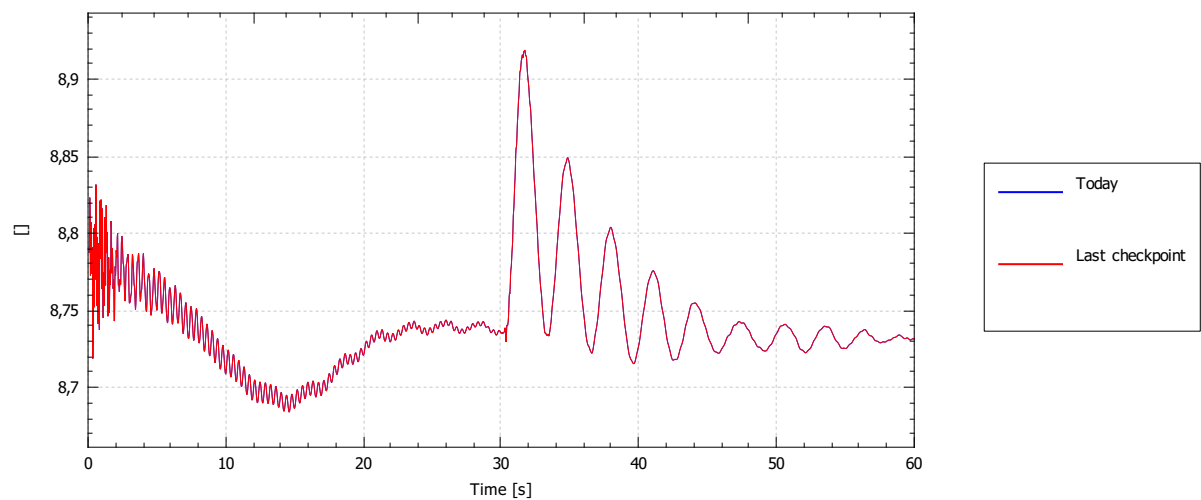
Thrust (aero)



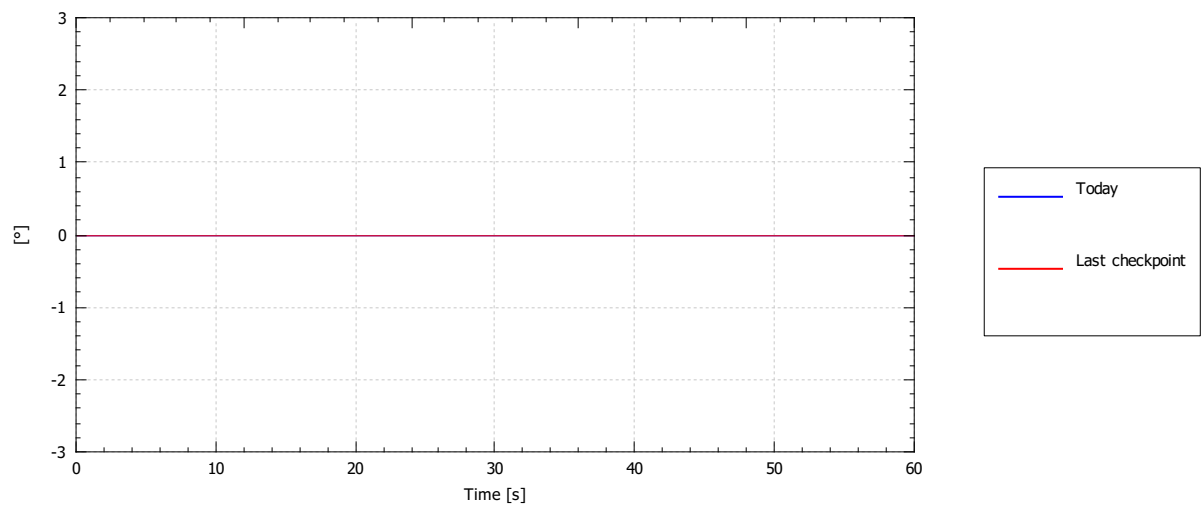
RPM



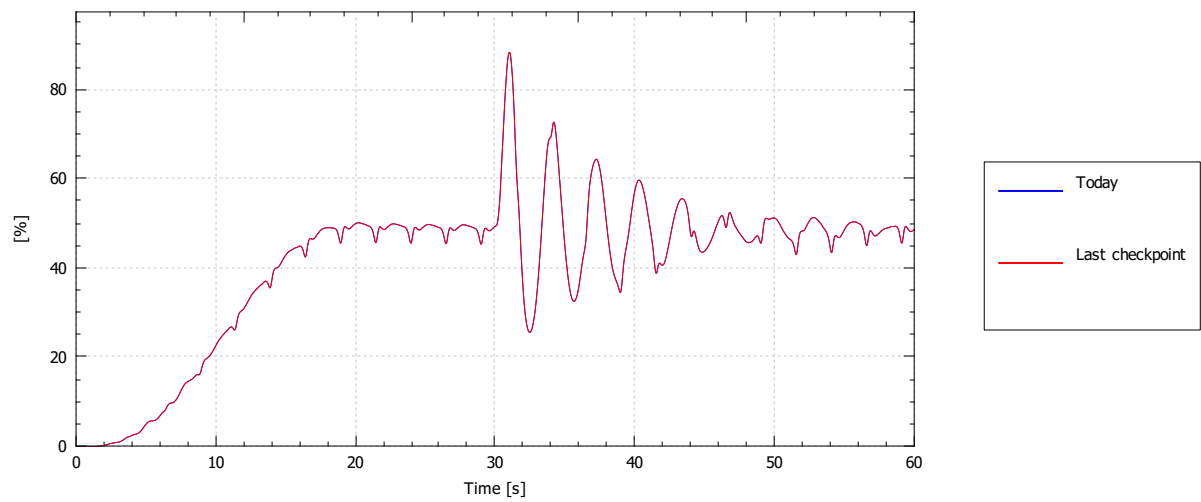
TSR



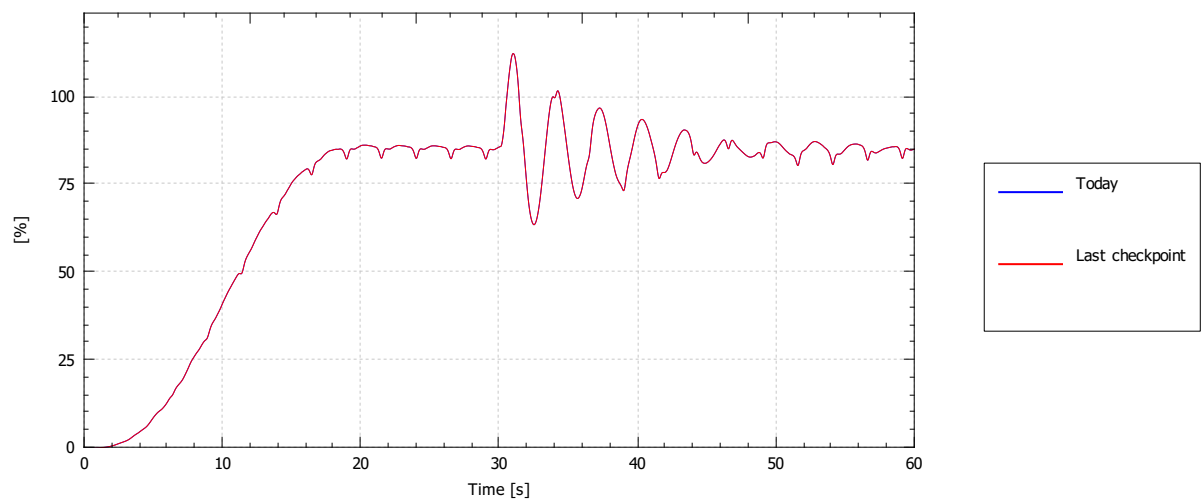
Representative demanded pitch angle



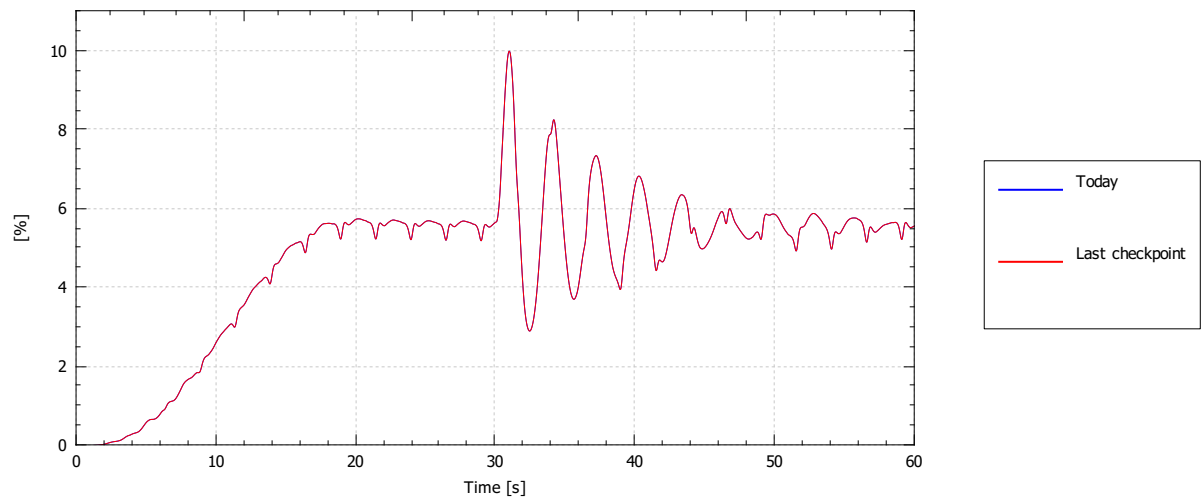
Power coef. (CP)



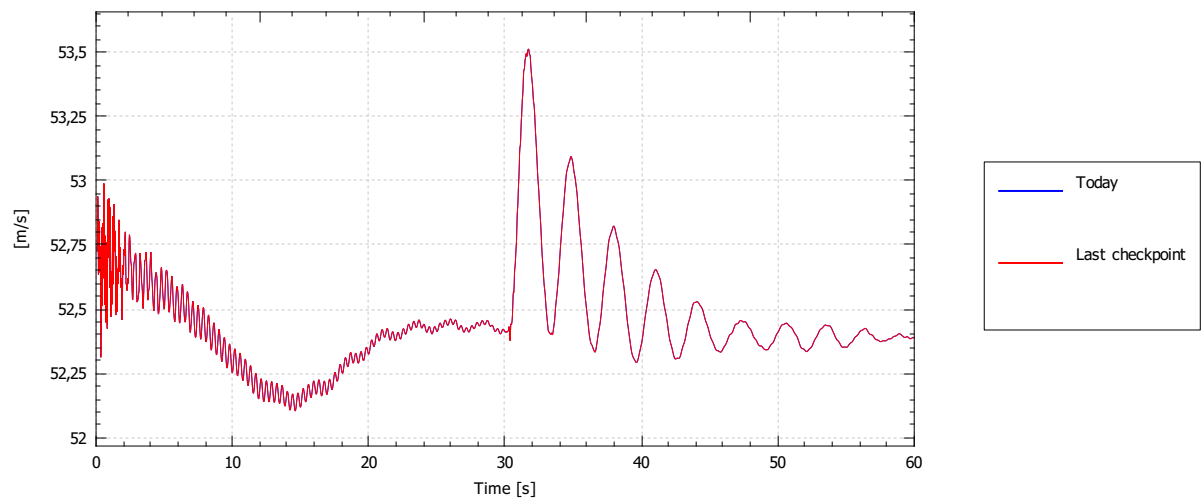
Thrust coef. (CT)



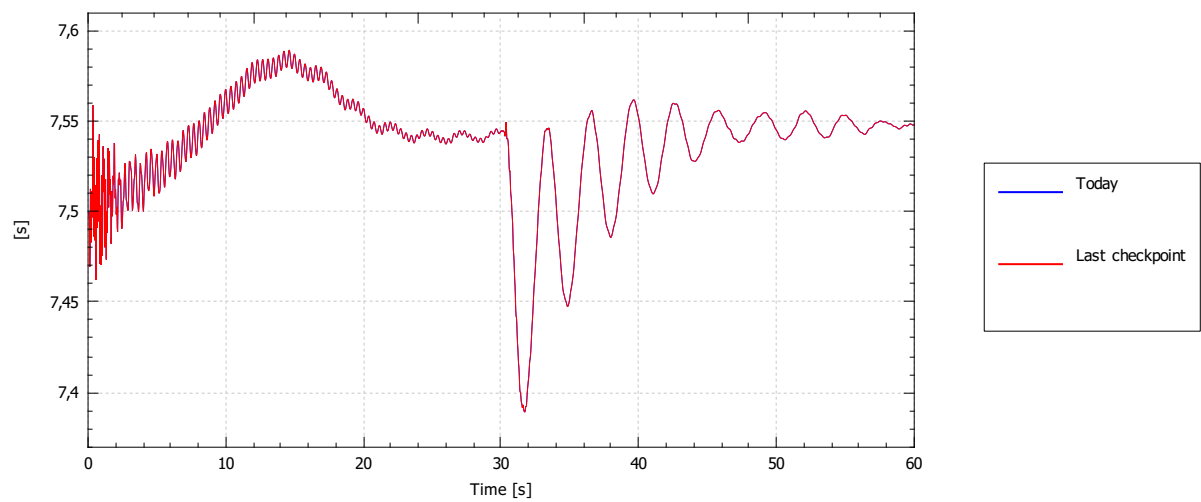
Torque coef. (CQ)



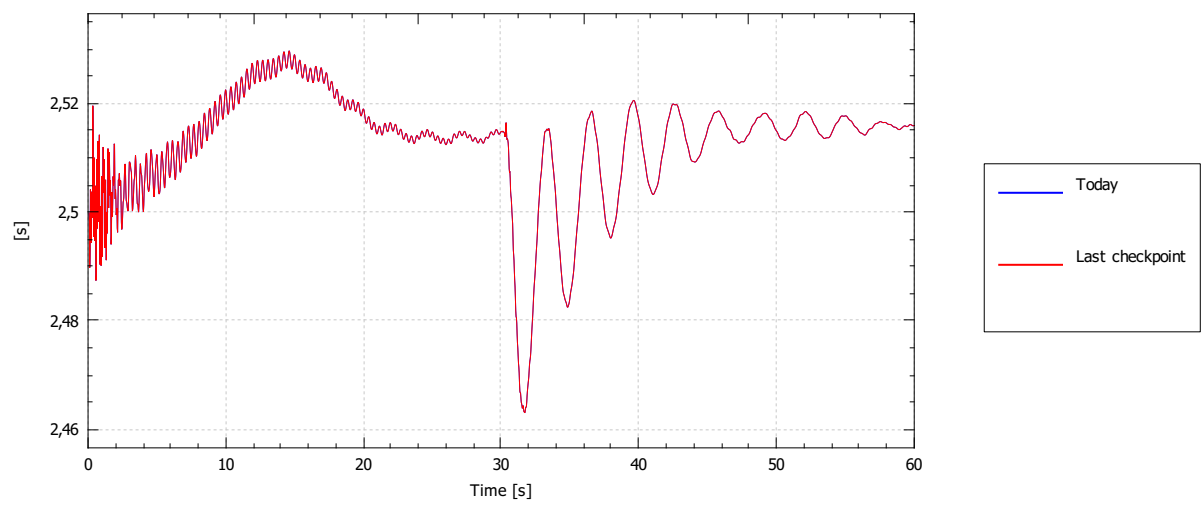
Tip speed



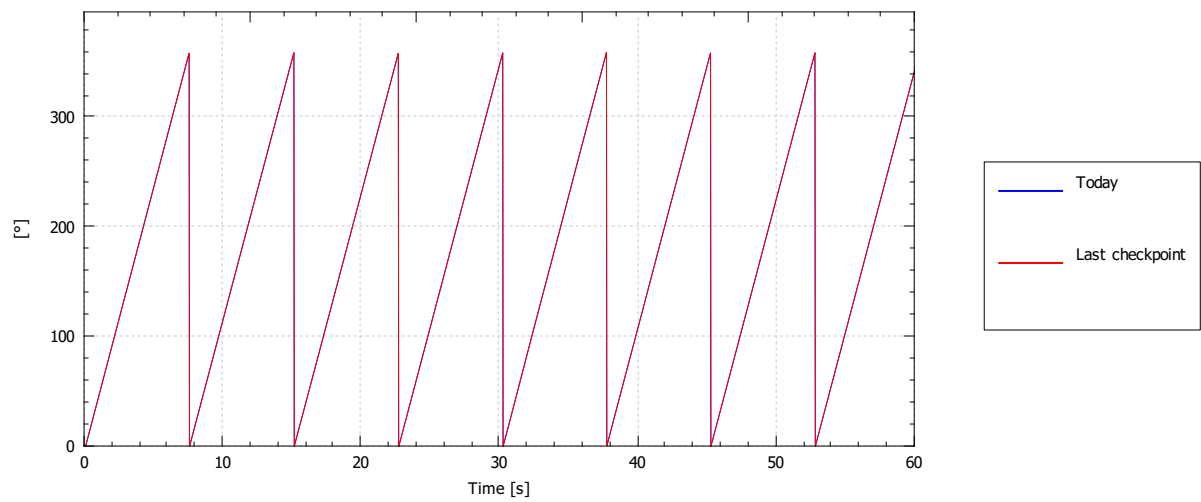
1P (one revolution)



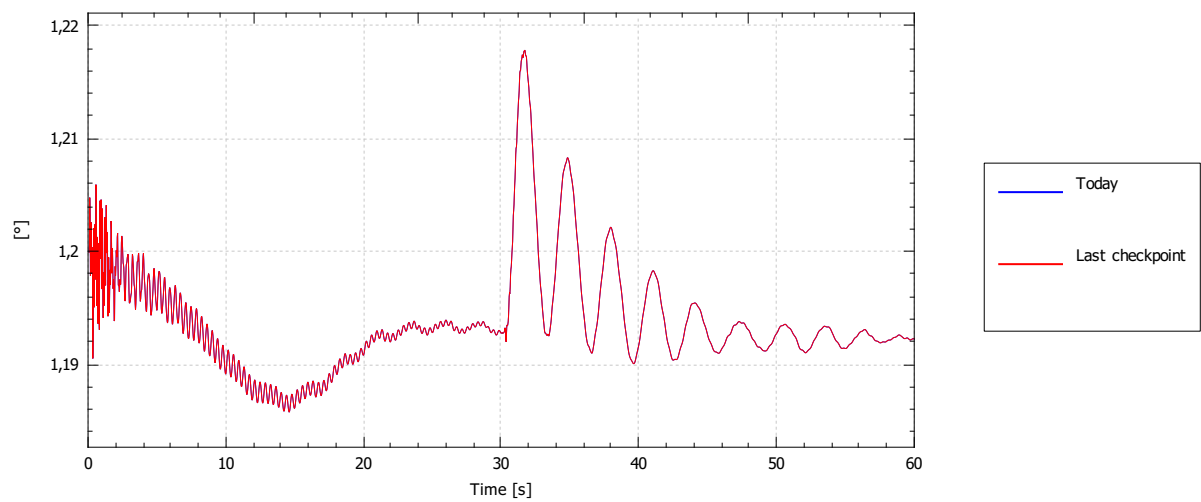
nP (blade passing)



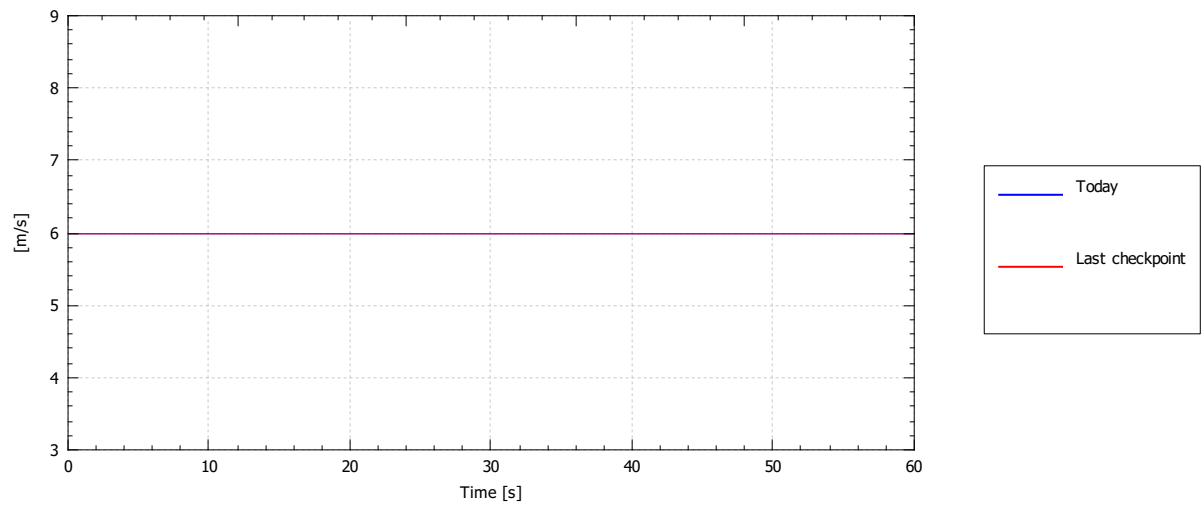
Azimuth angle



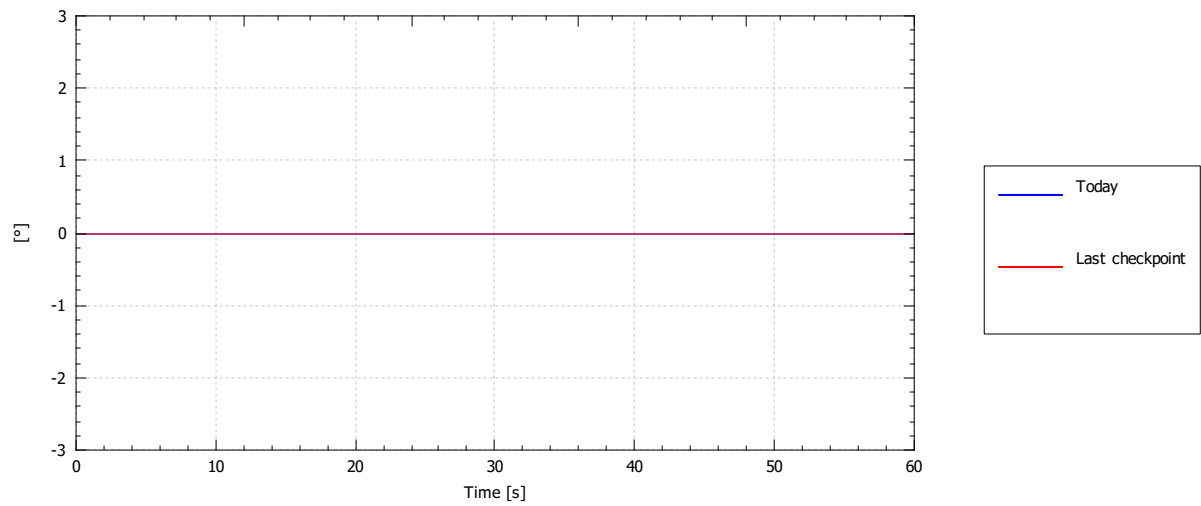
Rotation per timestep



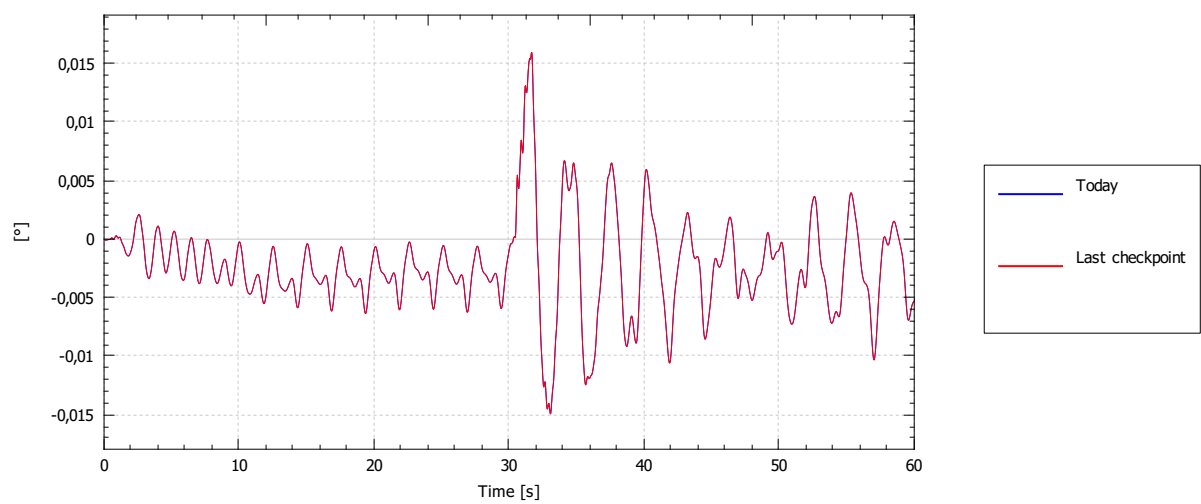
Wind speed at hub, magnitude



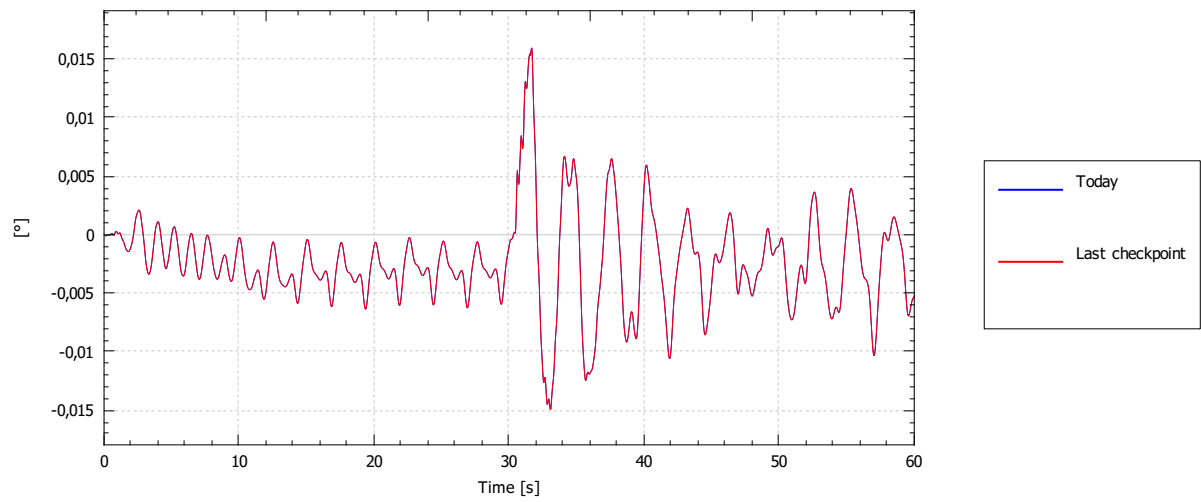
Wind angle at hub



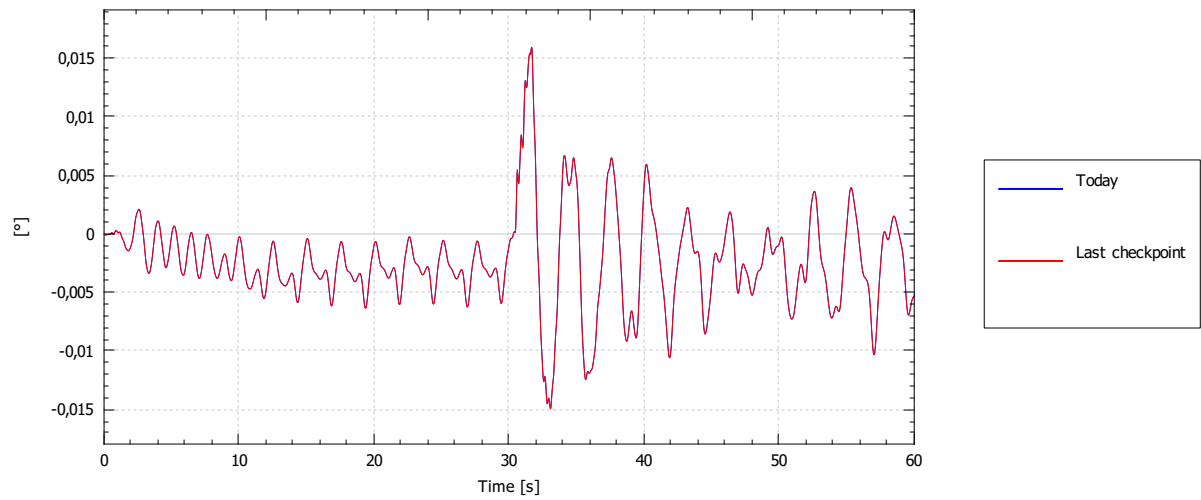
Yaw angle relative to forward



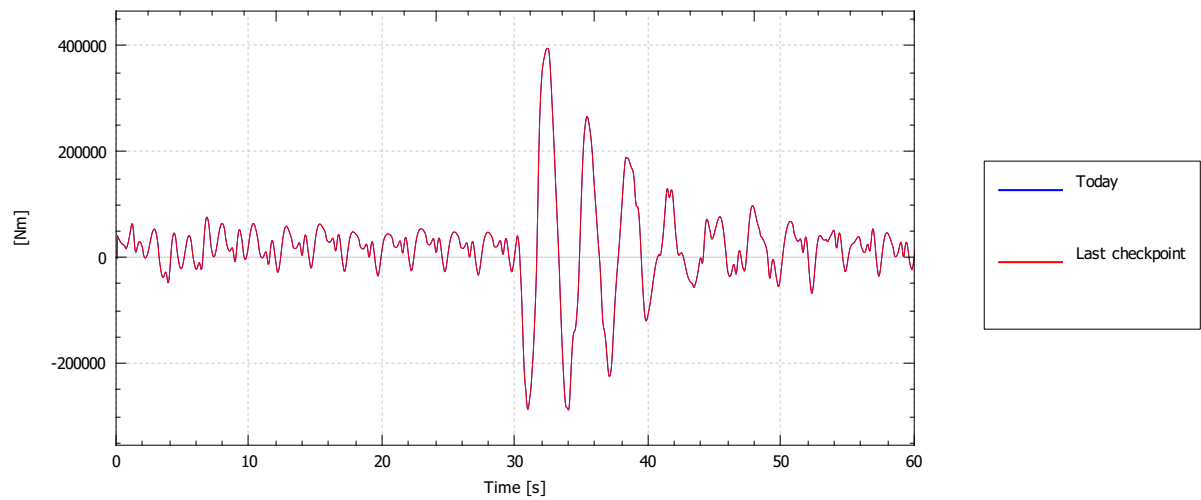
Yaw angle to reference direction



Yaw error

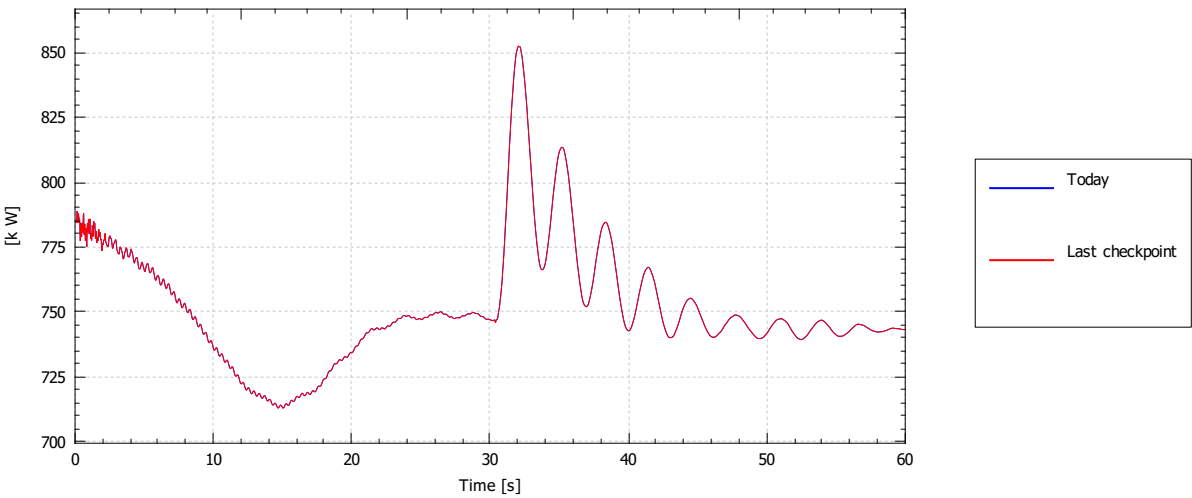


Torque about yaw axis

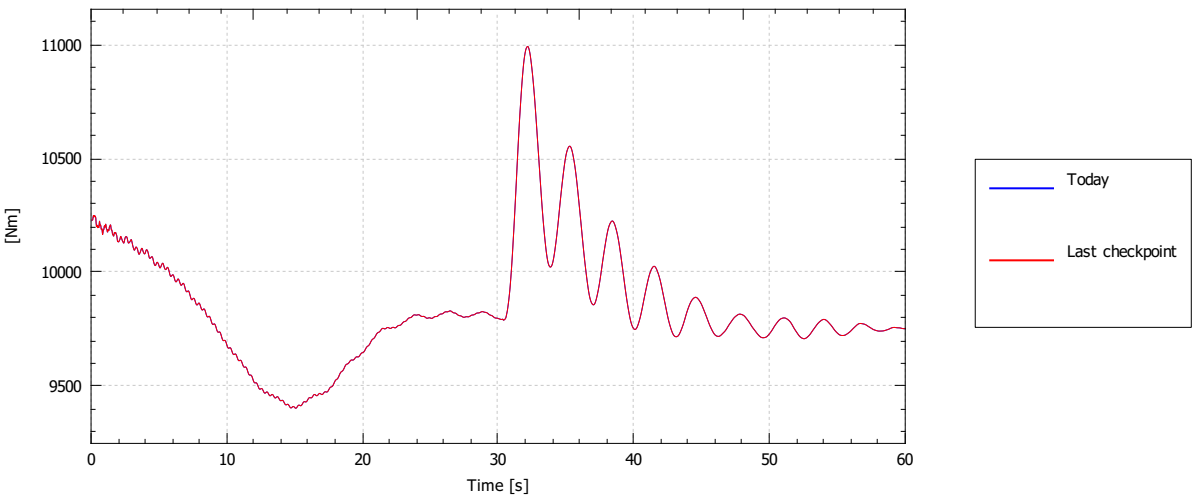


Generator

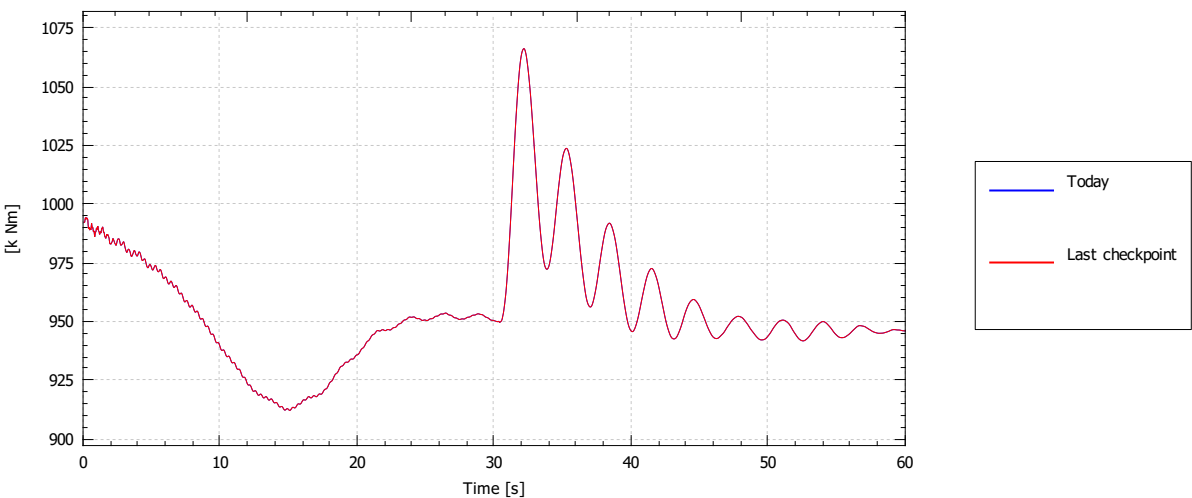
Power (electrical)



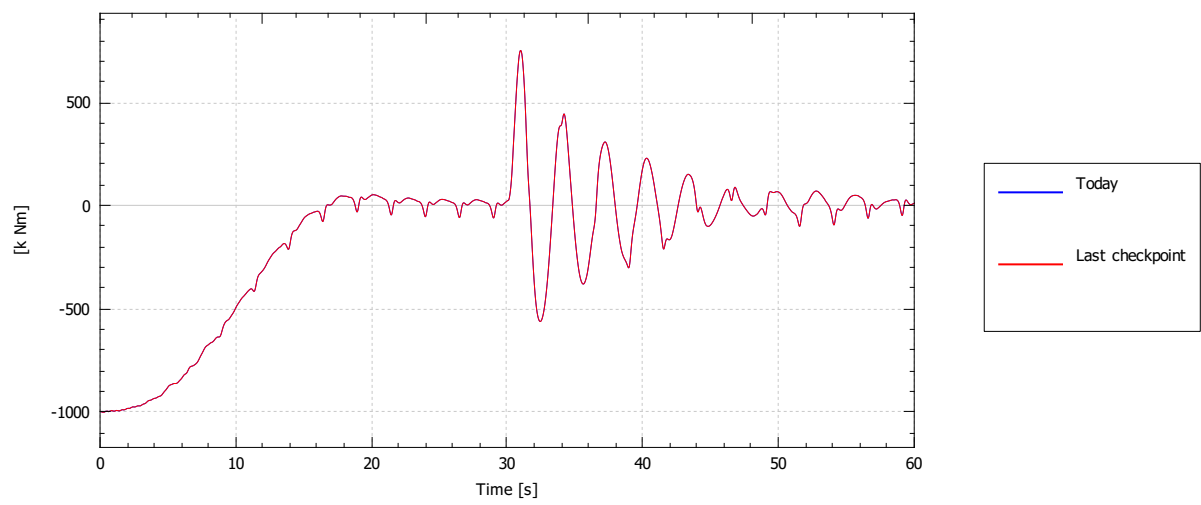
Torque



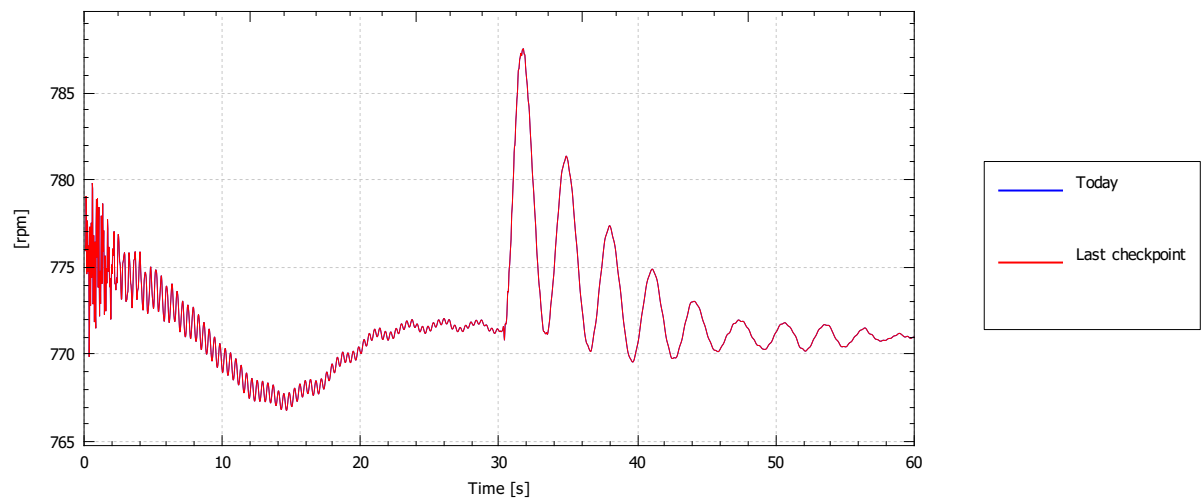
Torque on main shaft



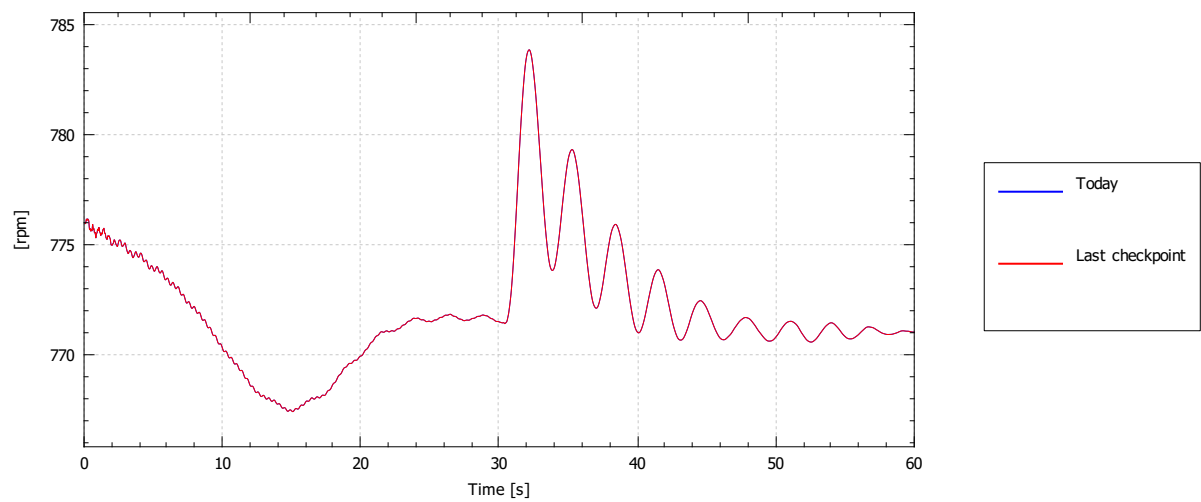
Torque diff. on main shaft



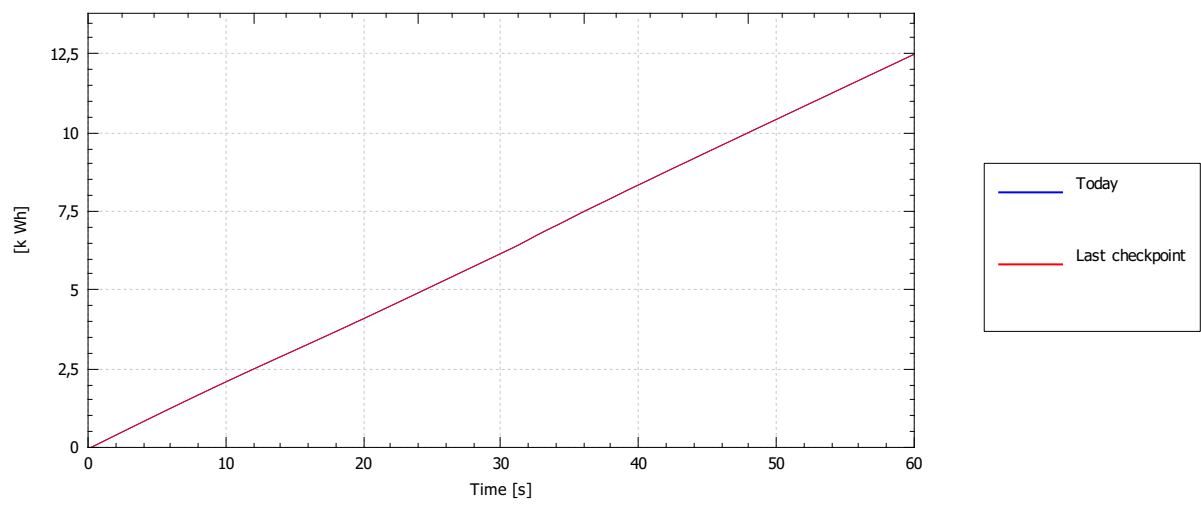
RPM



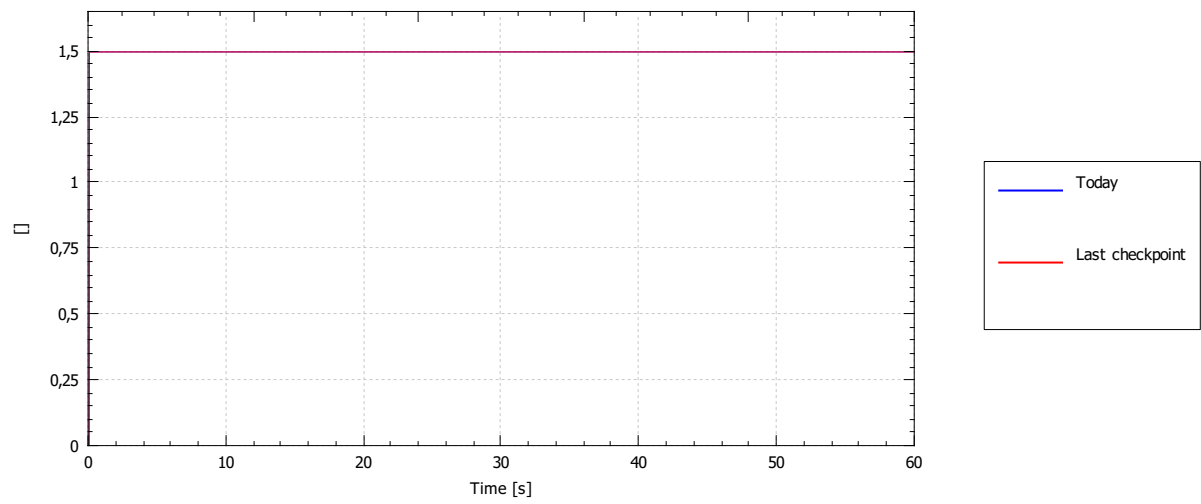
Filtered RPM



Electricity production

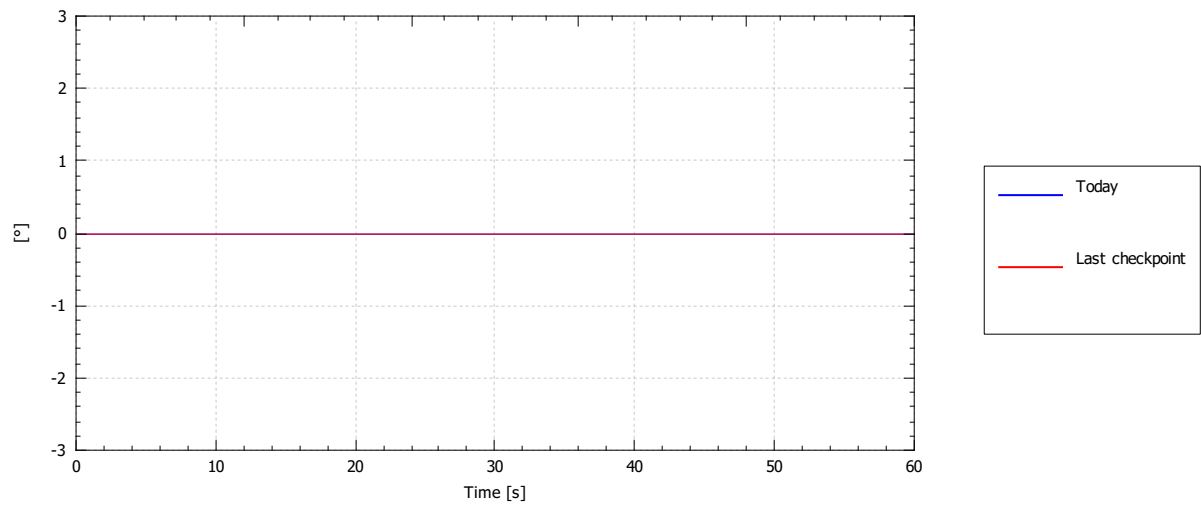


Region

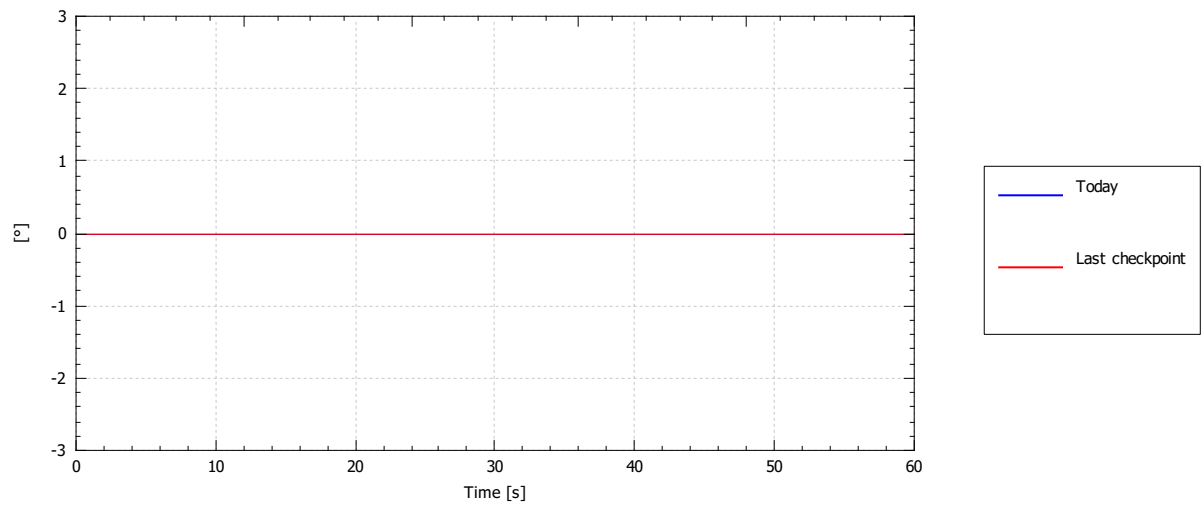


Demanded pitch controller

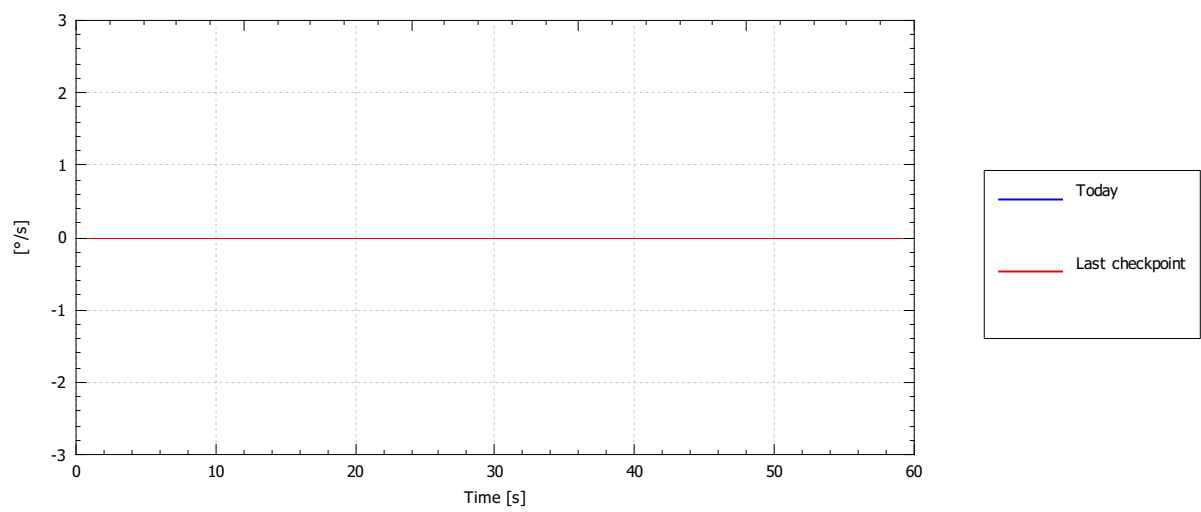
Demanded collective pitch angle



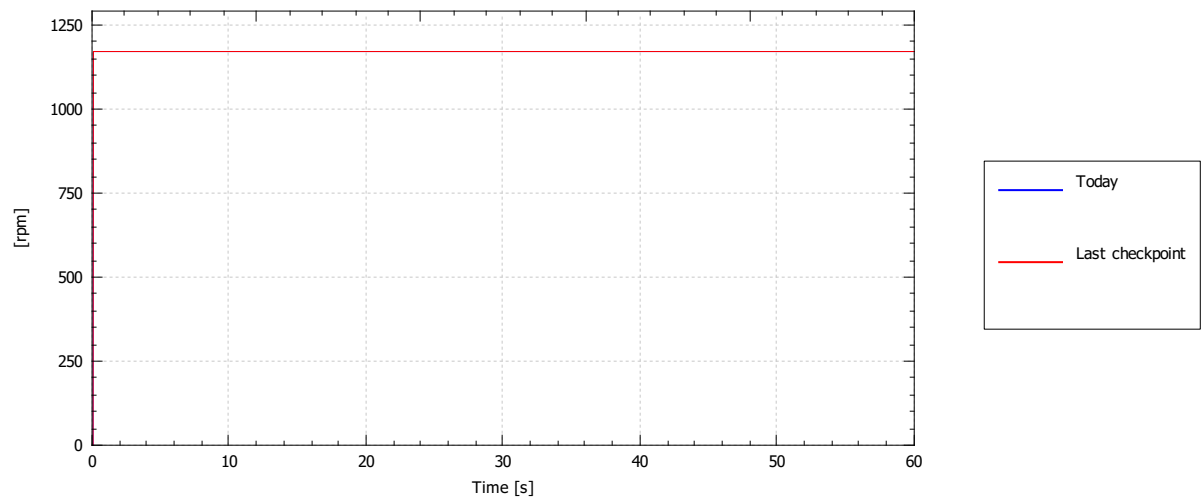
Cumulative demanded collective pitch angle



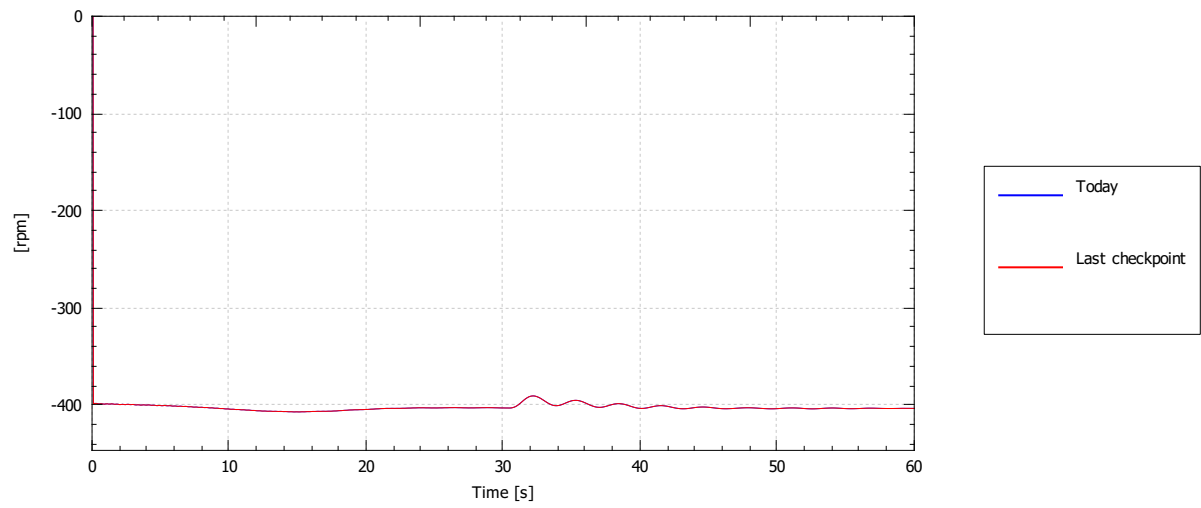
Demanded collective pitch angle rate



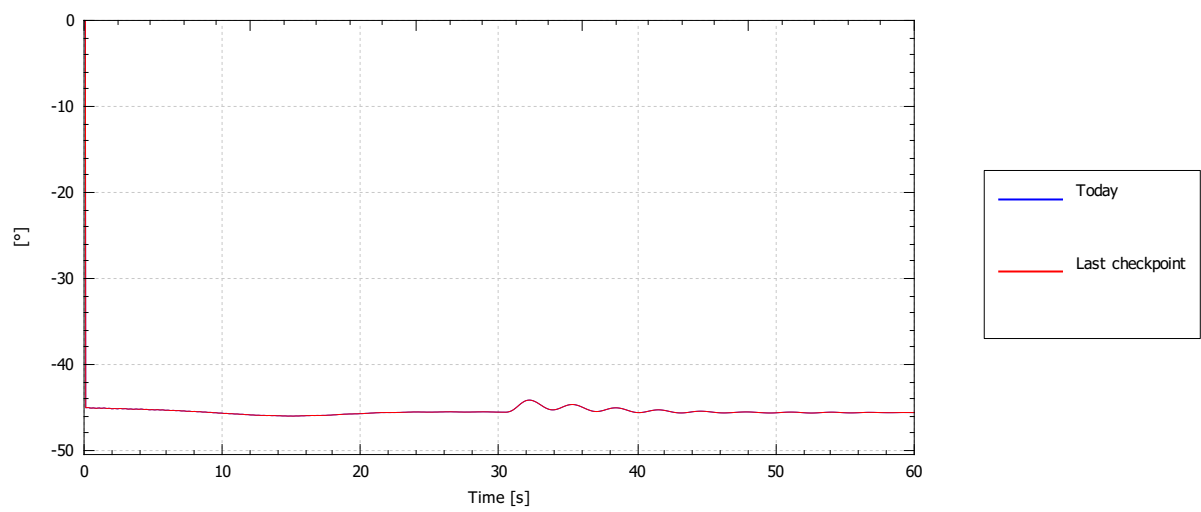
Set point

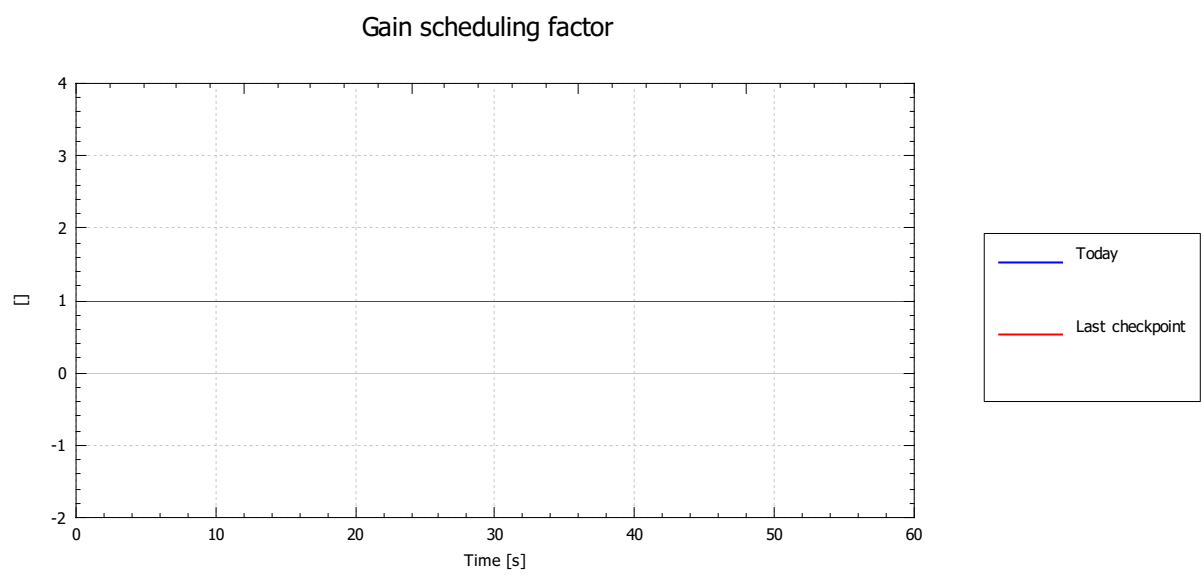
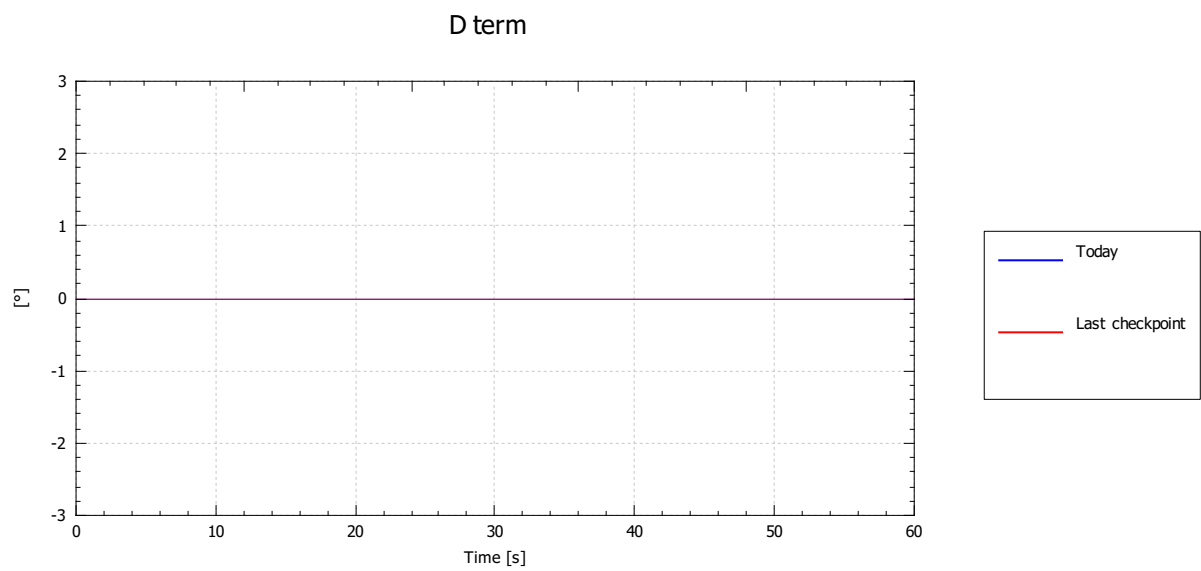
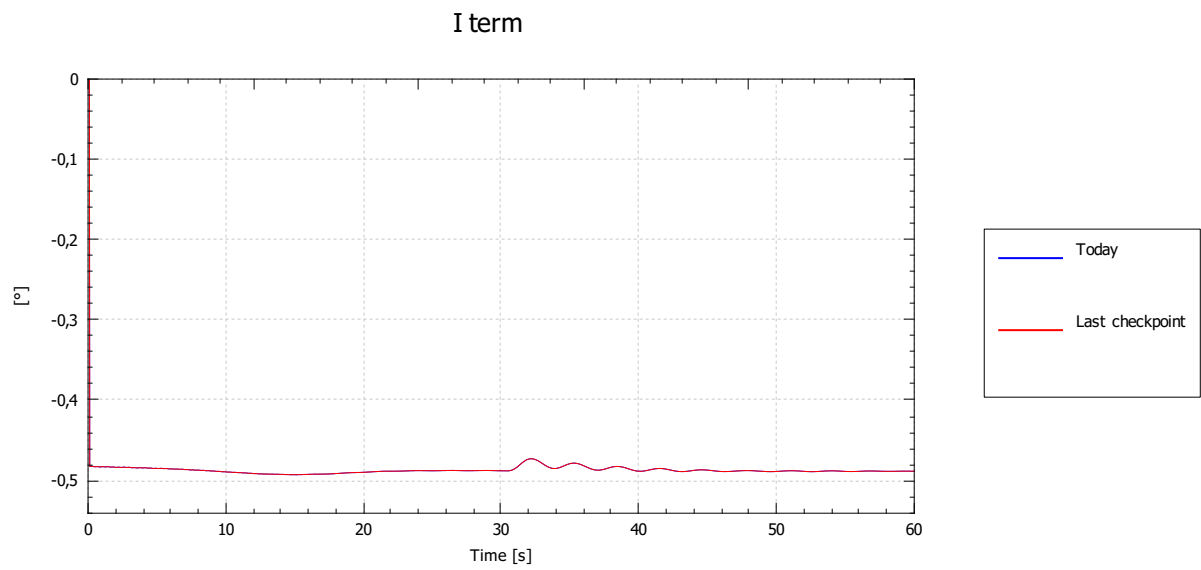


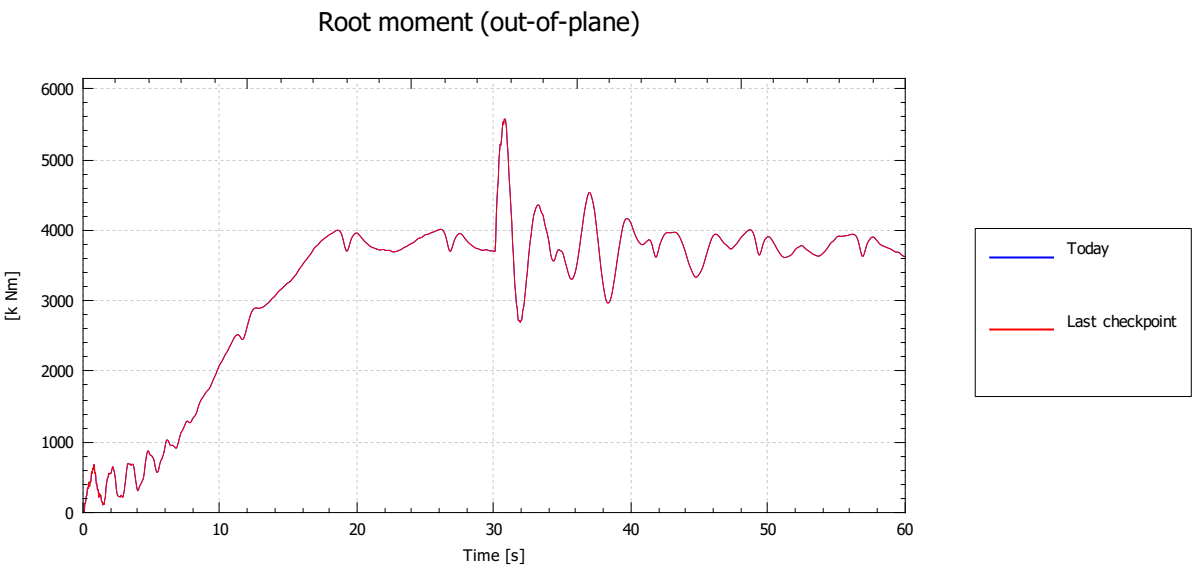
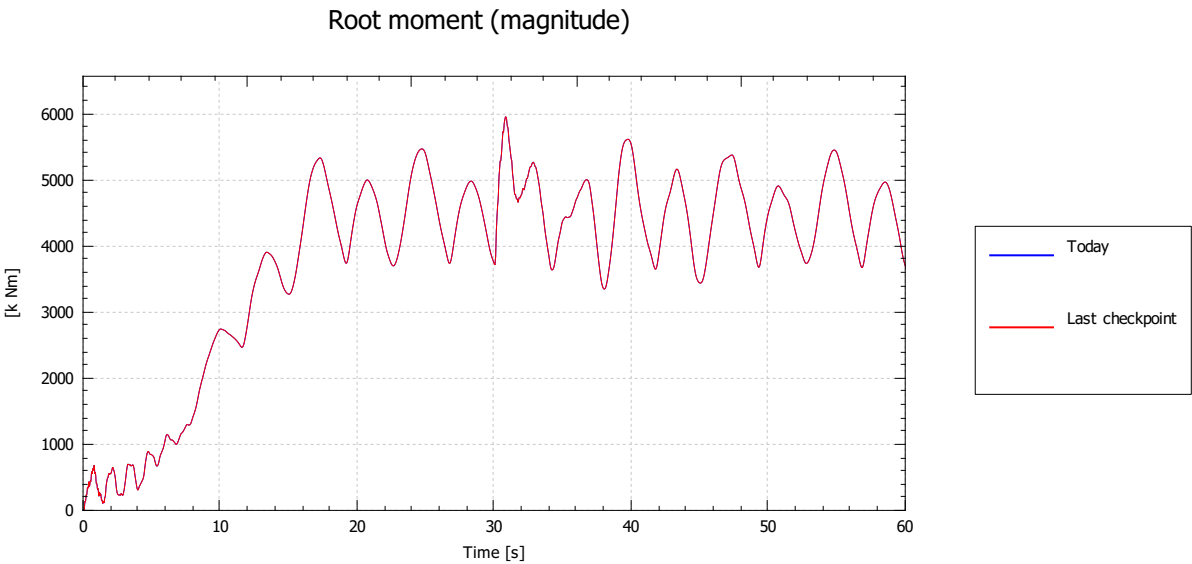
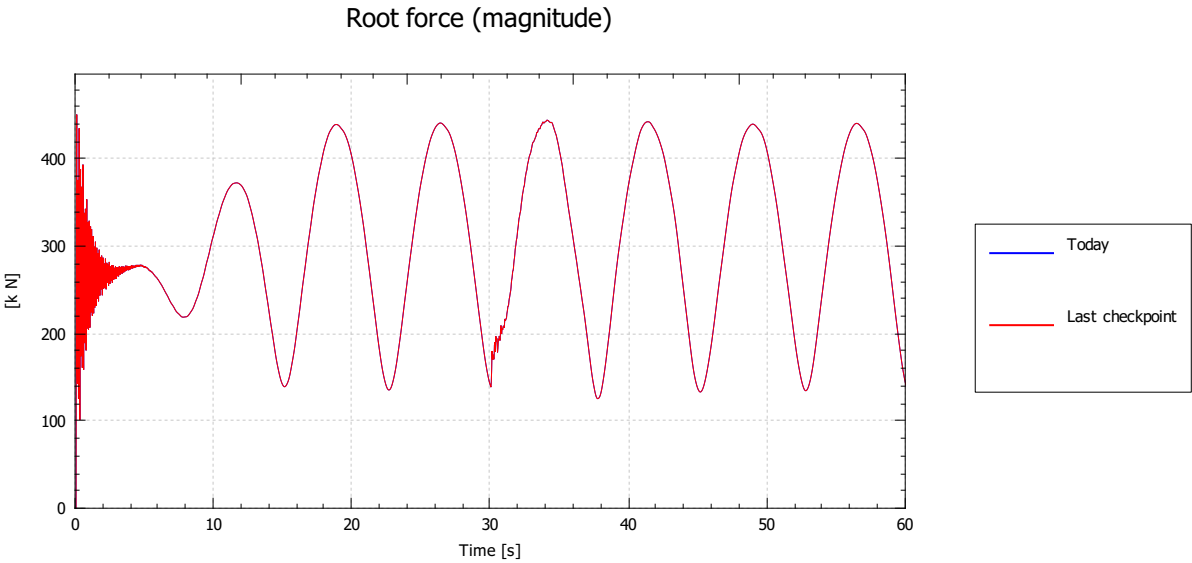
RPM error



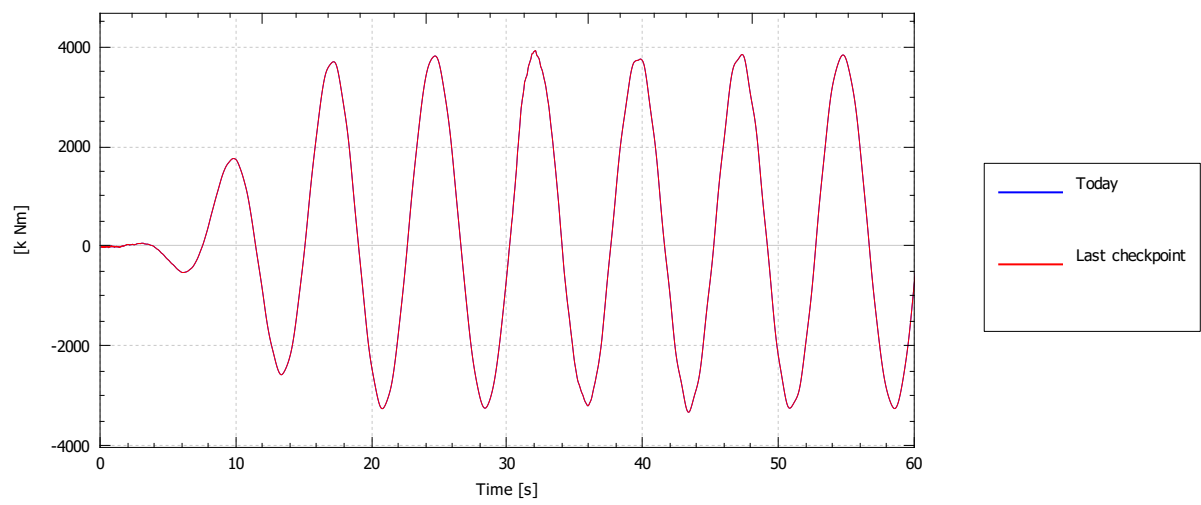
P term



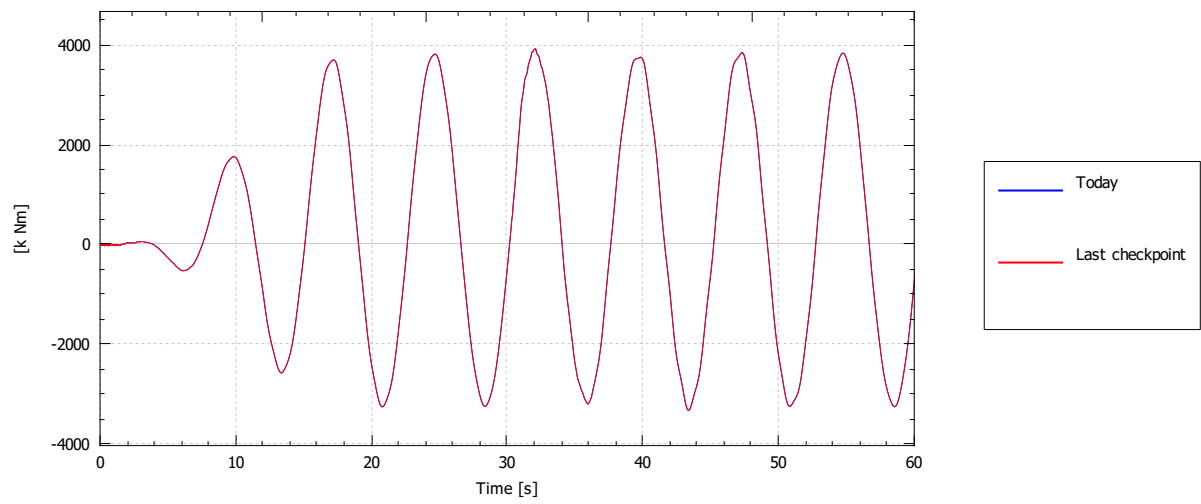




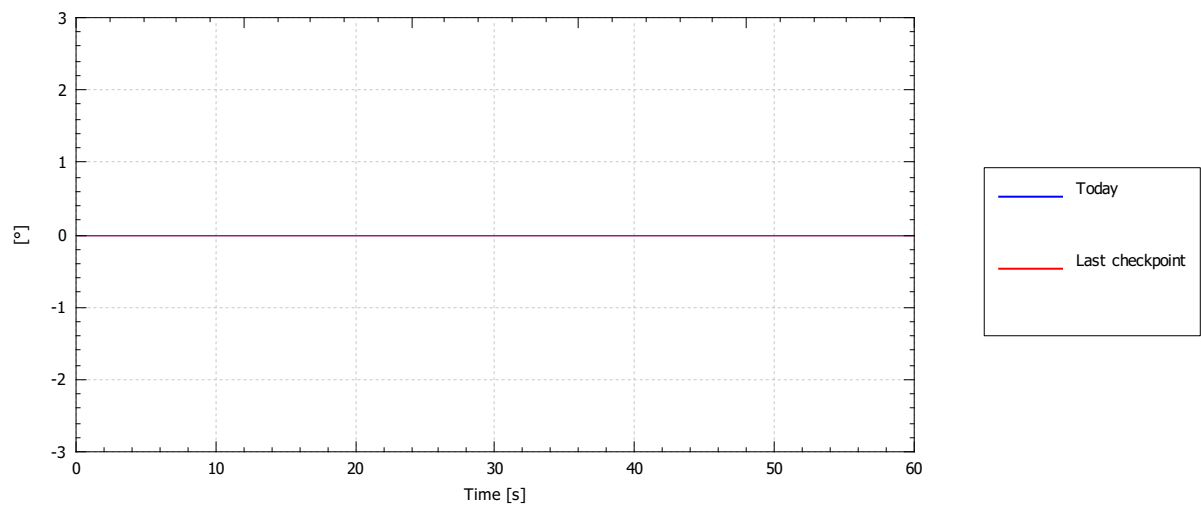
Root moment (in-plane)



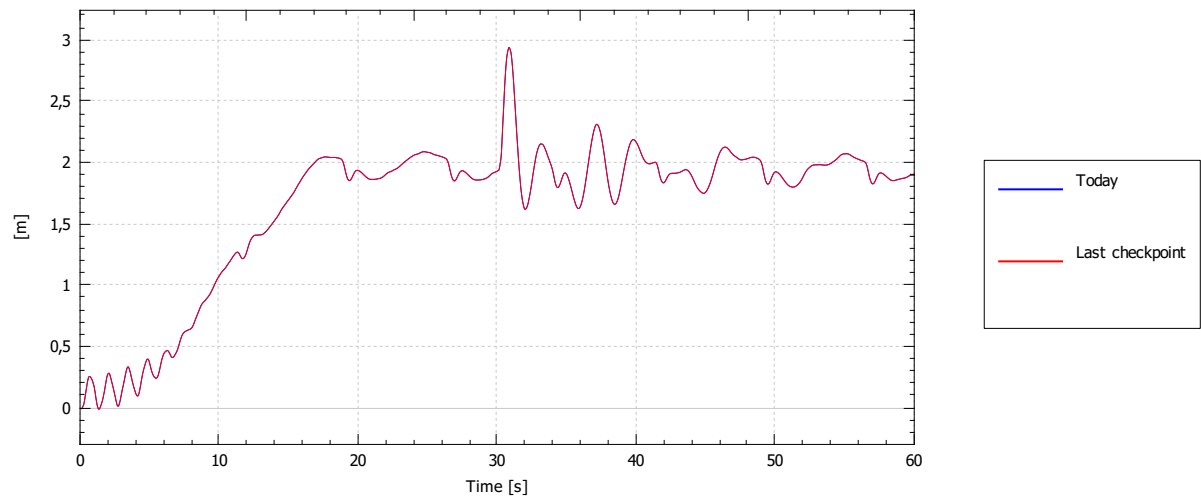
Root moment about shaft



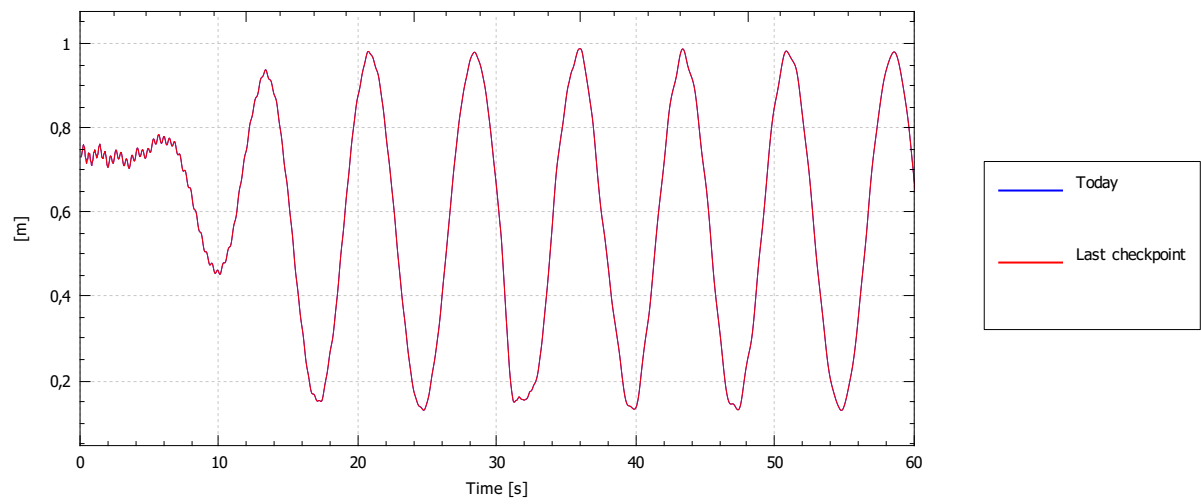
Pitch angle



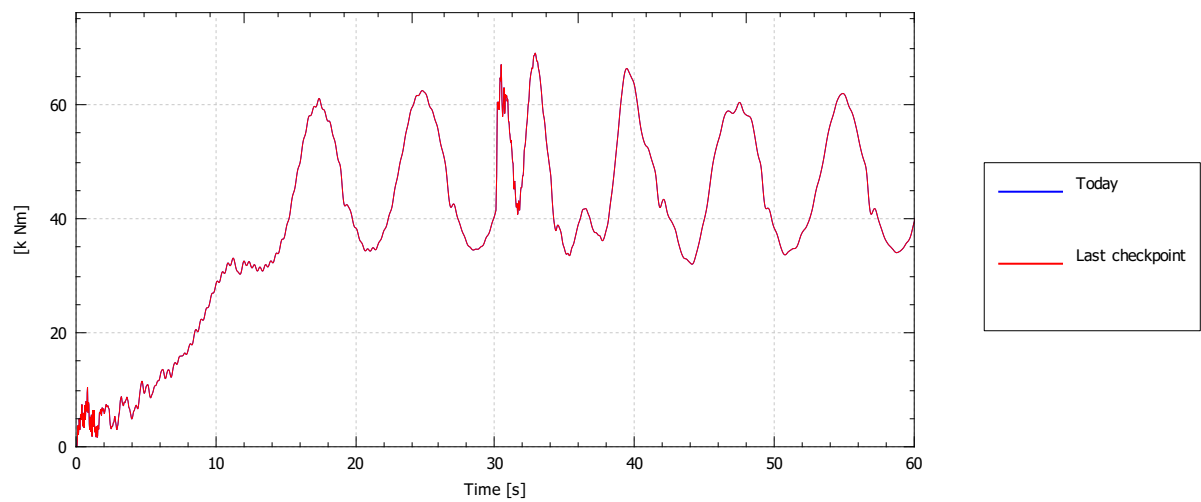
Tip deflection (out-of-plane)

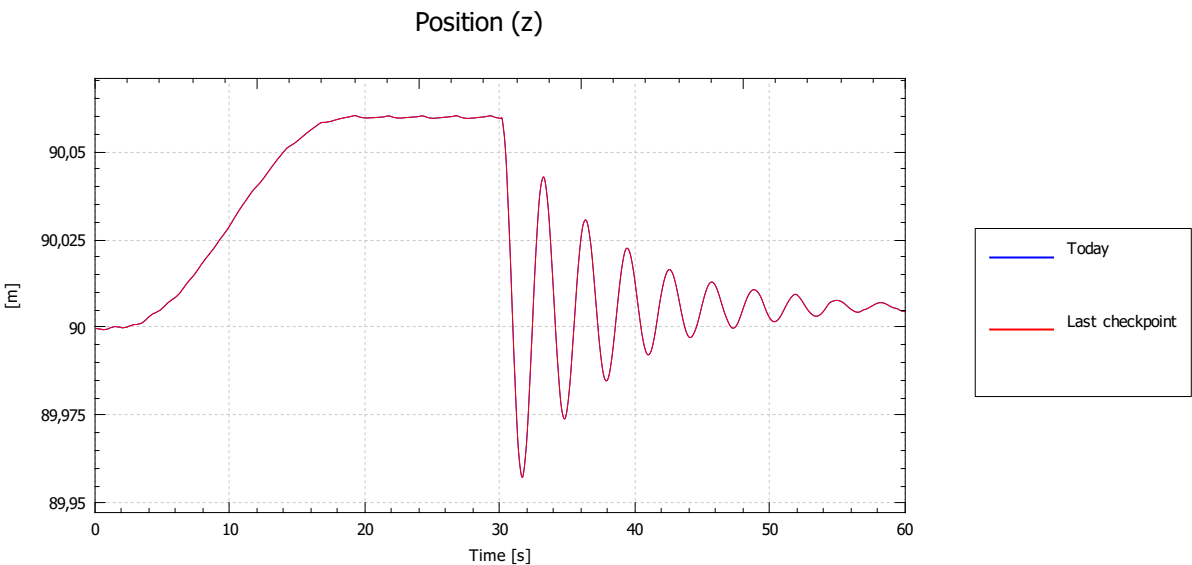
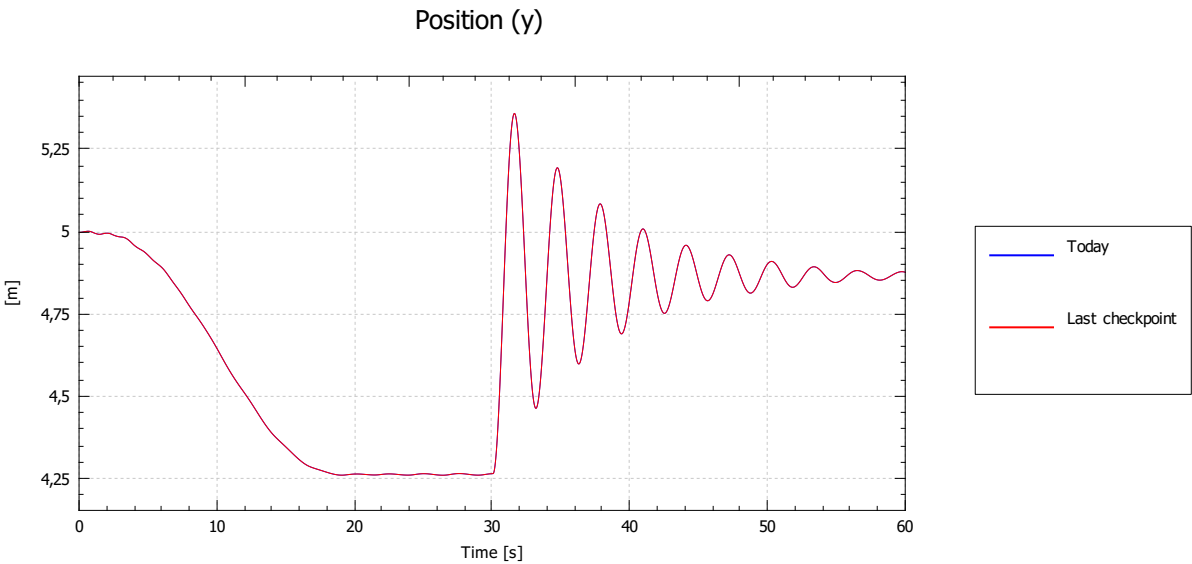
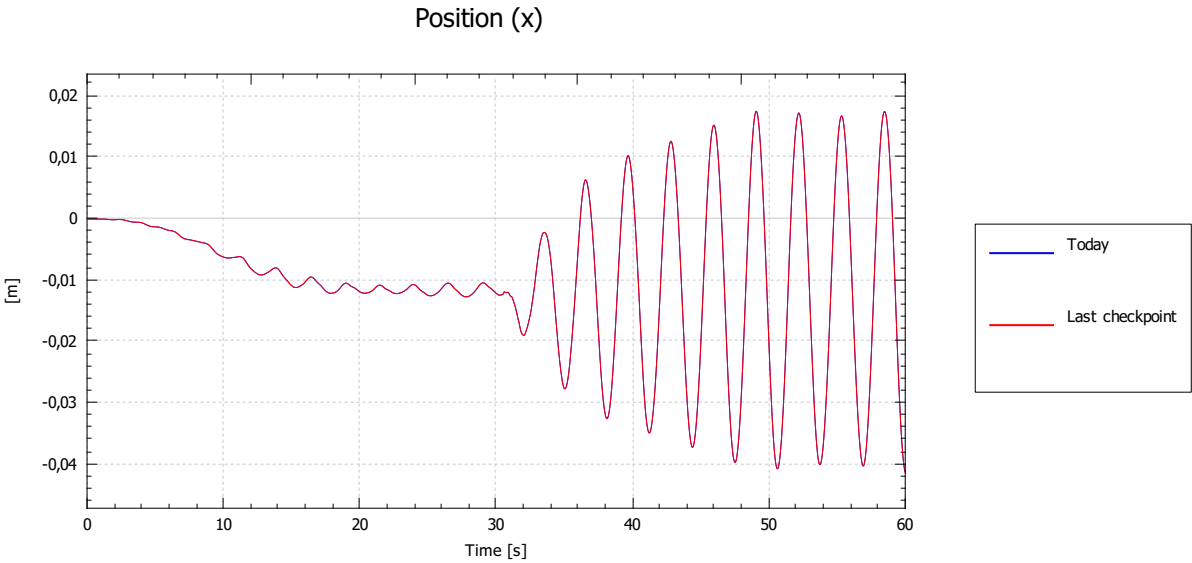


Tip deflection (in-plane)

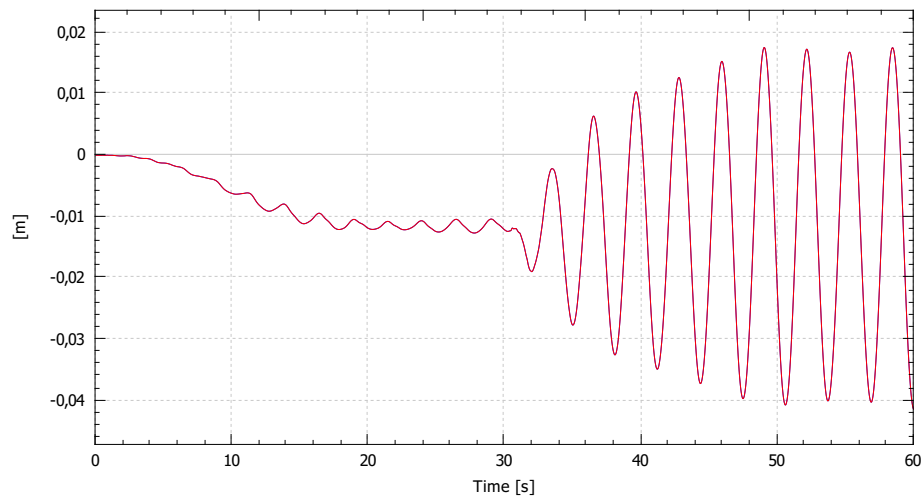


Root torque

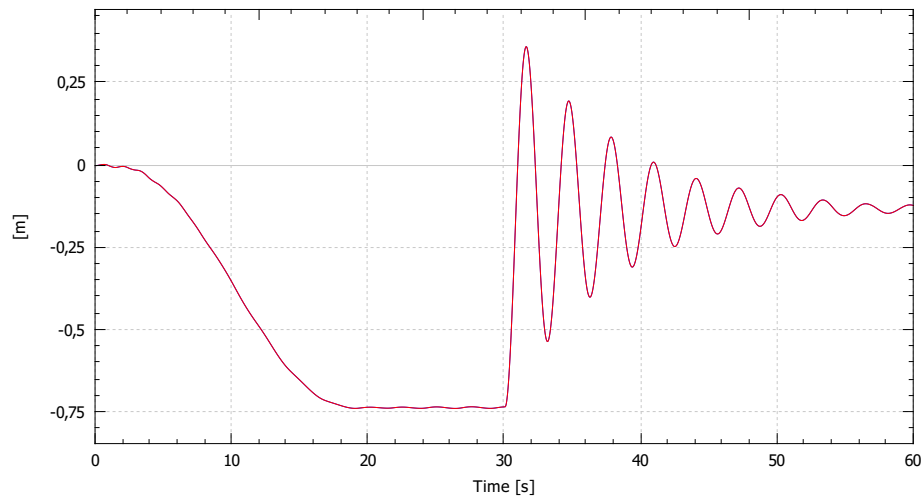




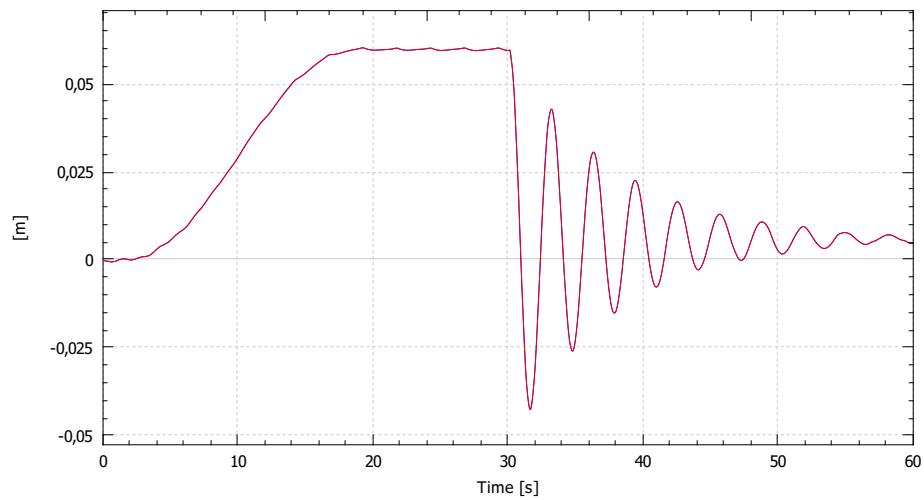
Displacement (u)



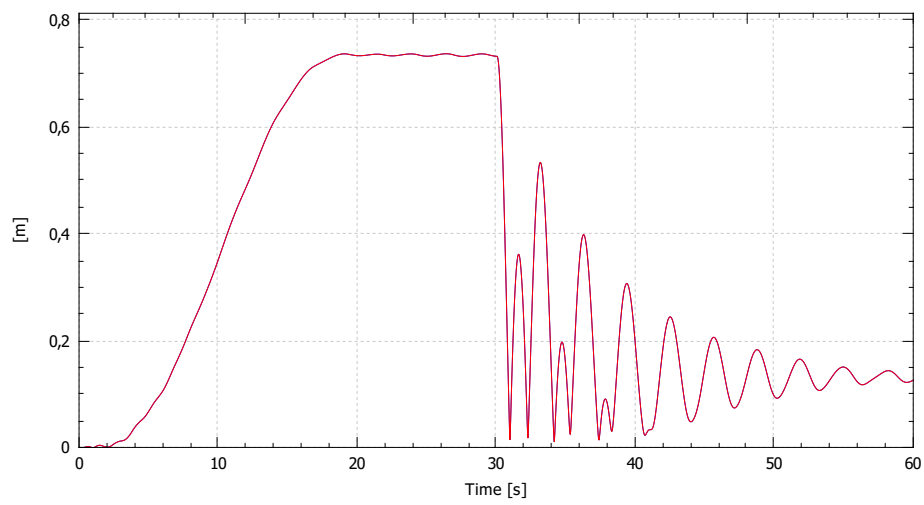
Displacement (v)



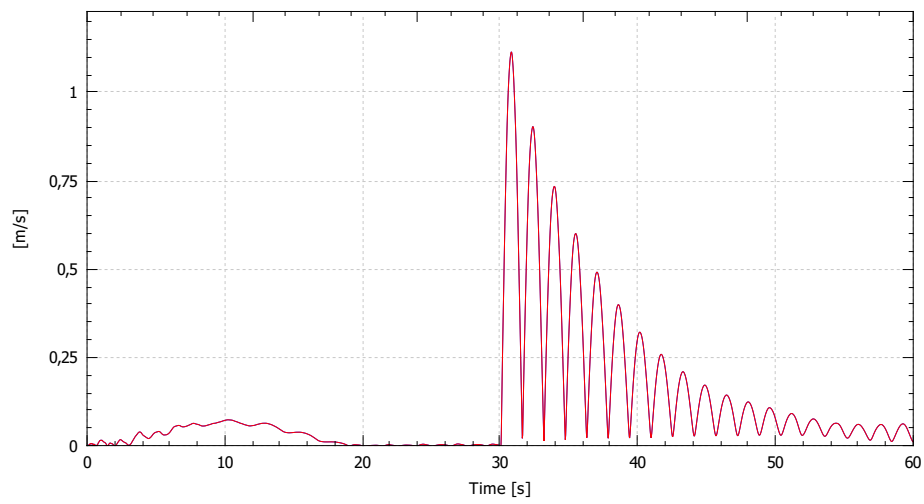
Displacement (w)



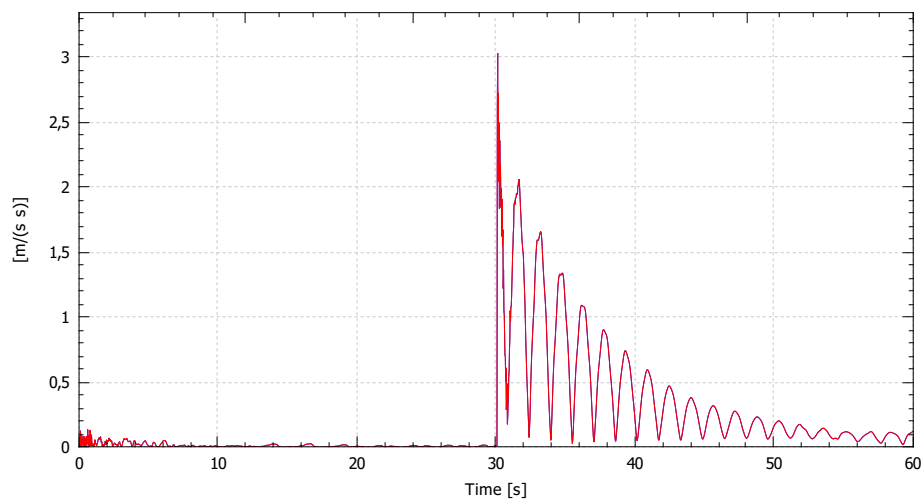
Displacement magnitude

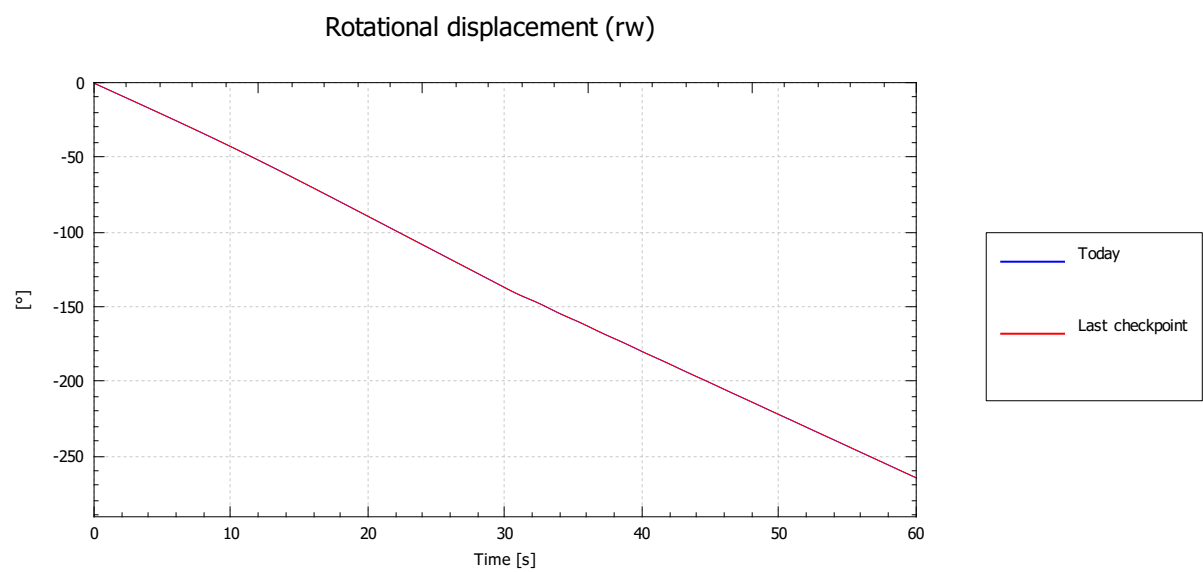
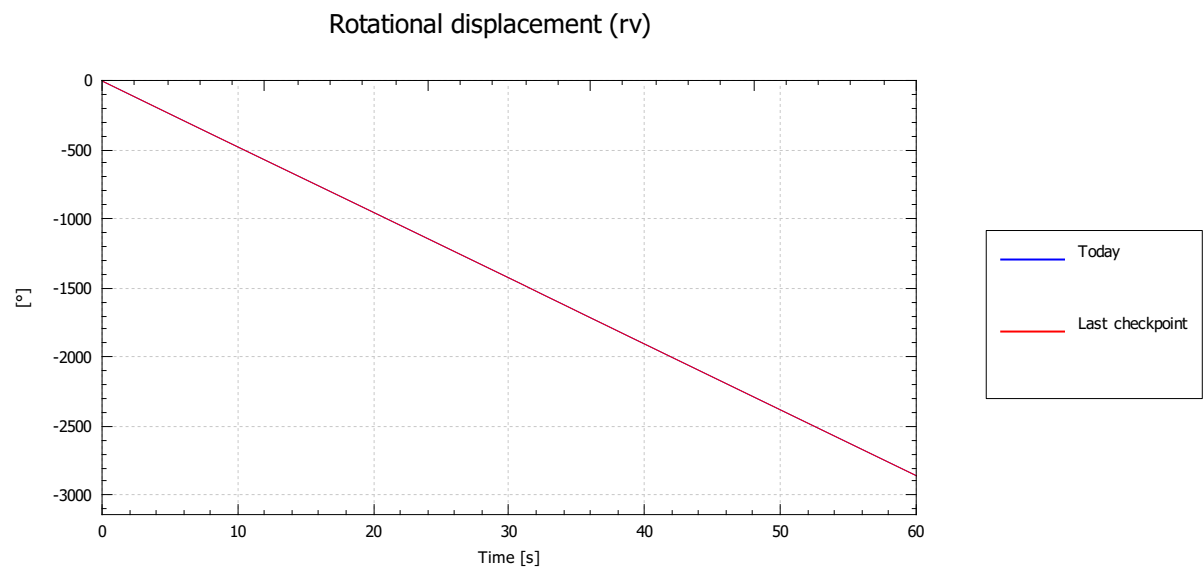
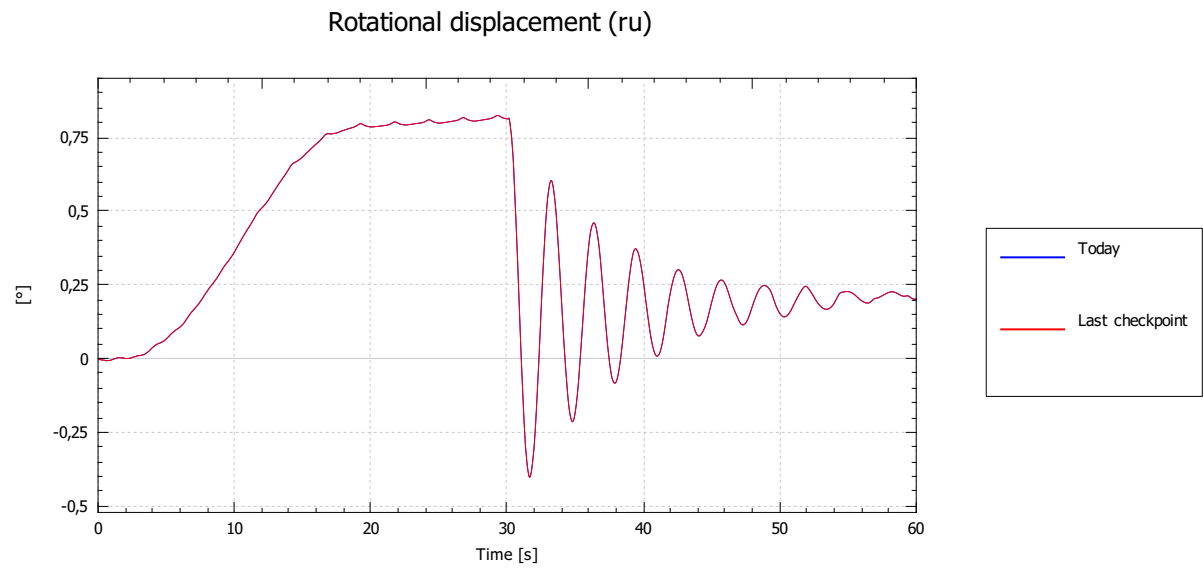


Speed

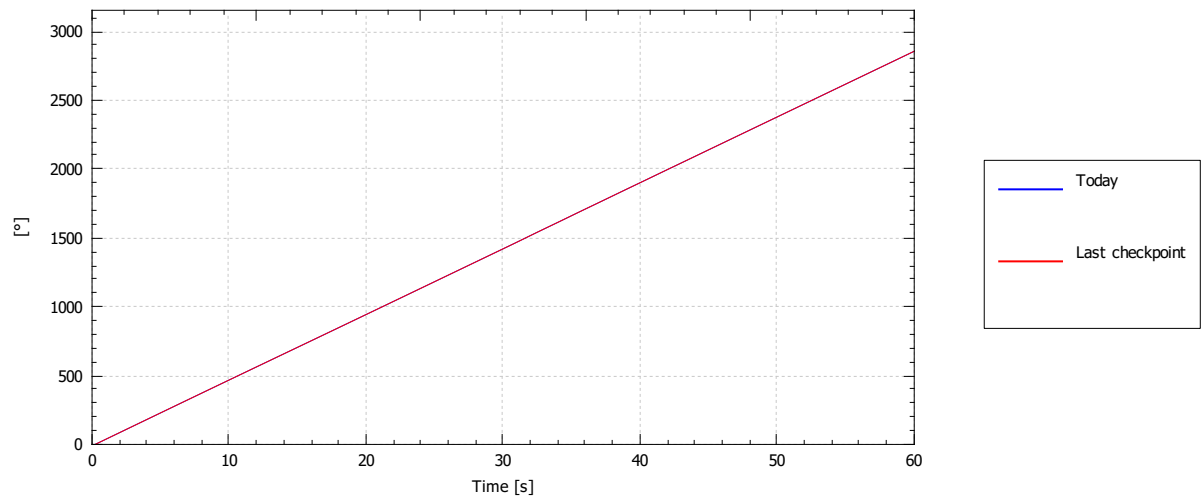


Acceleration, magnitude

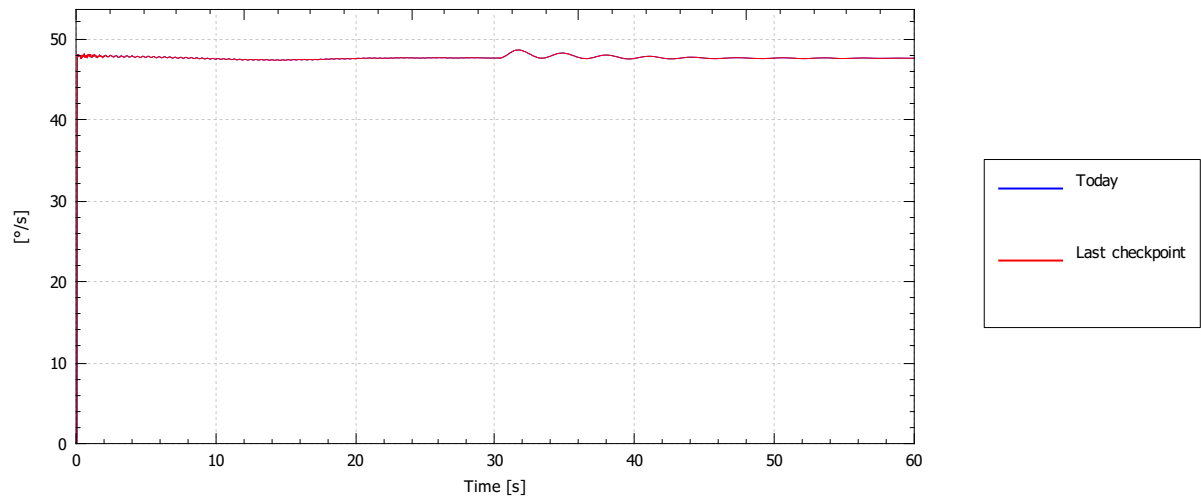




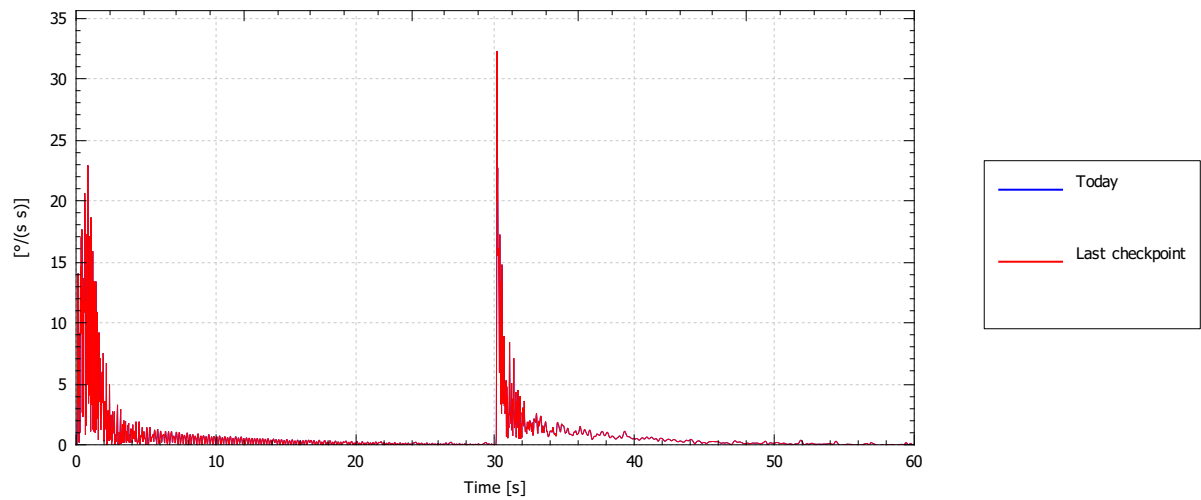
Rotational displacement magnitude



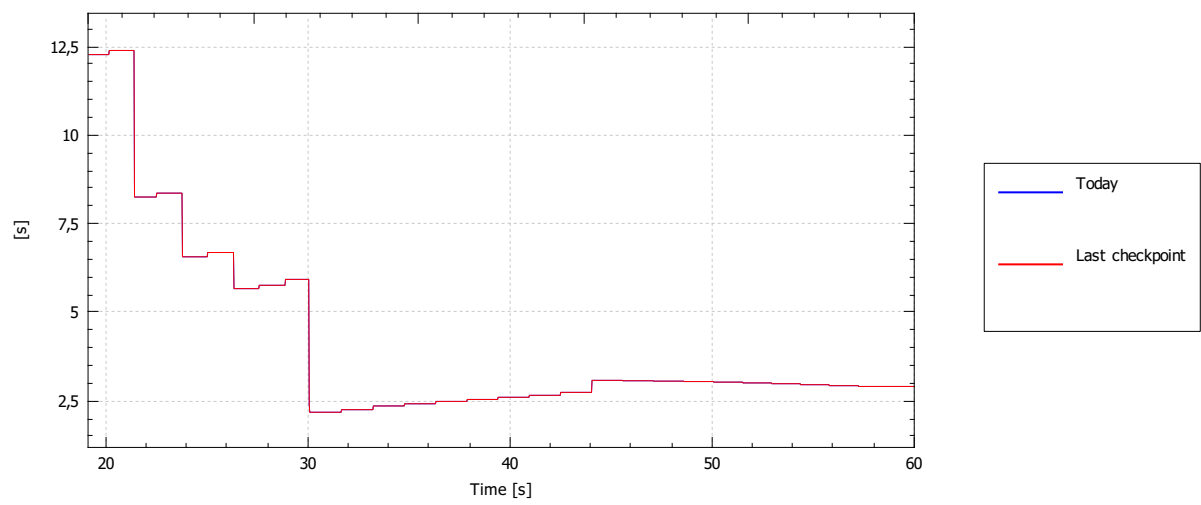
Rotational speed



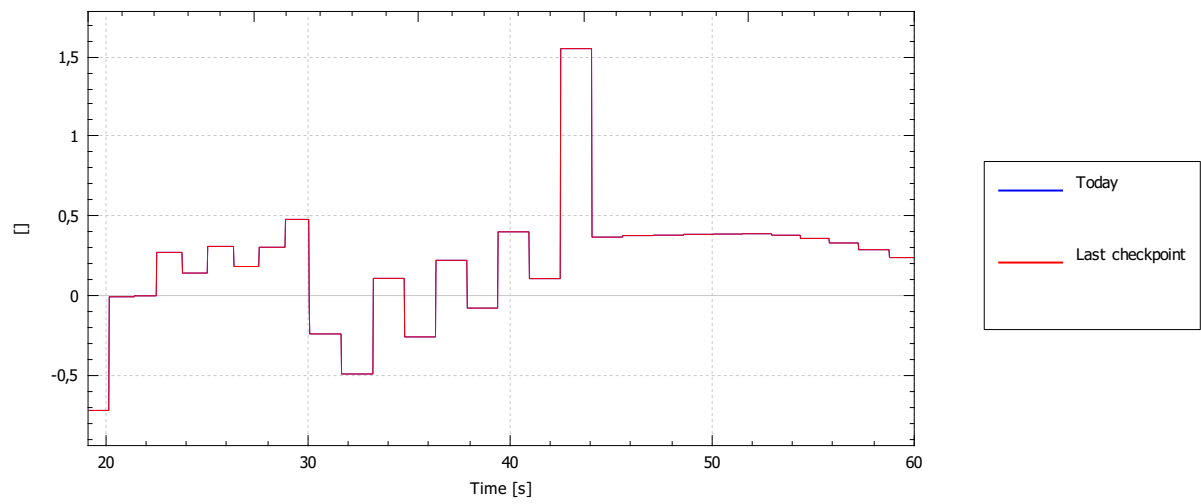
Rotational acceleration mag



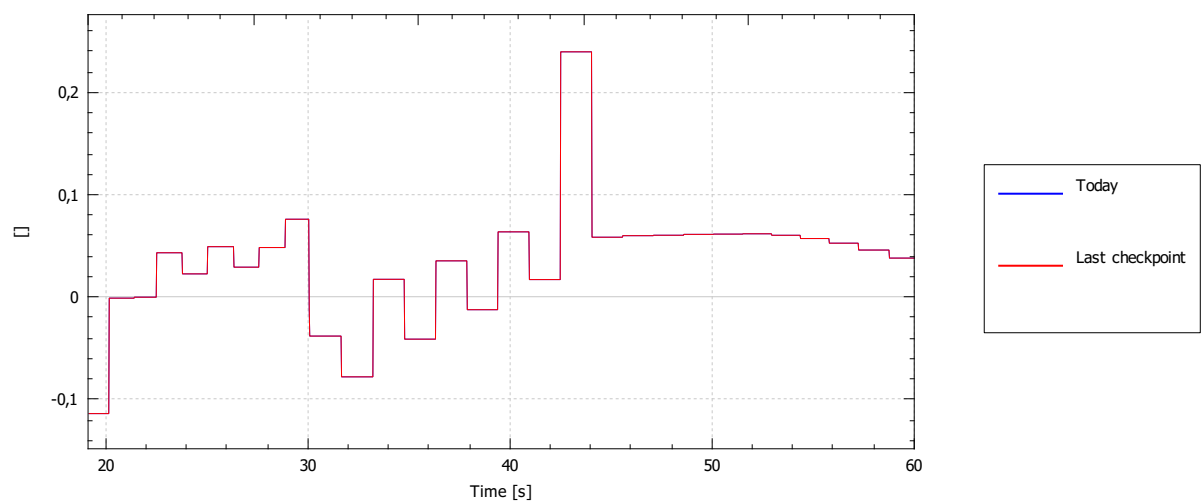
Displacement period



Displacement logarithmic decrement

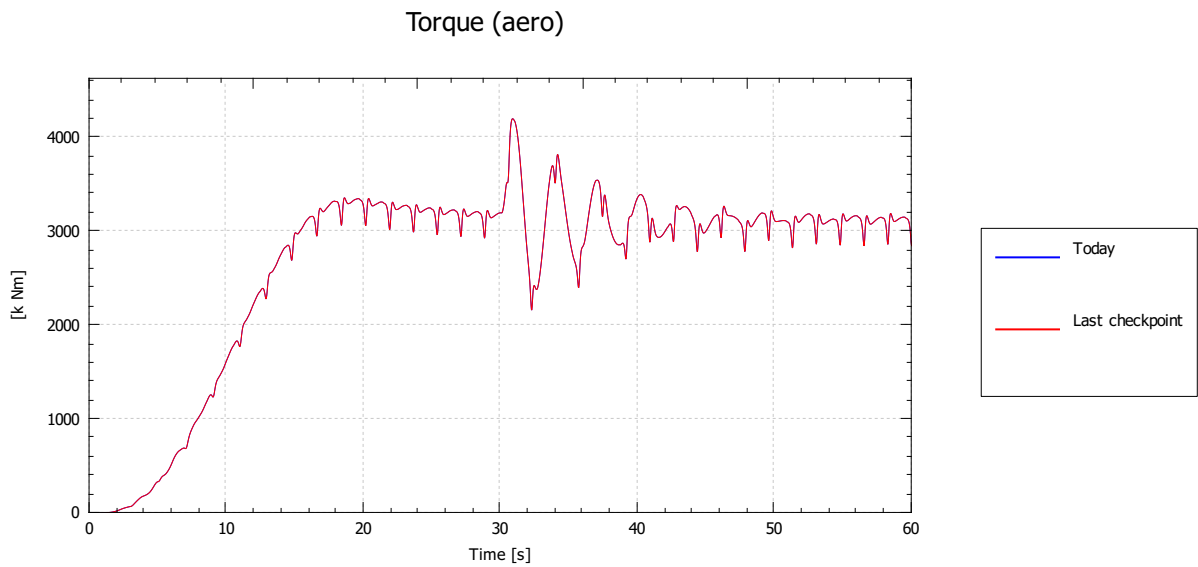
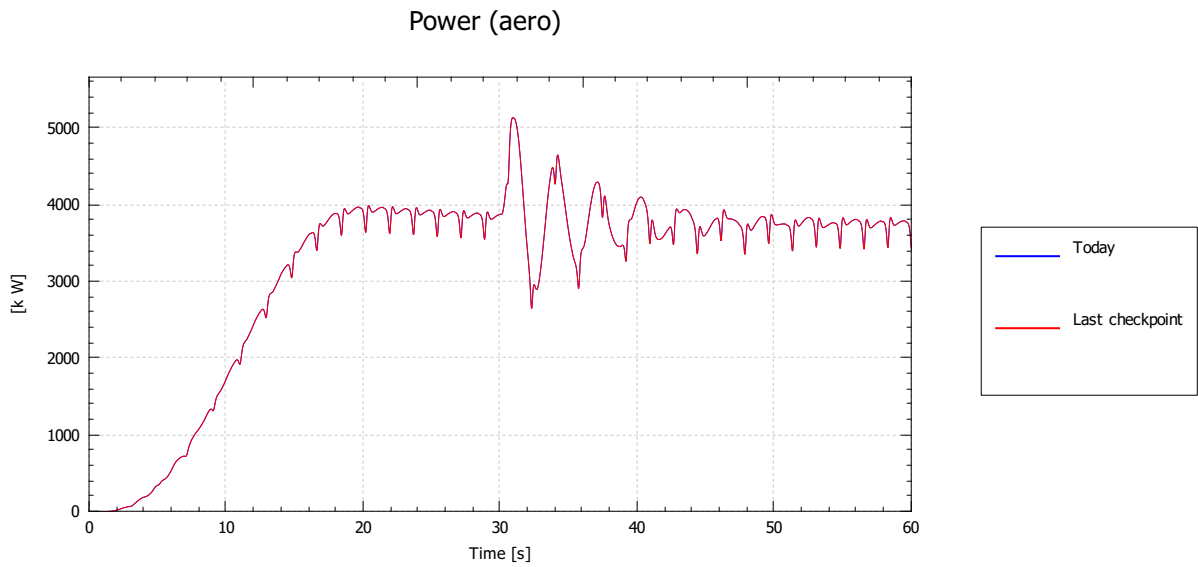


Displacement damping ratio

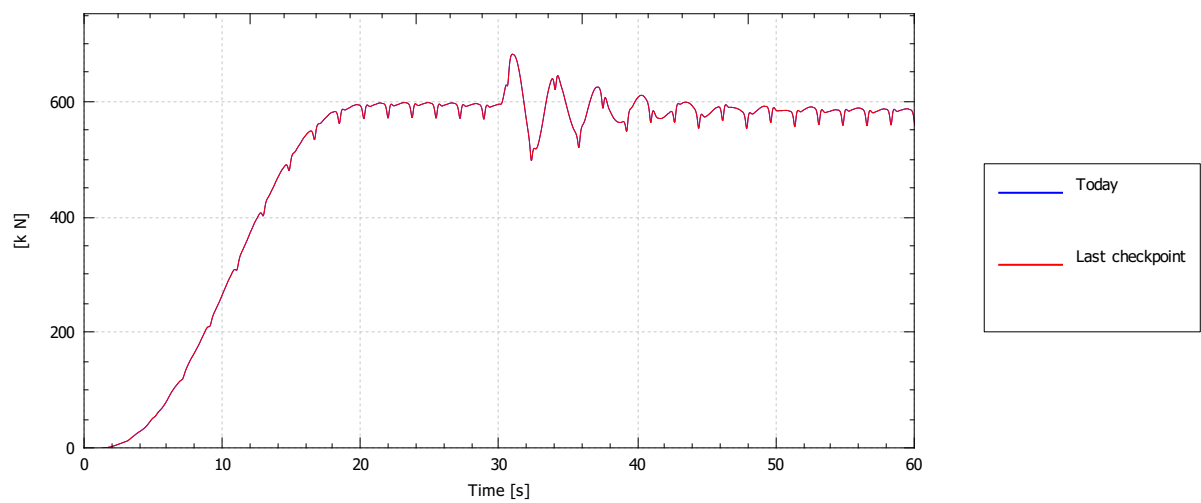


Load case: 10 ms

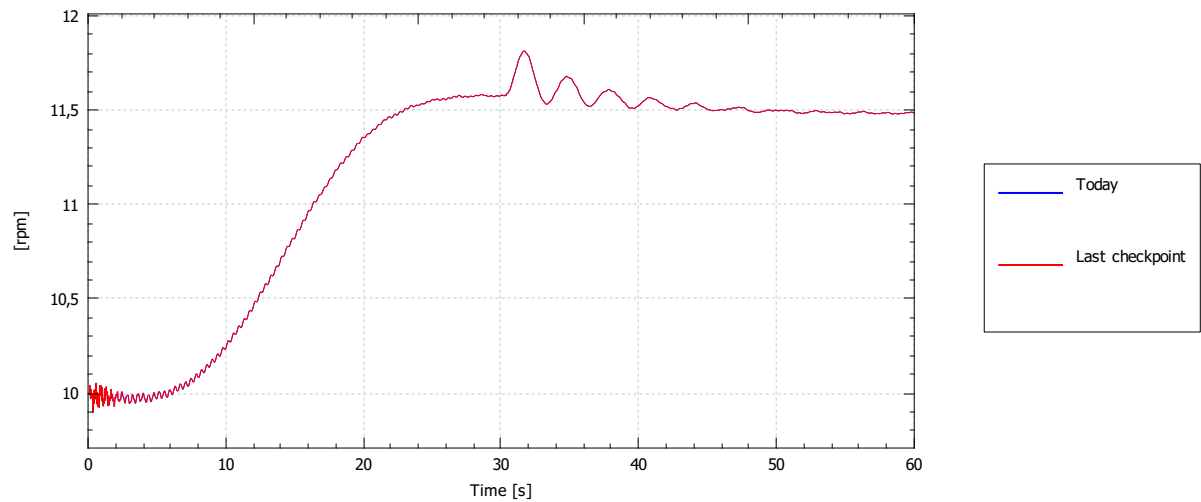
Rotor



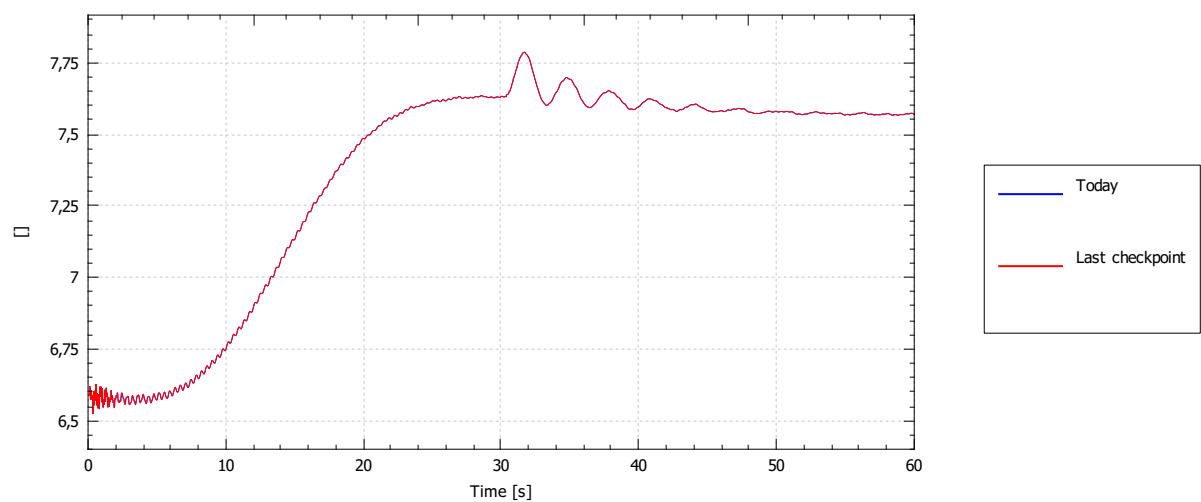
Thrust (aero)



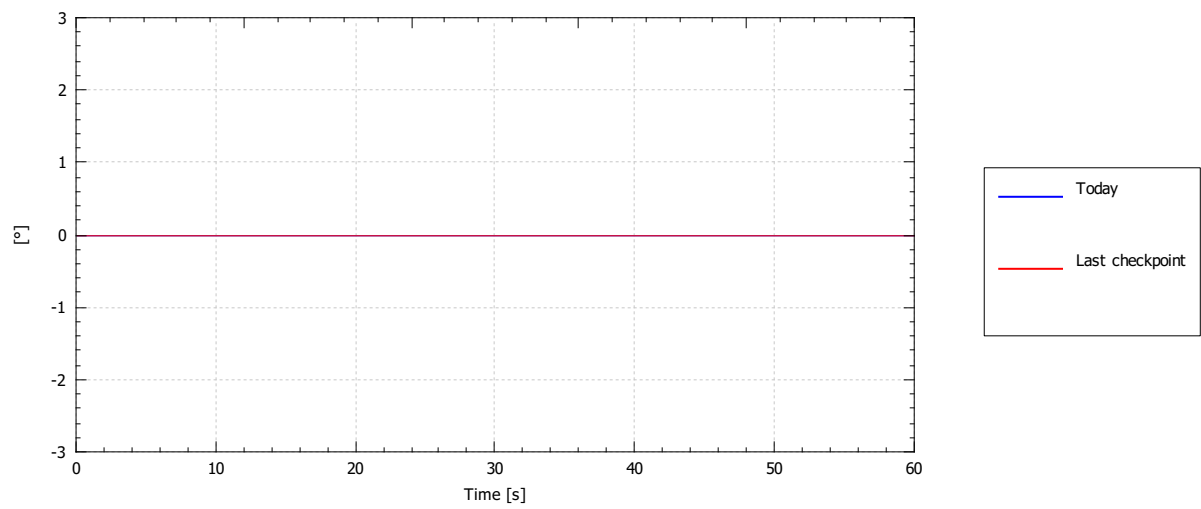
RPM



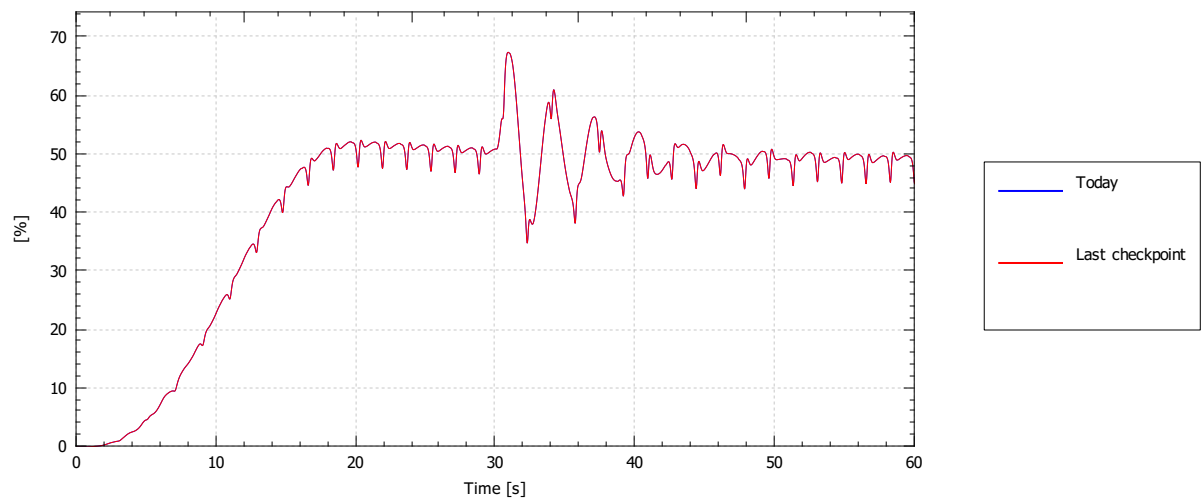
TSR



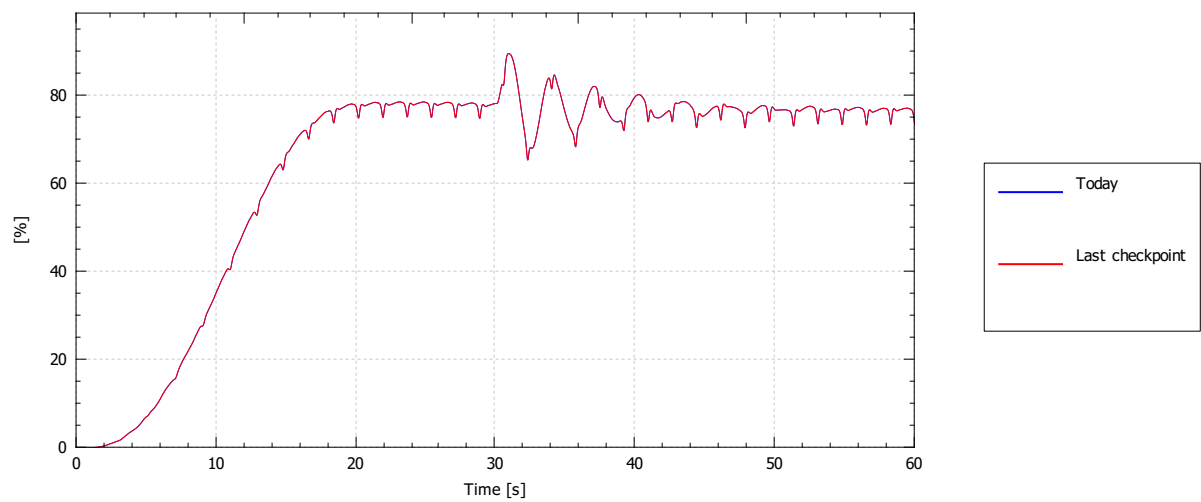
Representative demanded pitch angle



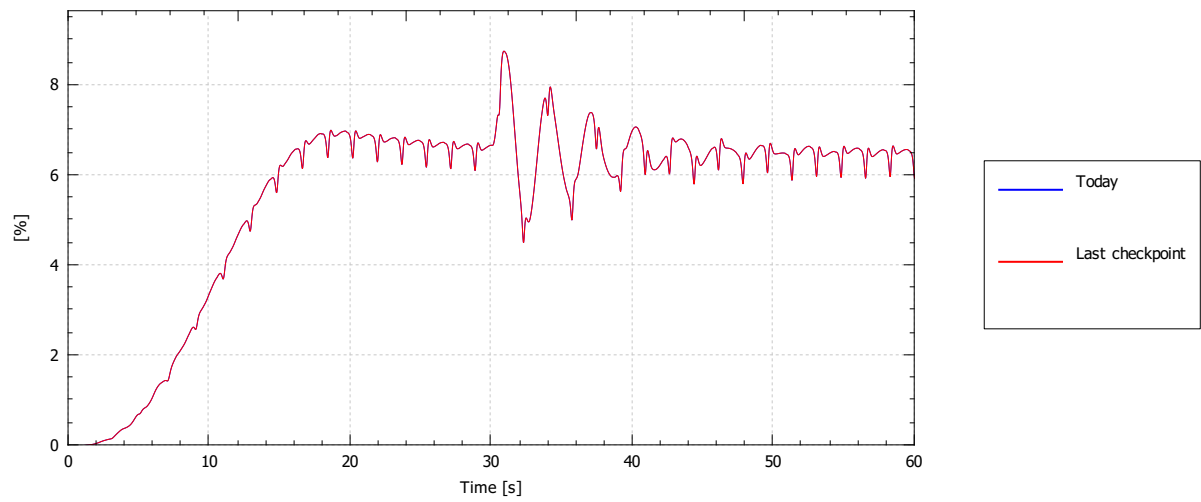
Power coef. (CP)



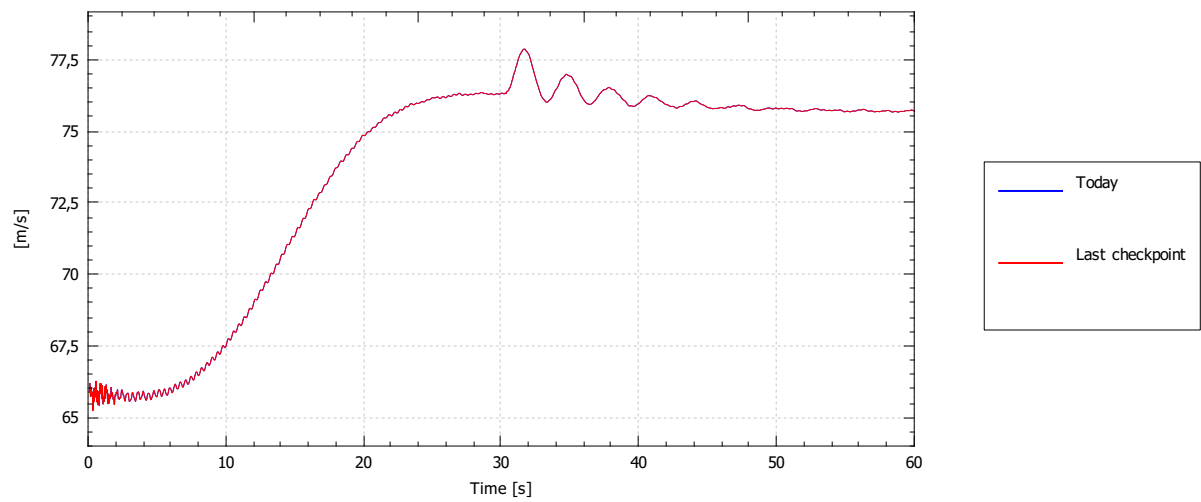
Thrust coef. (CT)



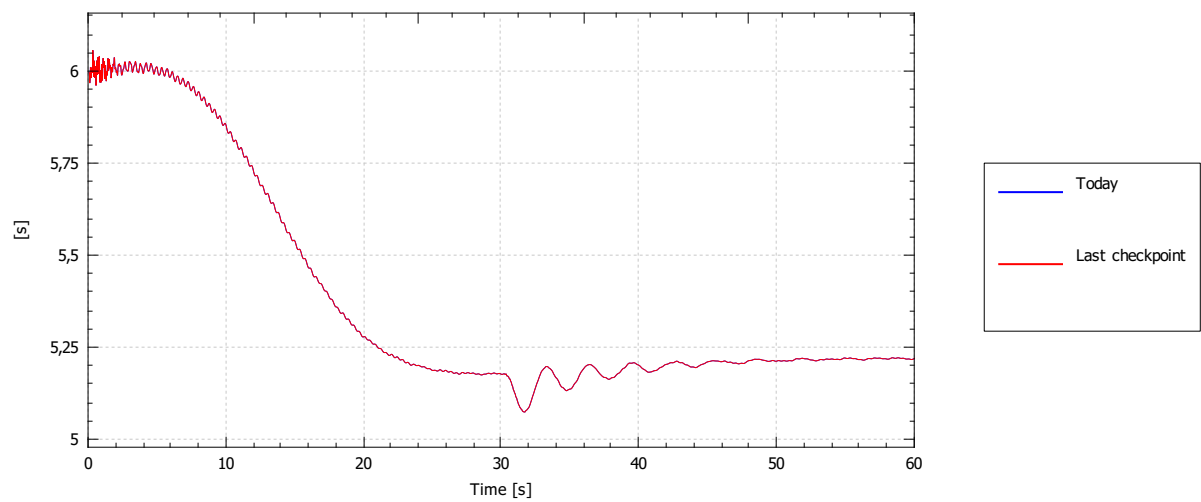
Torque coef. (CQ)



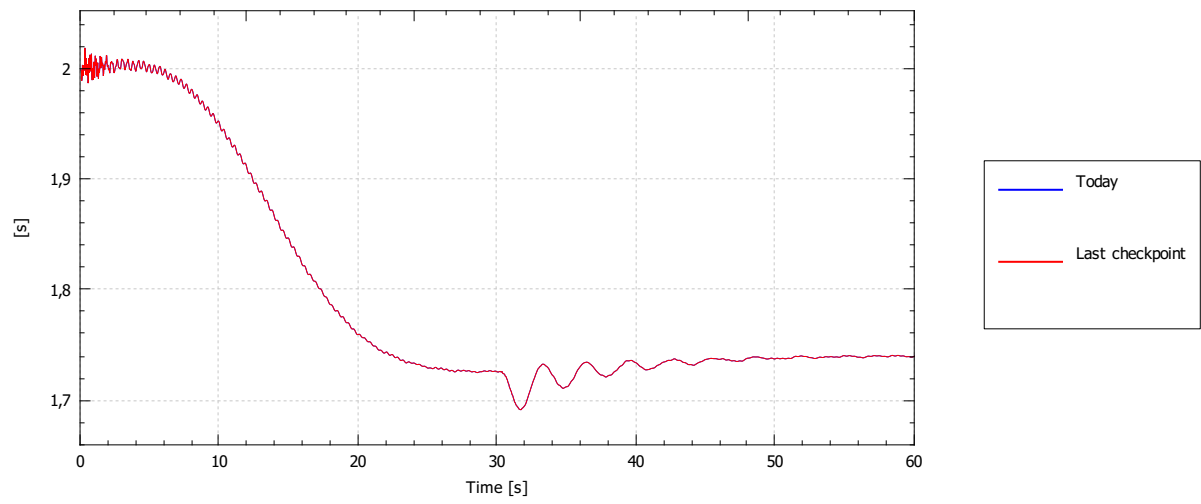
Tip speed



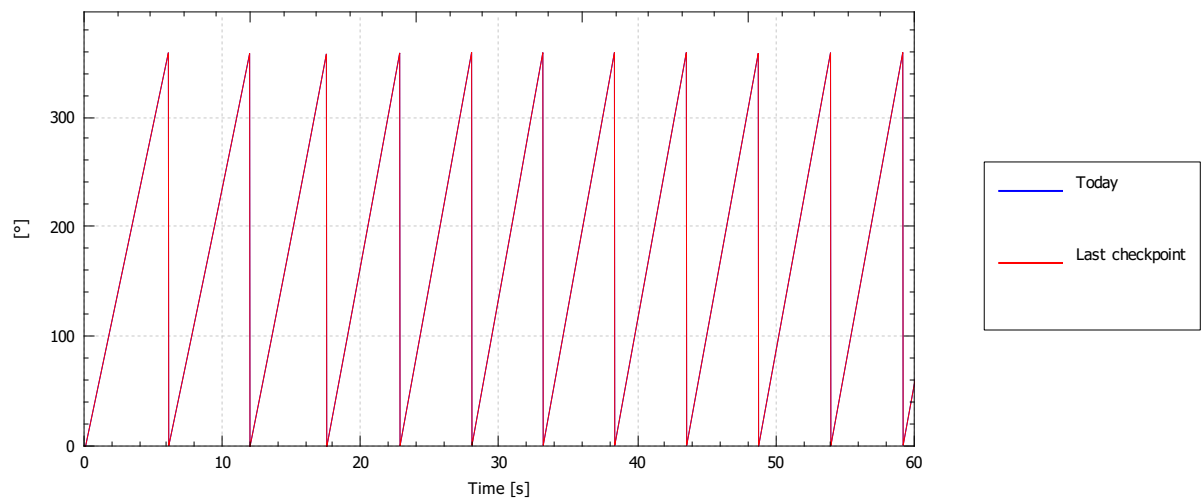
1P (one revolution)



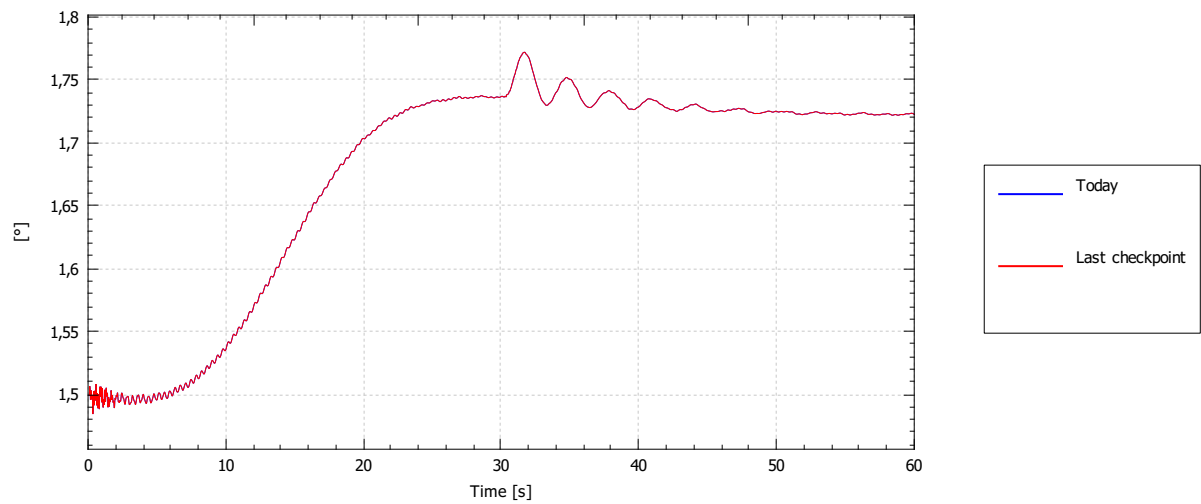
nP (blade passing)



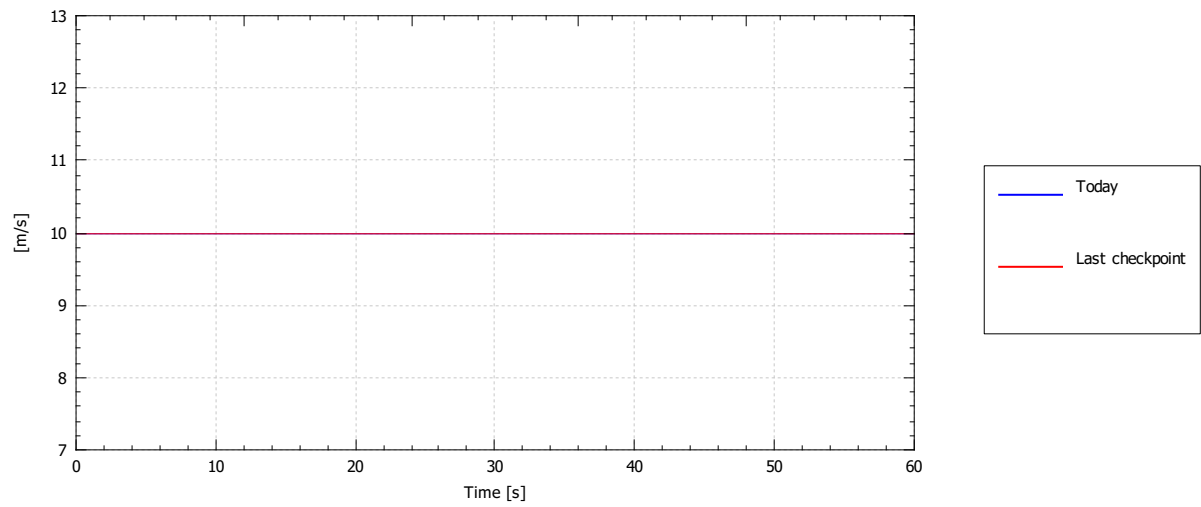
Azimuth angle



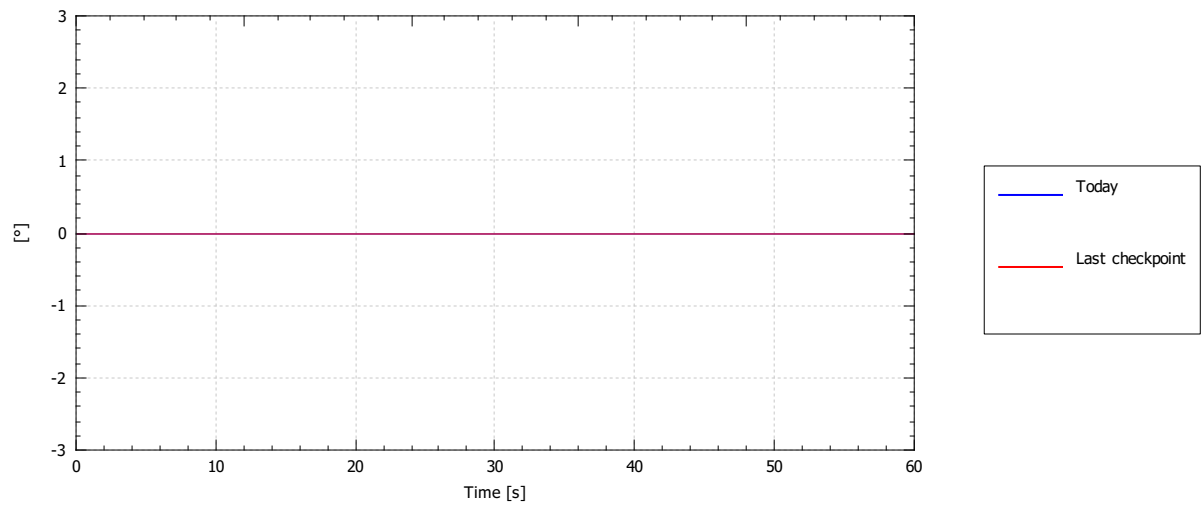
Rotation per timestep



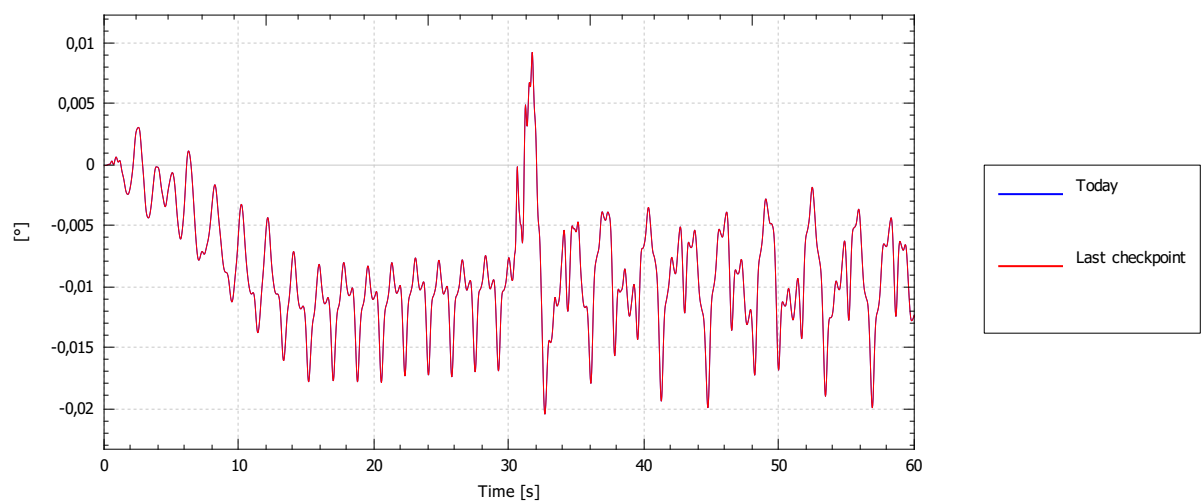
Wind speed at hub, magnitude



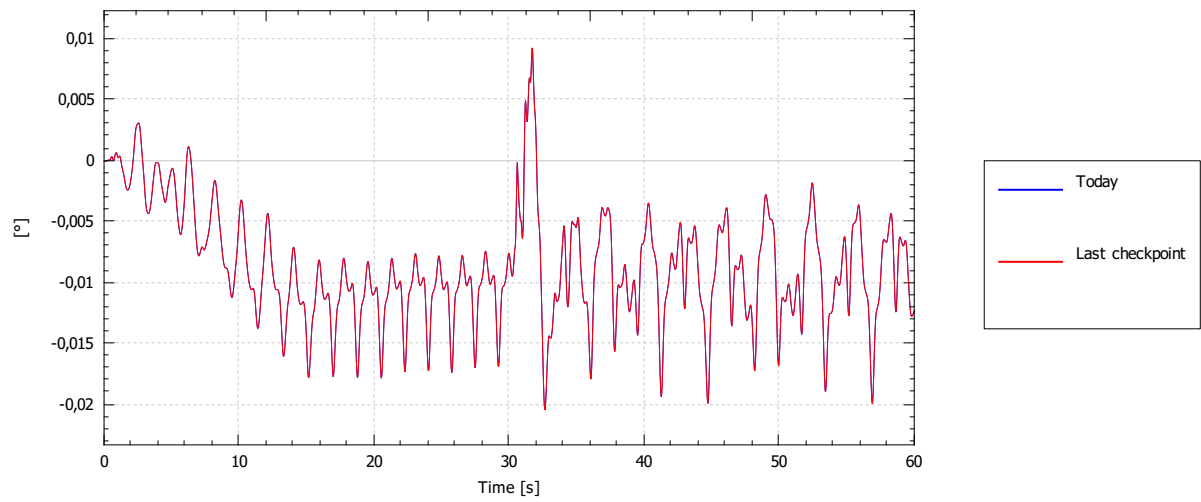
Wind angle at hub



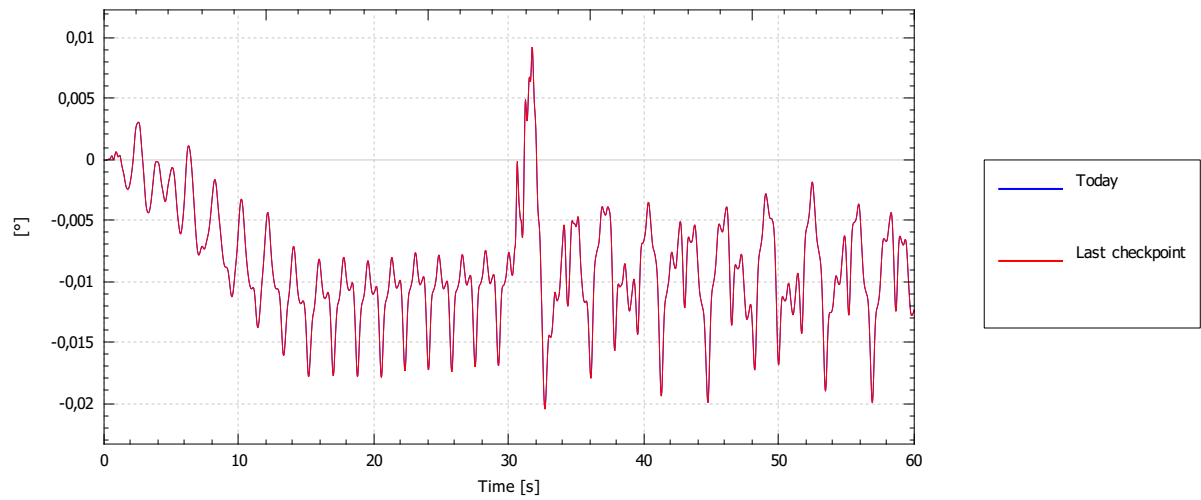
Yaw angle relative to forward



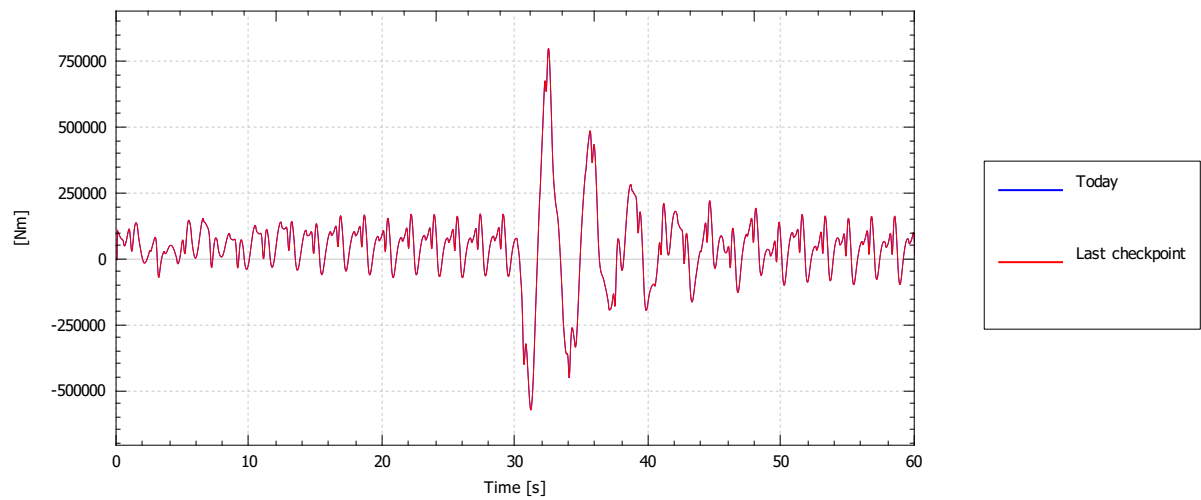
Yaw angle to reference direction



Yaw error

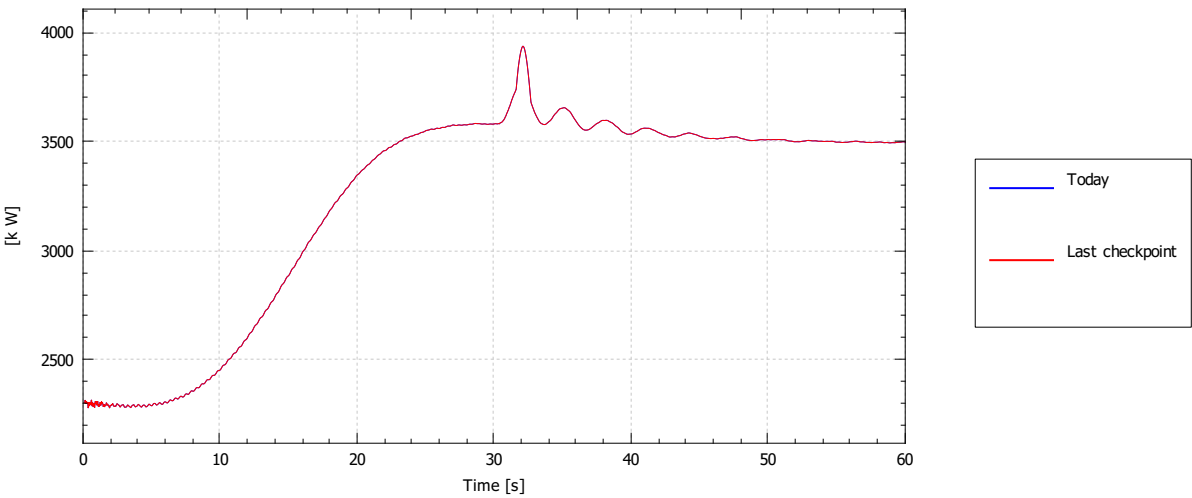


Torque about yaw axis

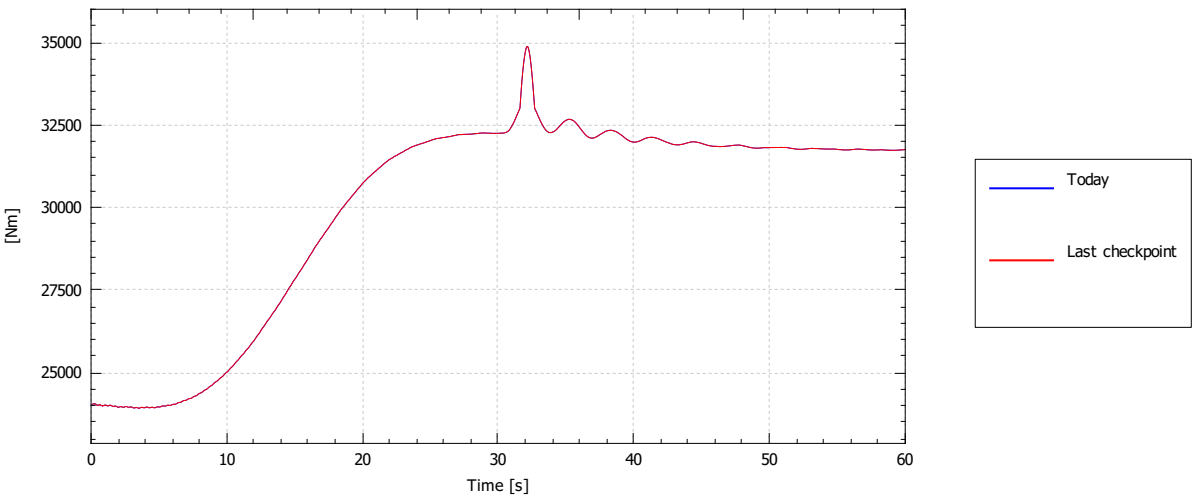


Generator

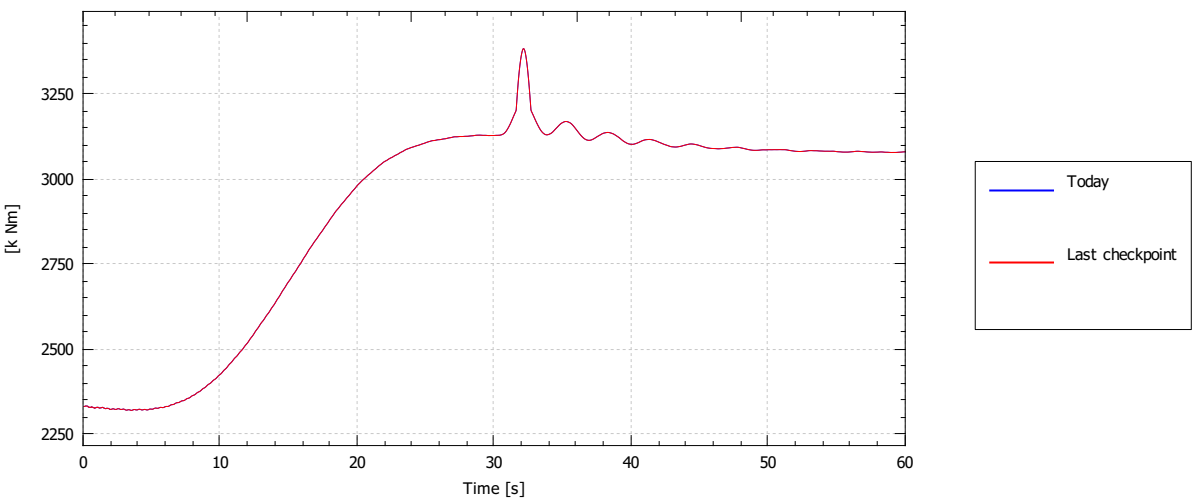
Power (electrical)



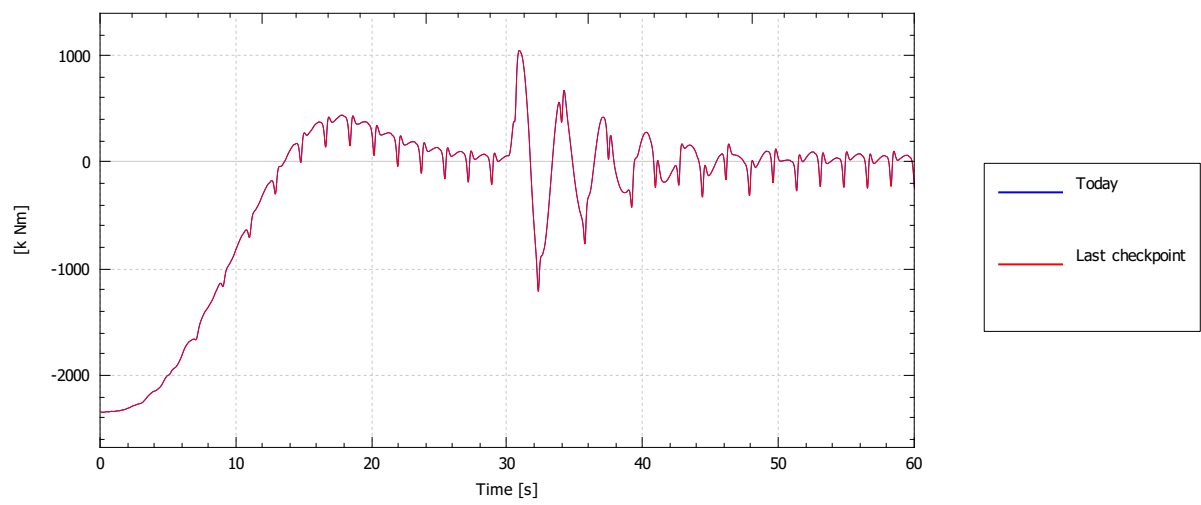
Torque



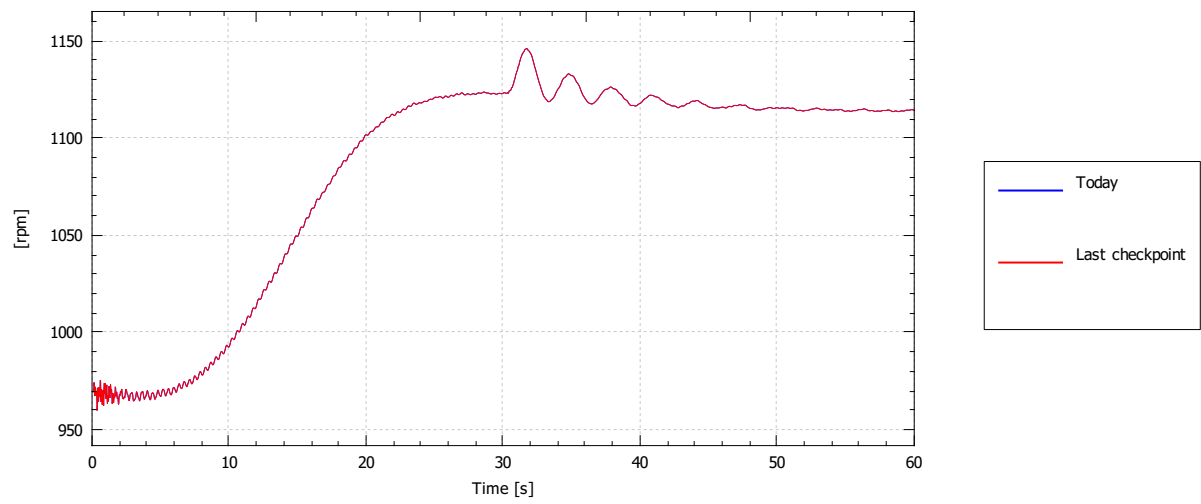
Torque on main shaft



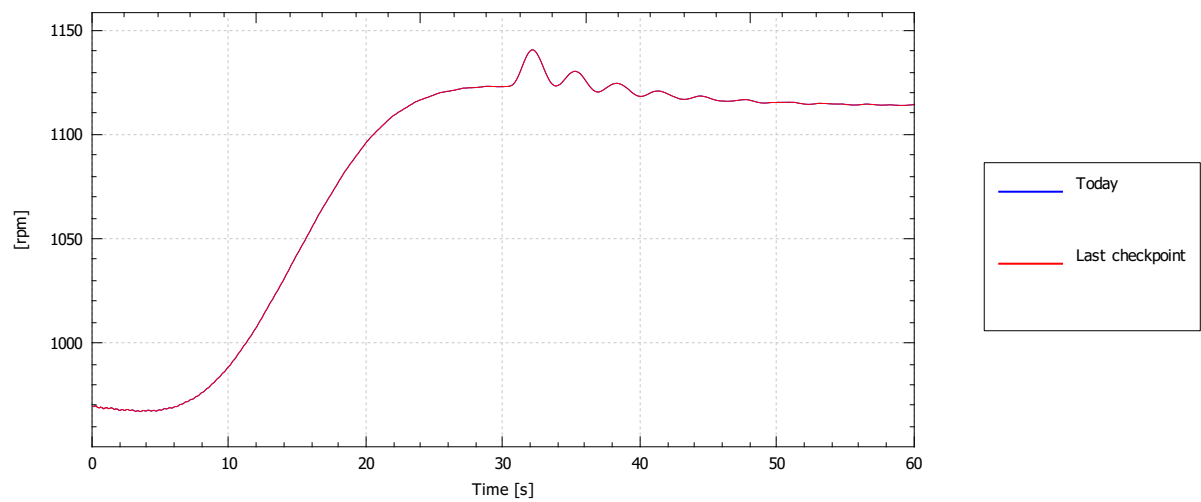
Torque diff. on main shaft



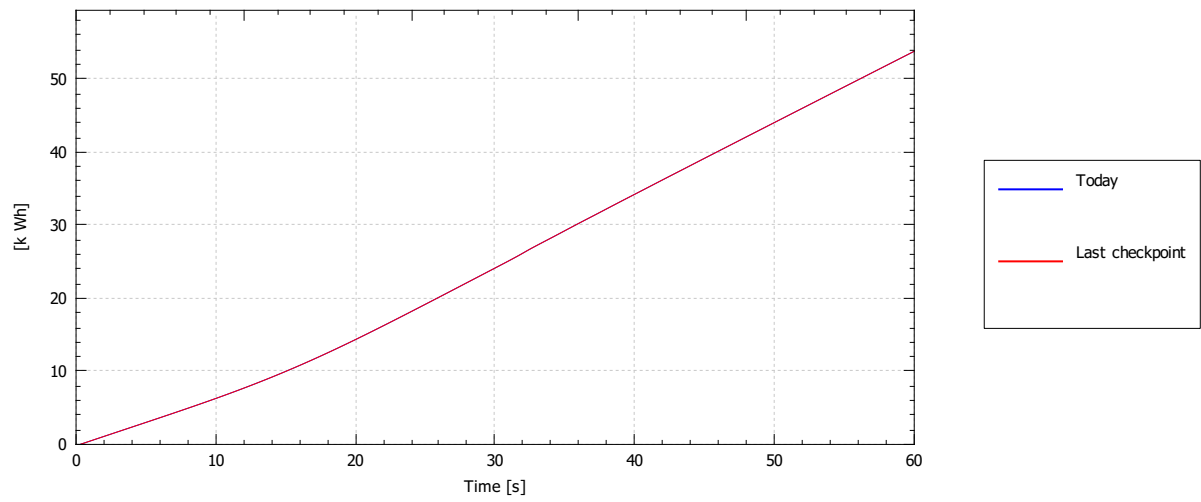
RPM



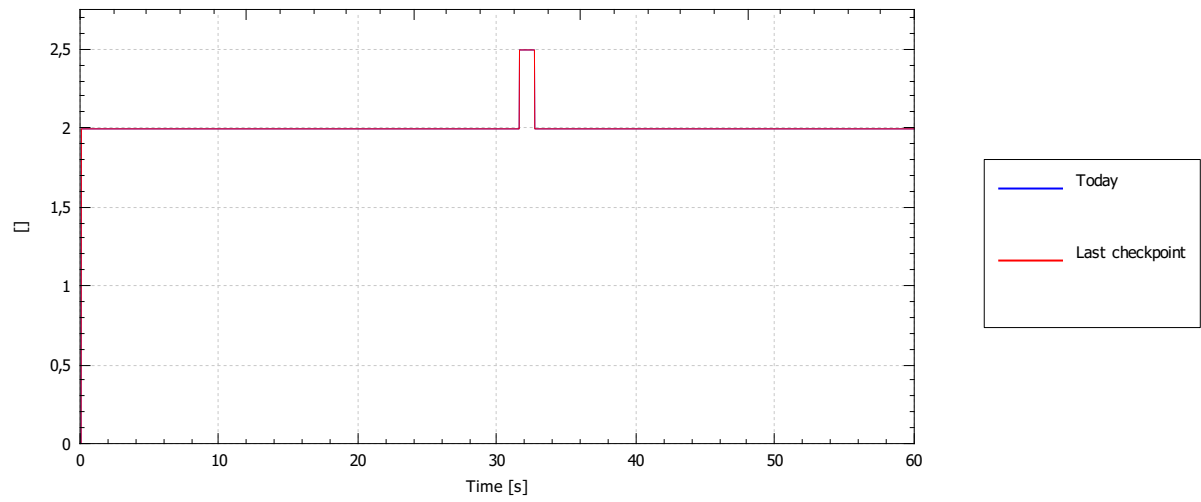
Filtered RPM



Electricity production

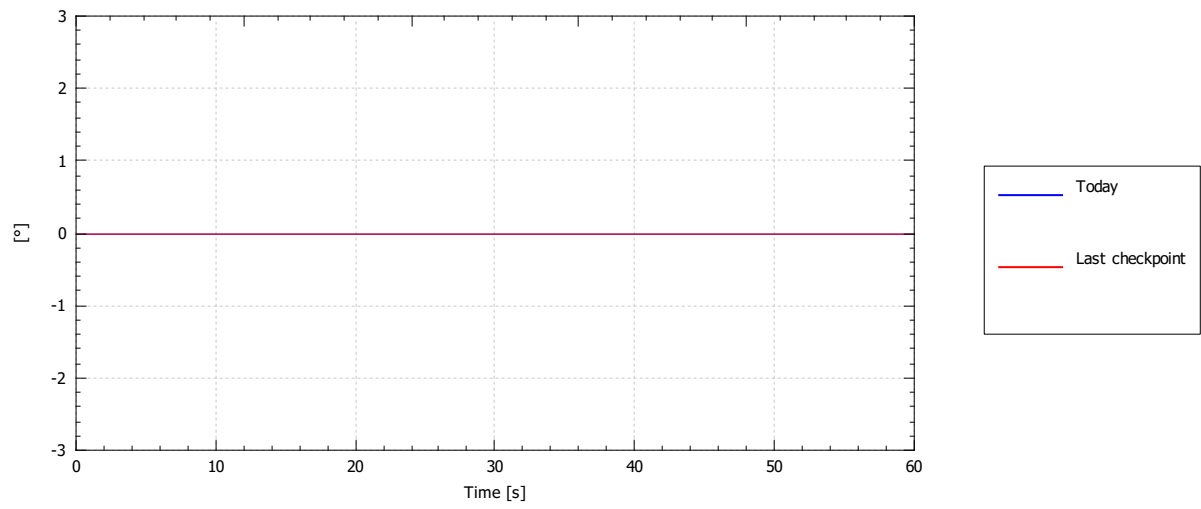


Region

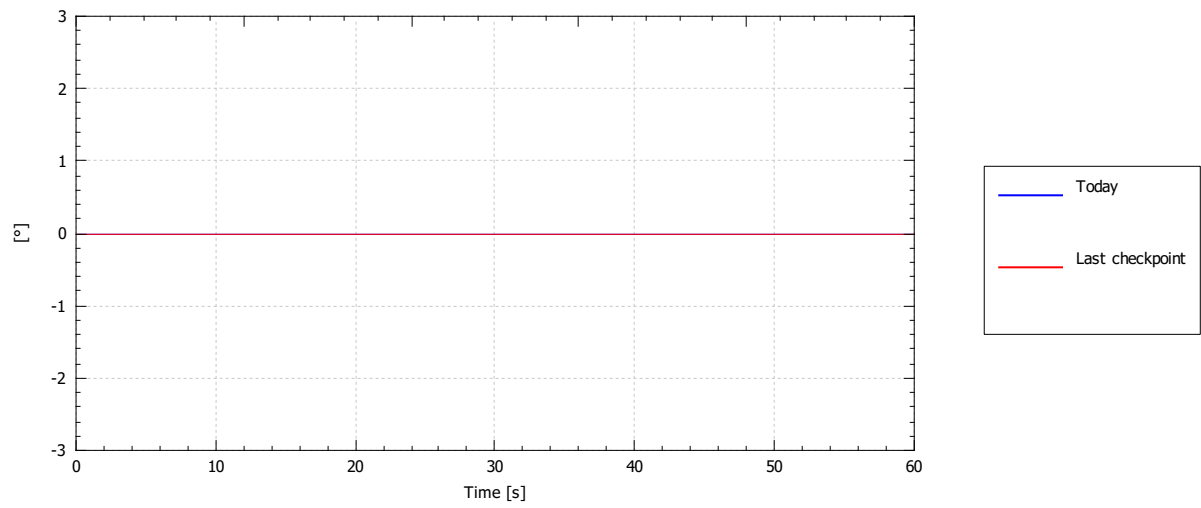


Demanded pitch controller

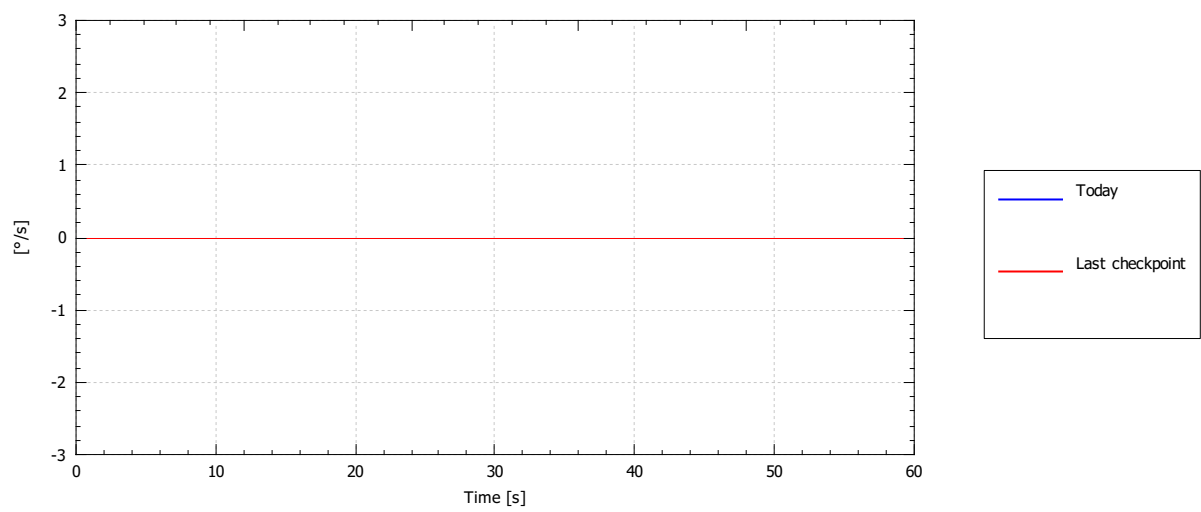
Demanded collective pitch angle



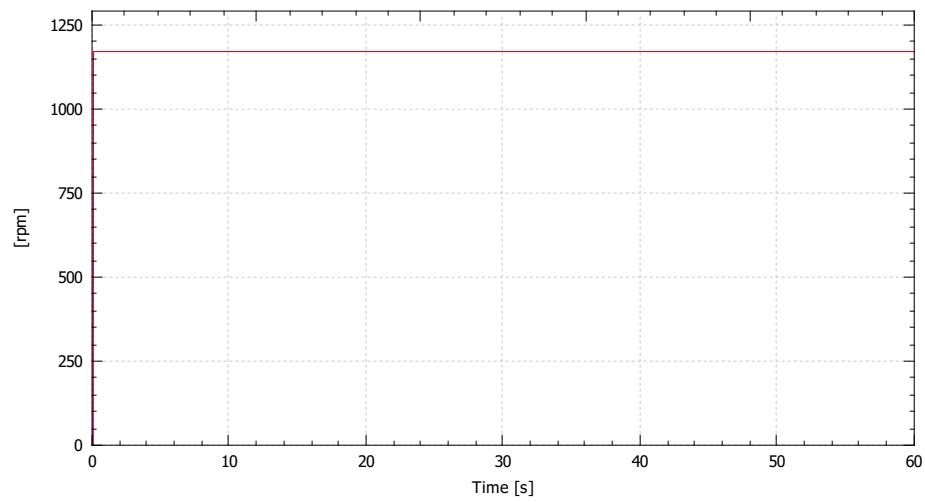
Cumulative demanded collective pitch angle



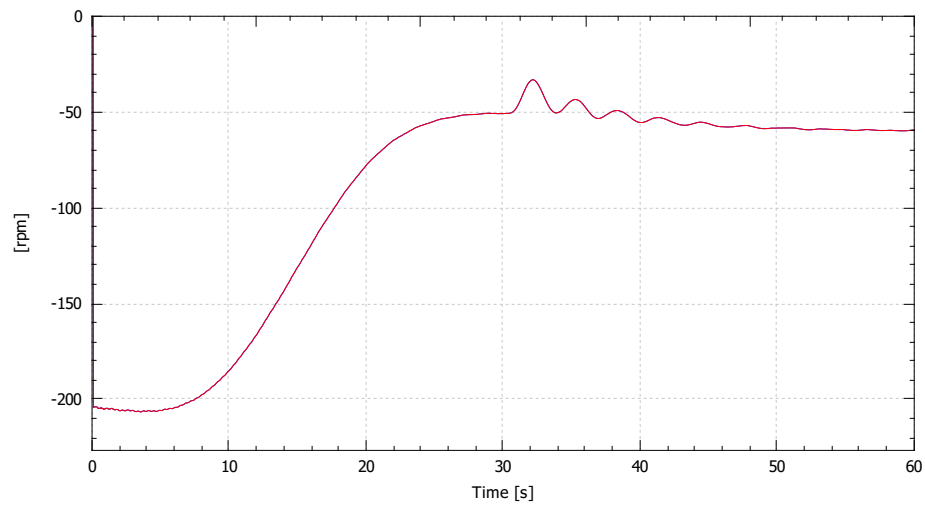
Demanded collective pitch angle rate



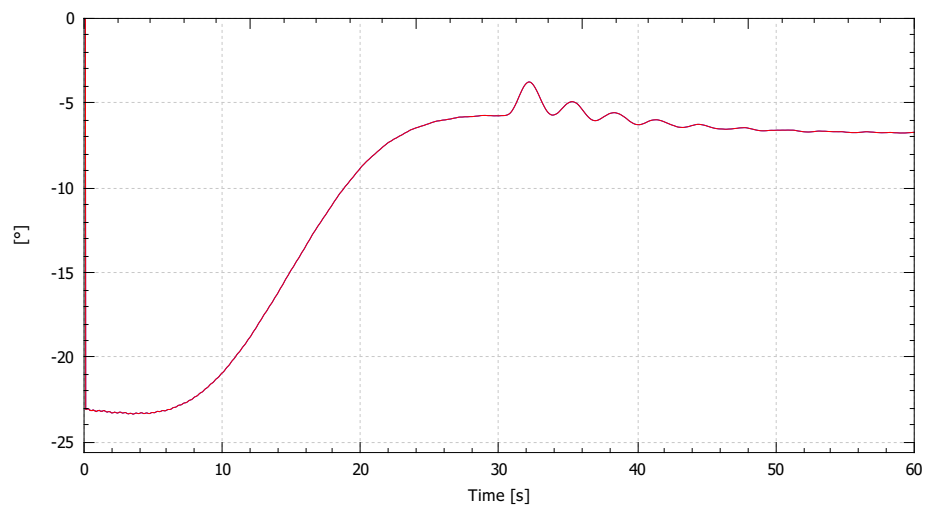
Set point



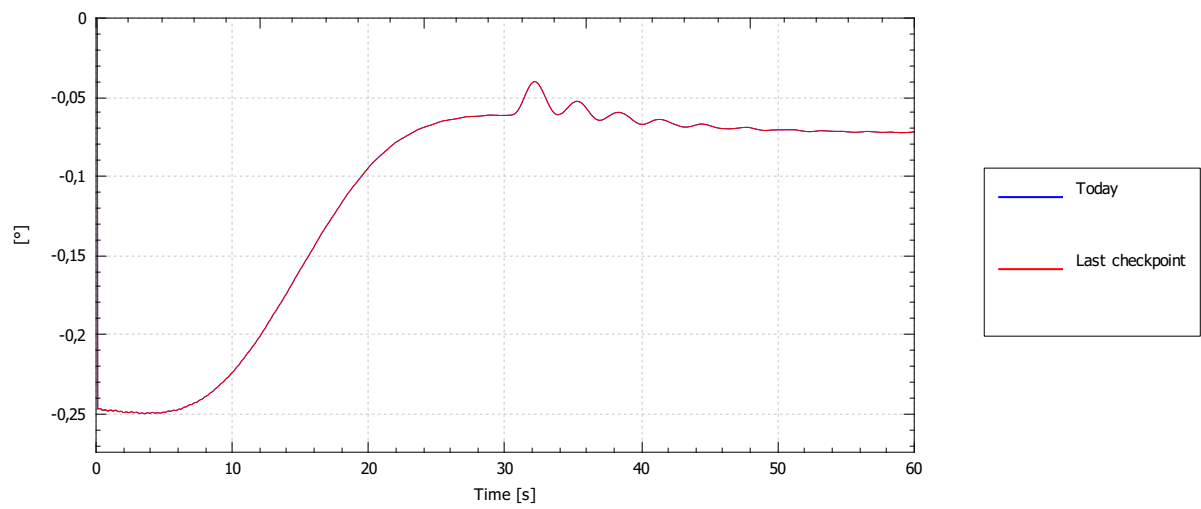
RPM error



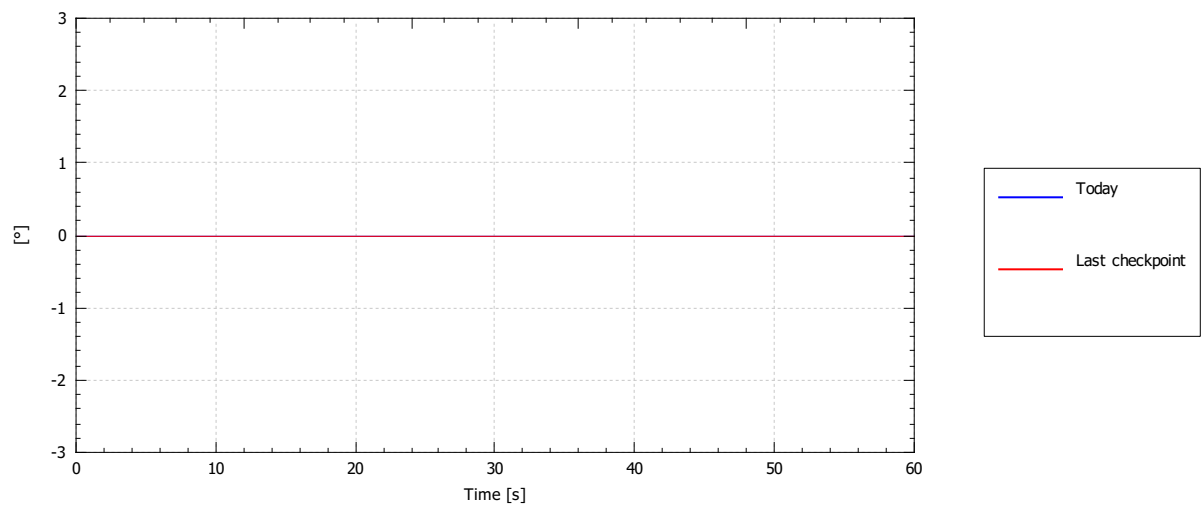
P term



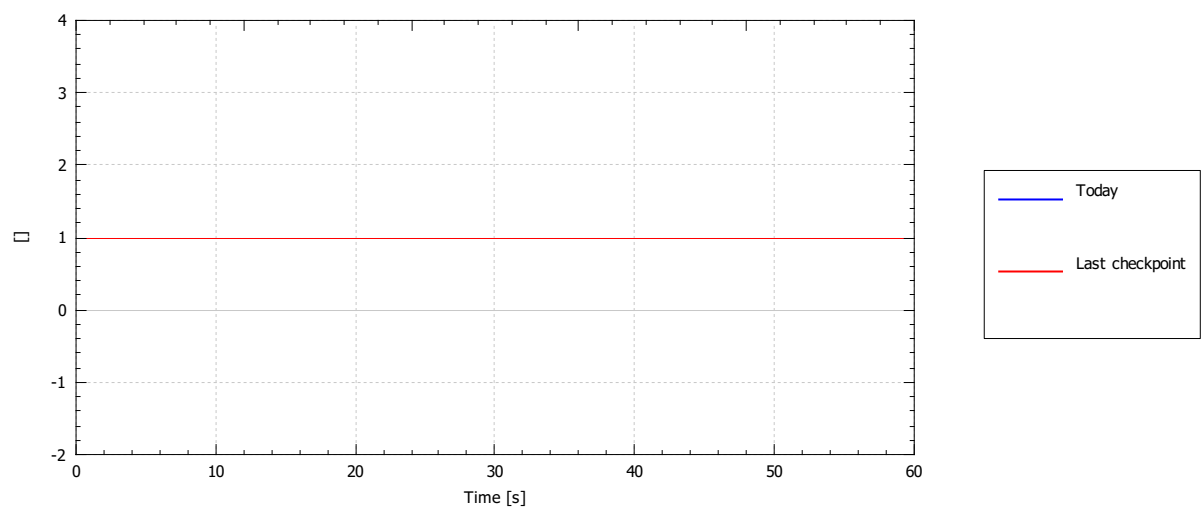
I term

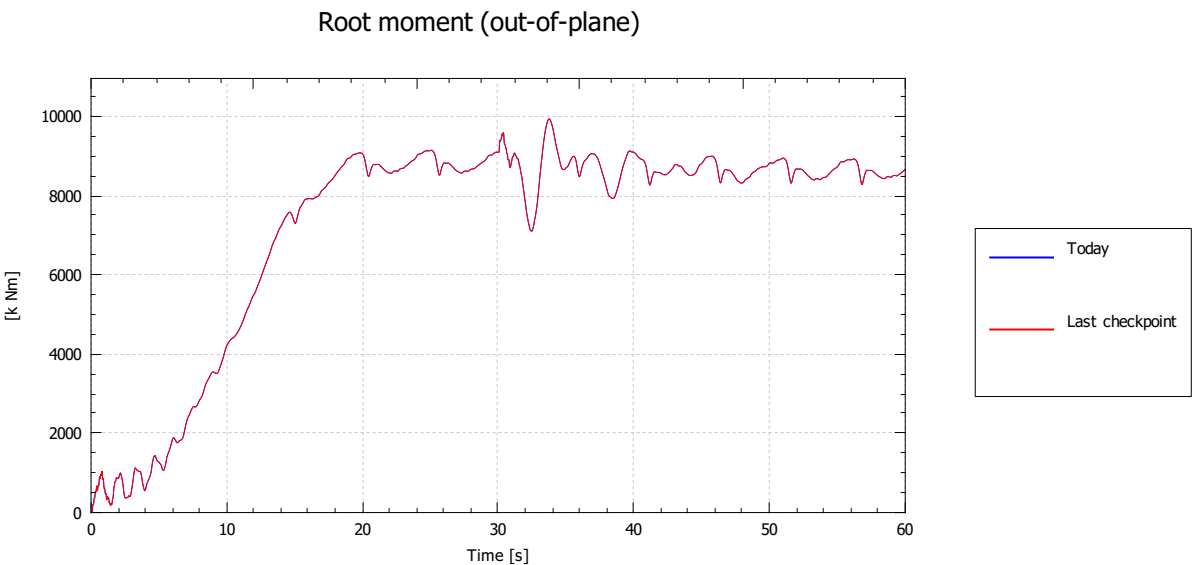
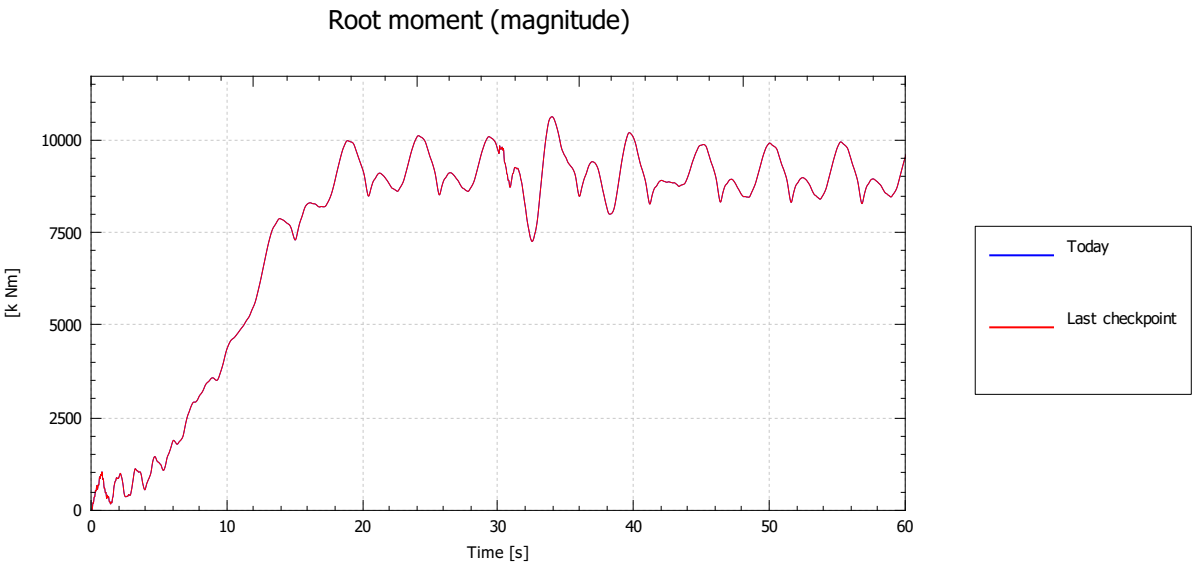
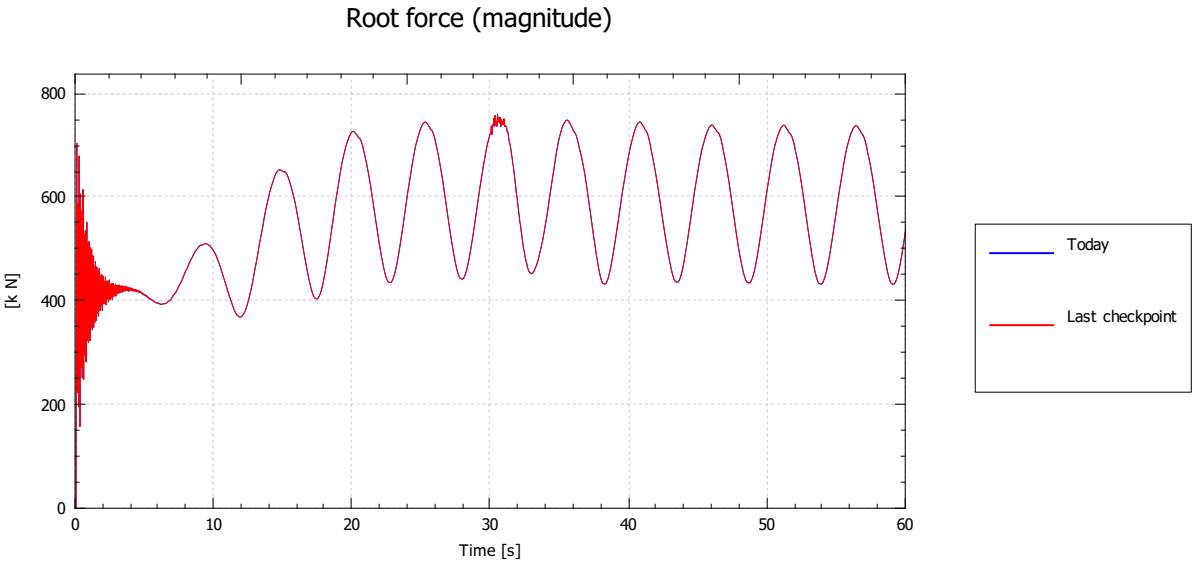


D term

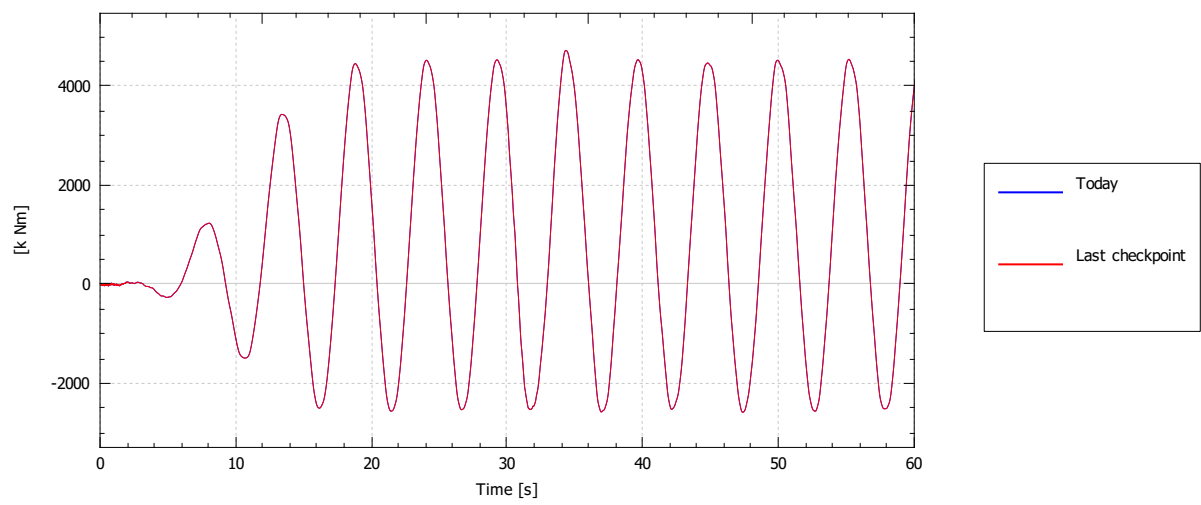


Gain scheduling factor

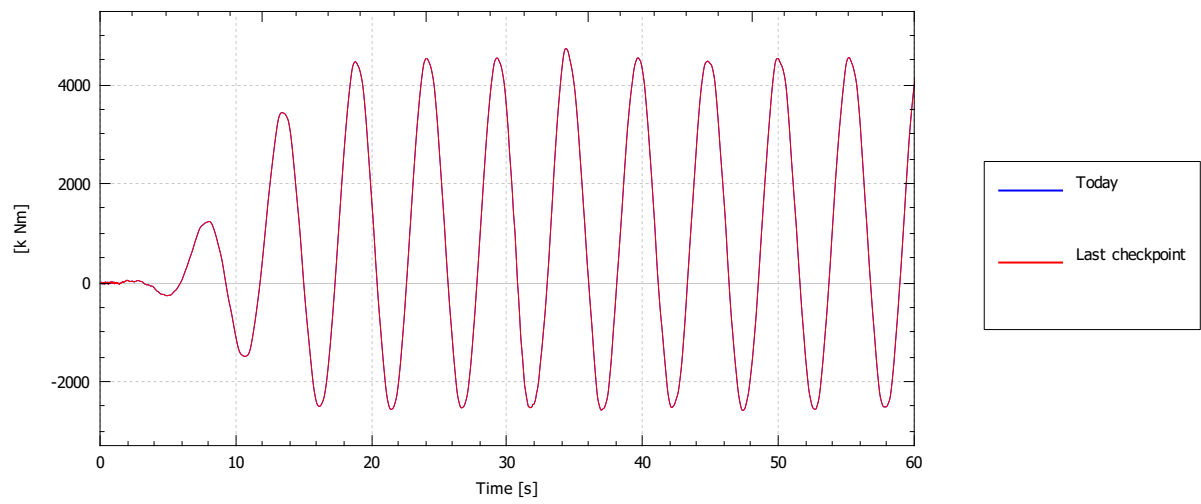




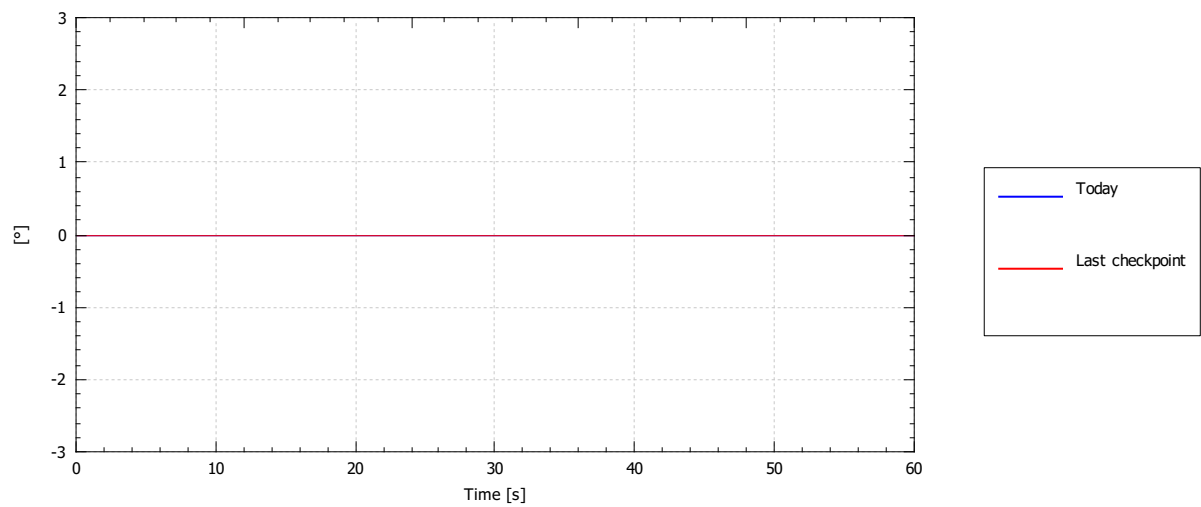
Root moment (in-plane)



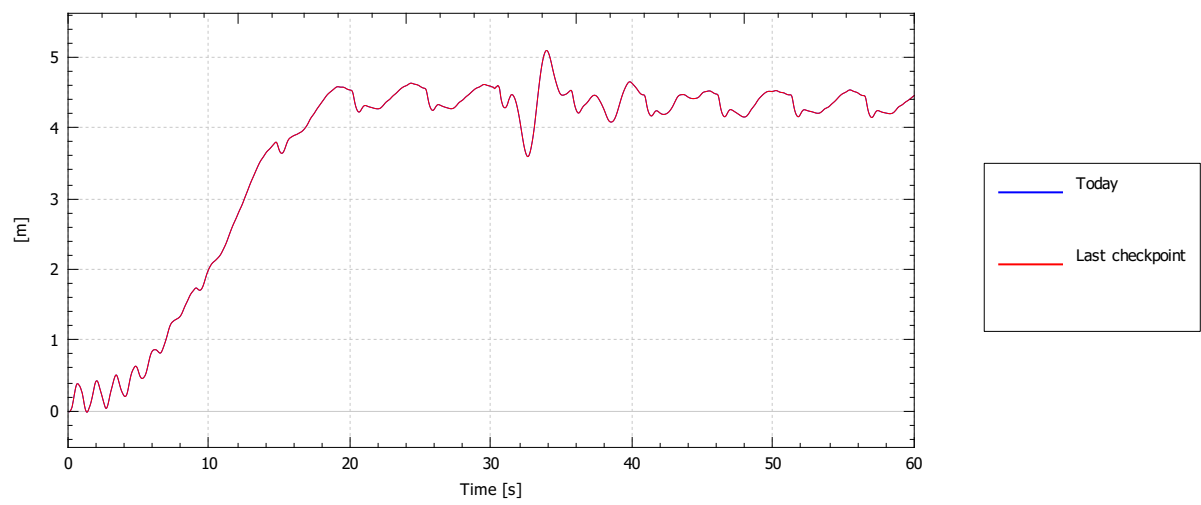
Root moment about shaft



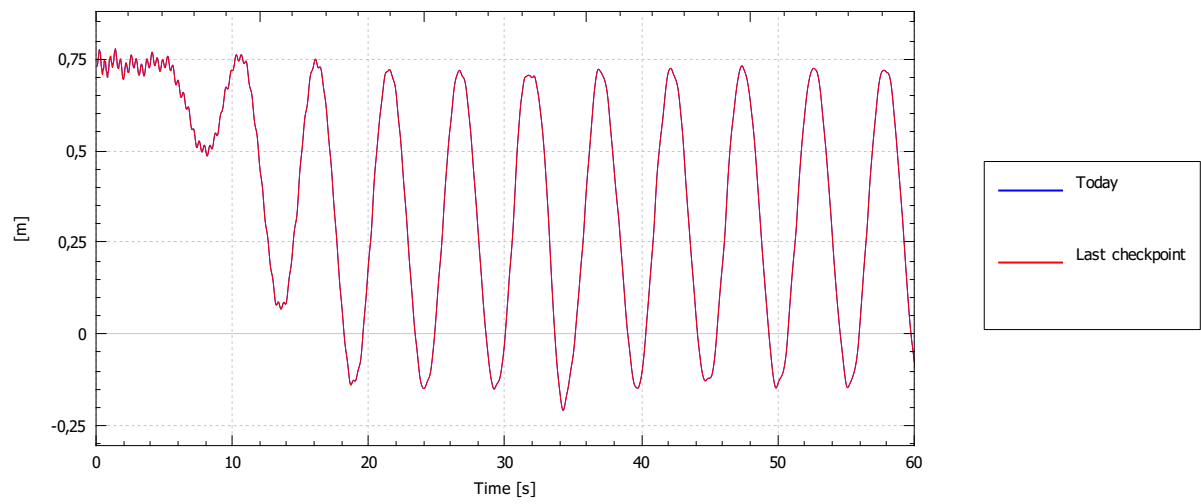
Pitch angle



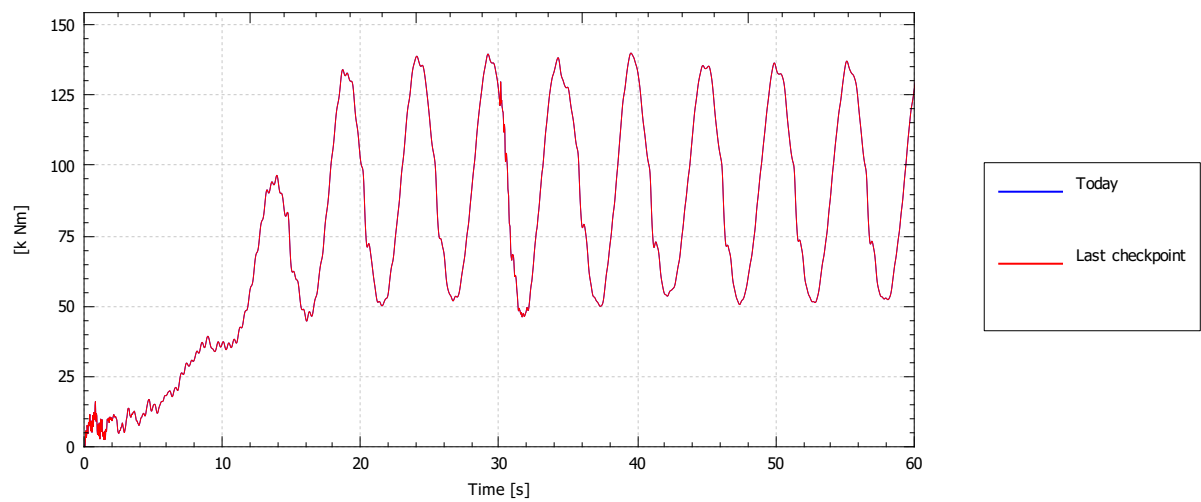
Tip deflection (out-of-plane)

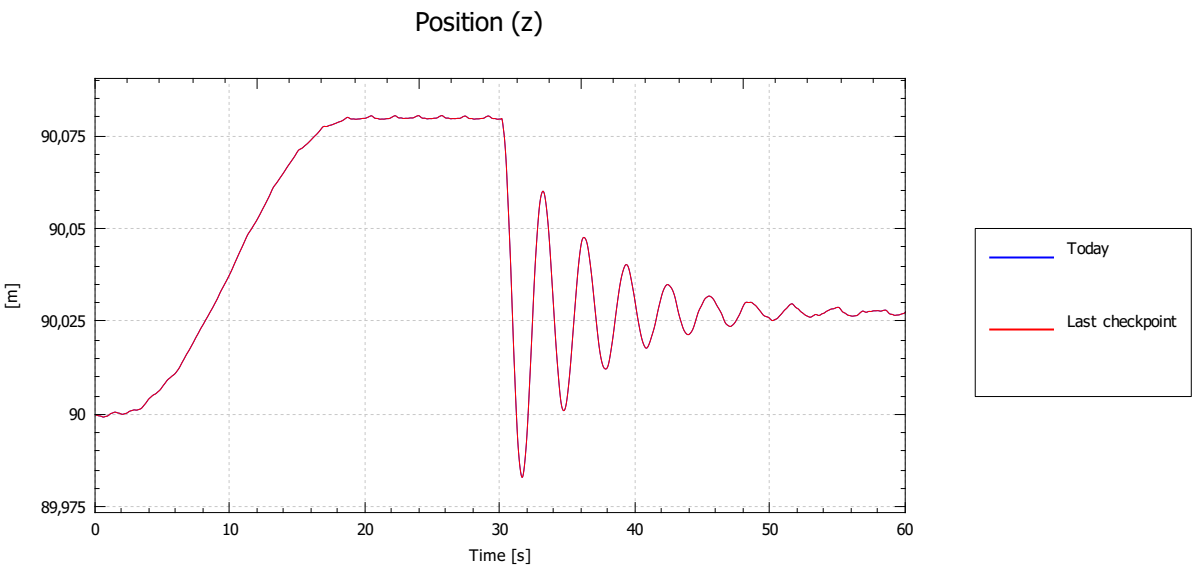
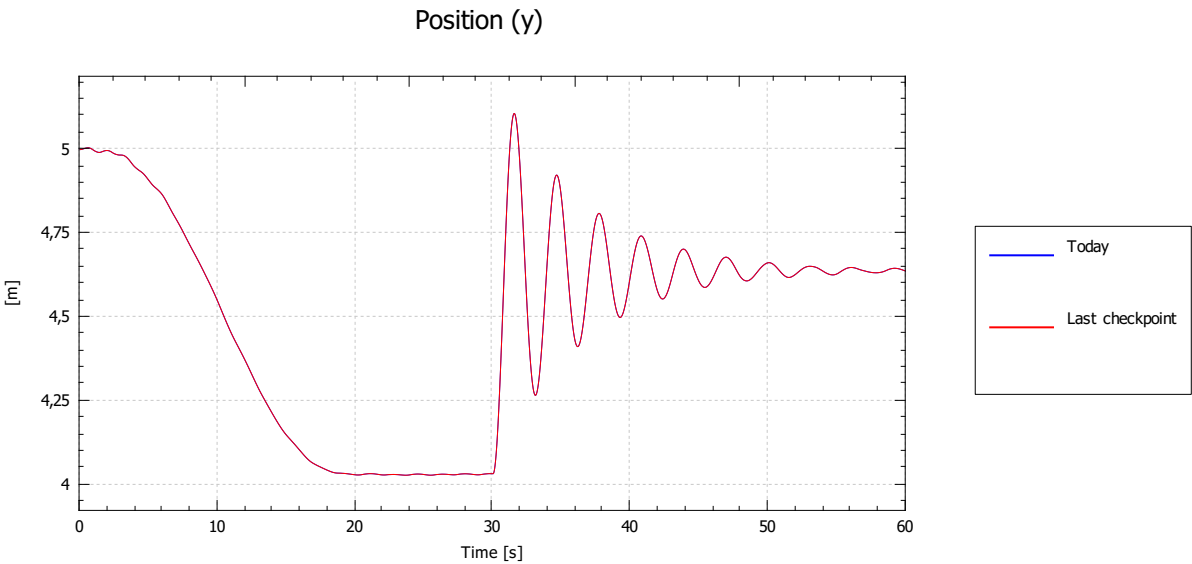
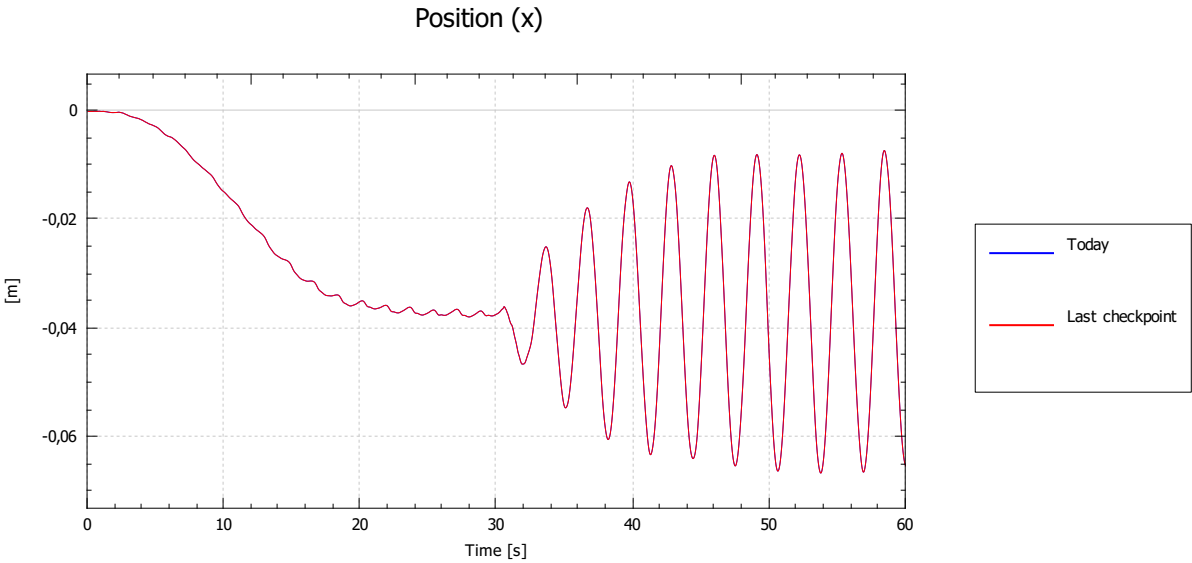


Tip deflection (in-plane)

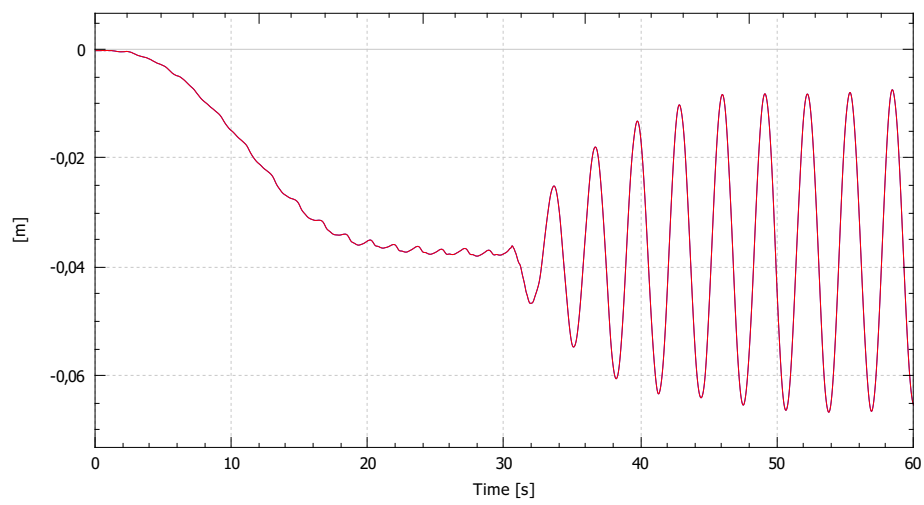


Root torque

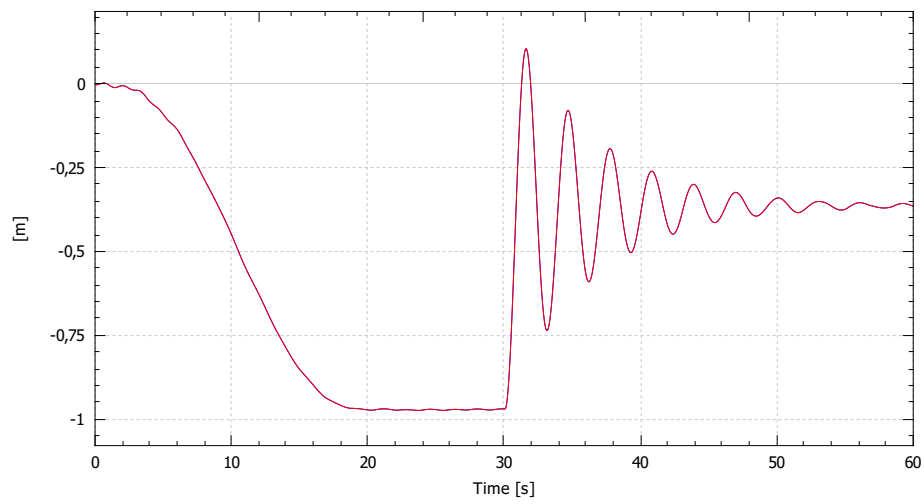




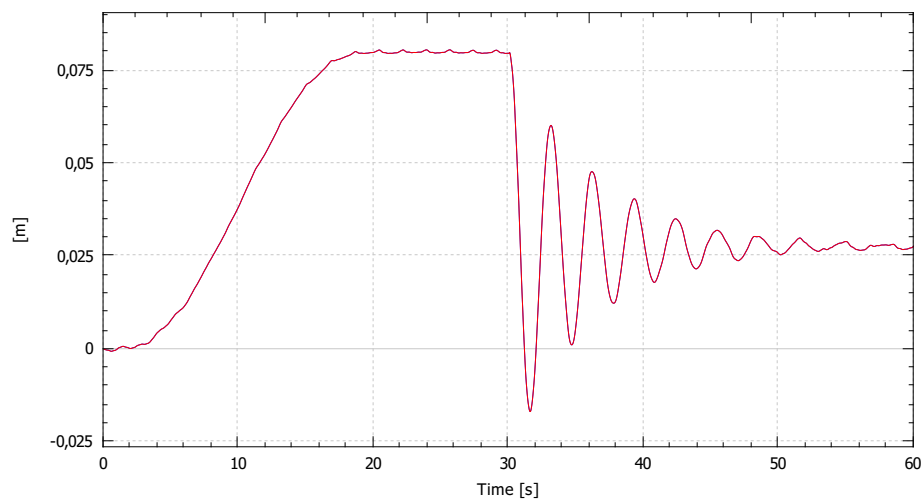
Displacement (u)



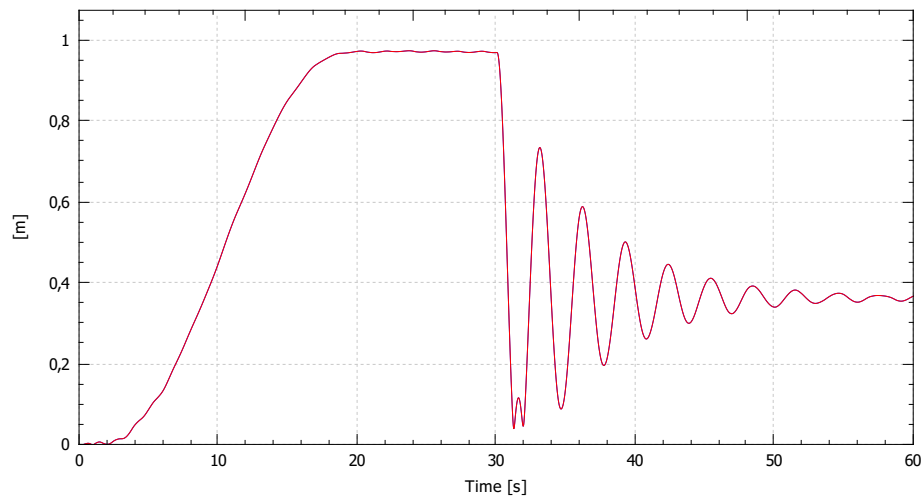
Displacement (v)



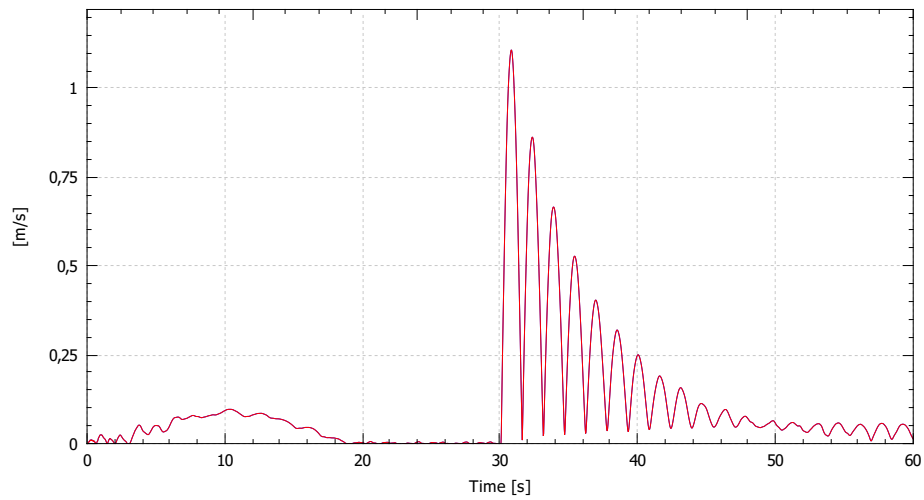
Displacement (w)



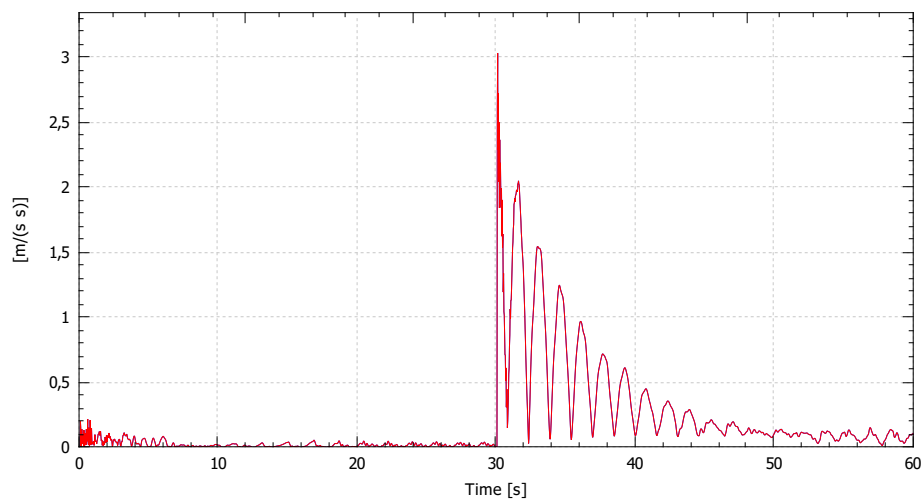
Displacement magnitude



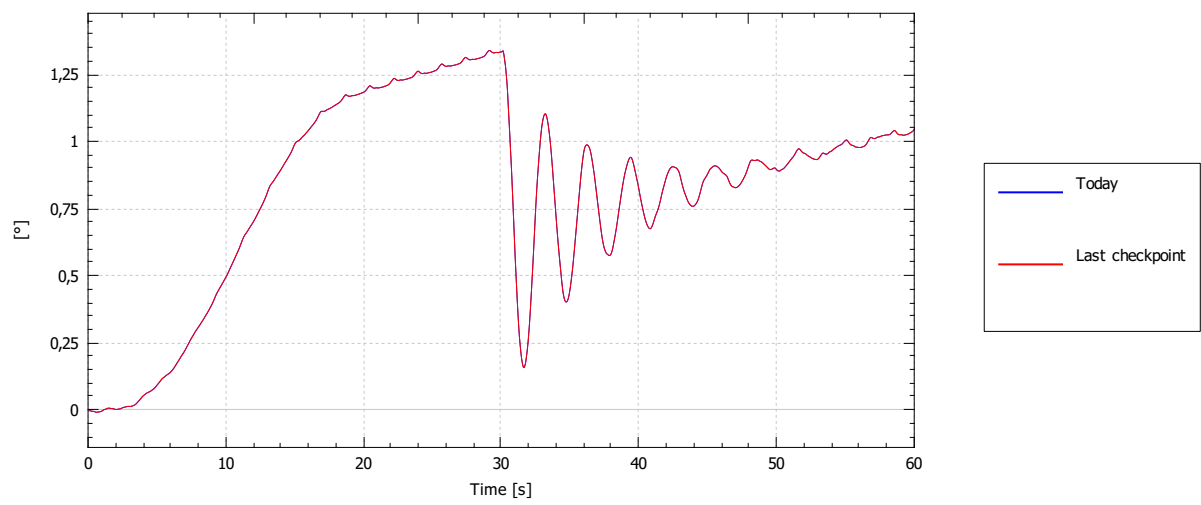
Speed



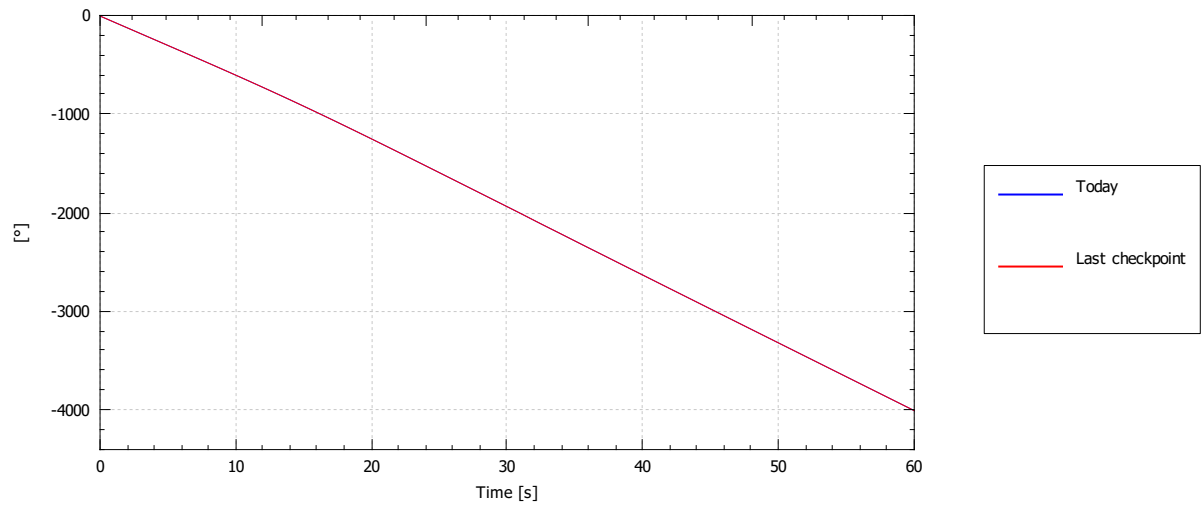
Acceleration, magnitude



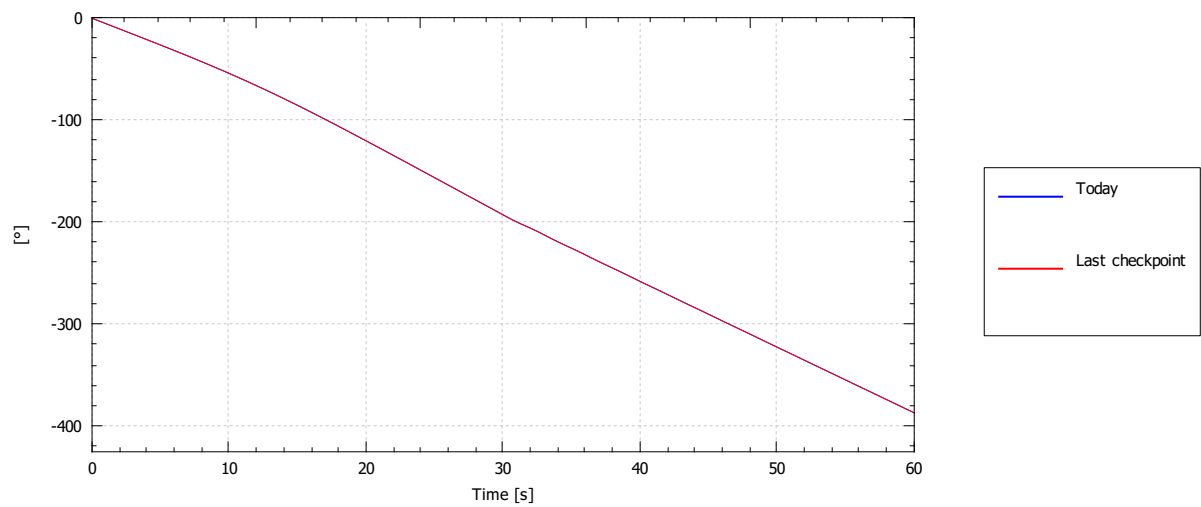
Rotational displacement (ru)



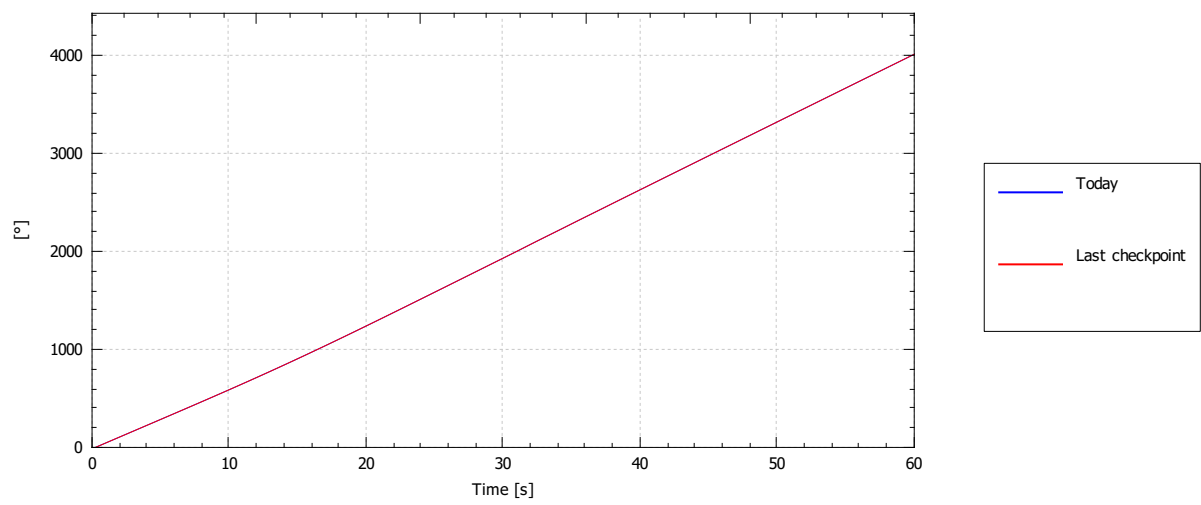
Rotational displacement (rv)



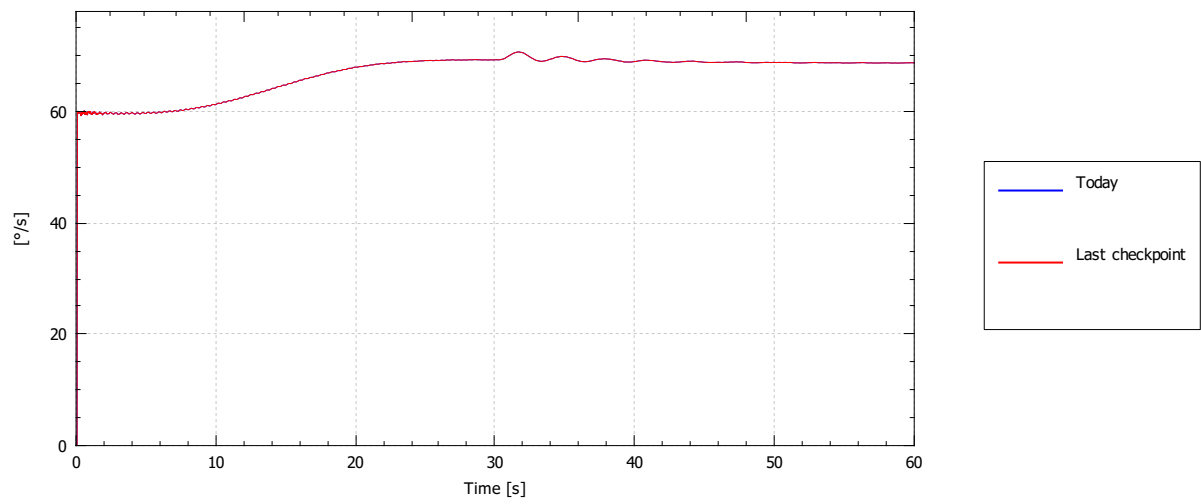
Rotational displacement (rw)



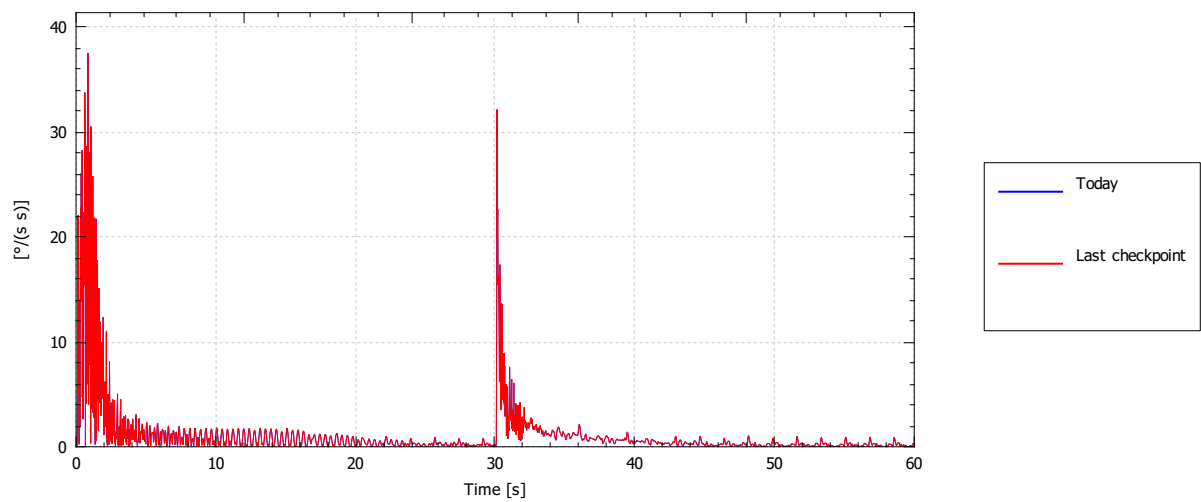
Rotational displacement magnitude



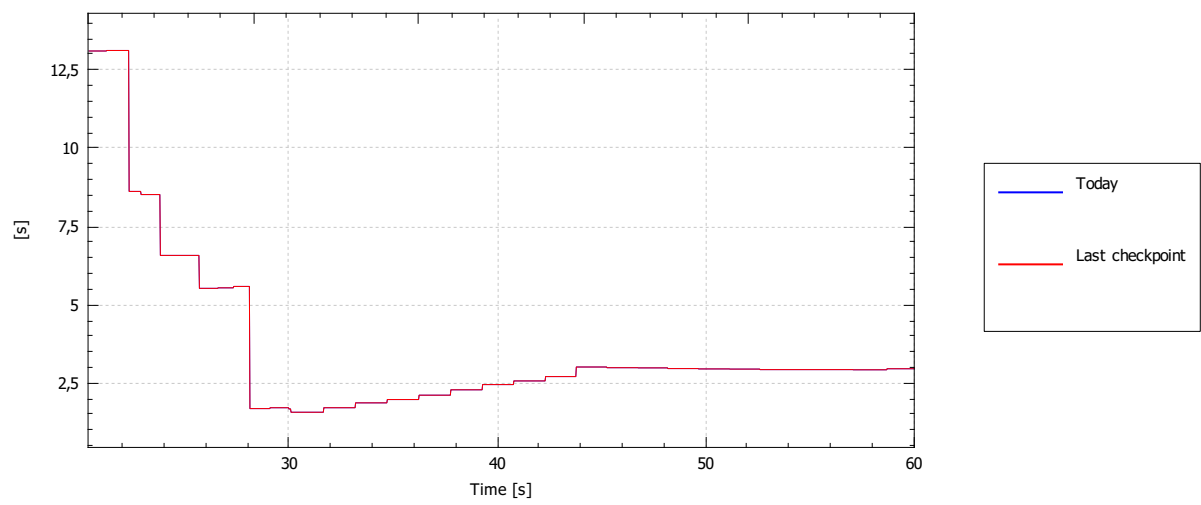
Rotational speed



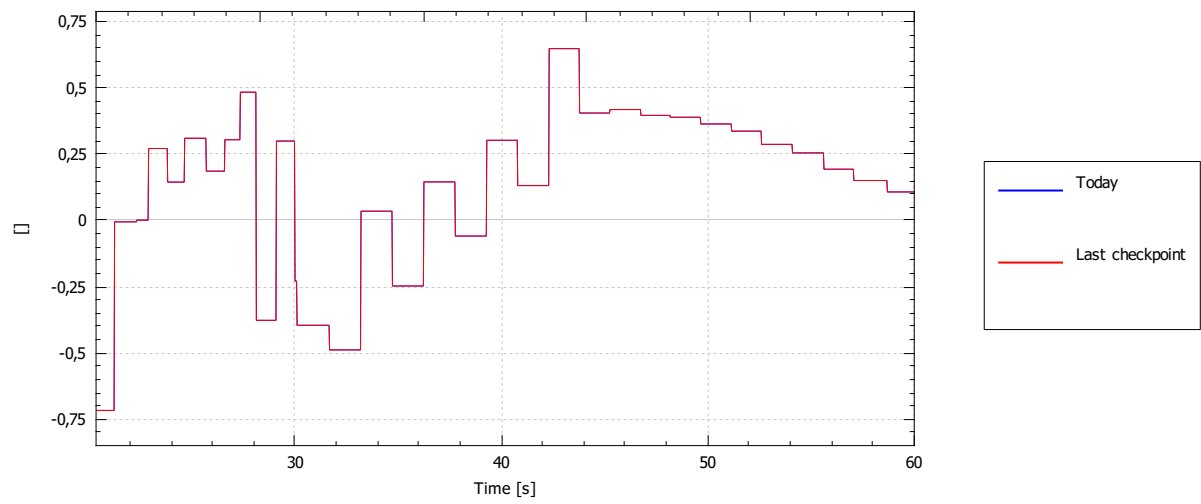
Rotational acceleration mag



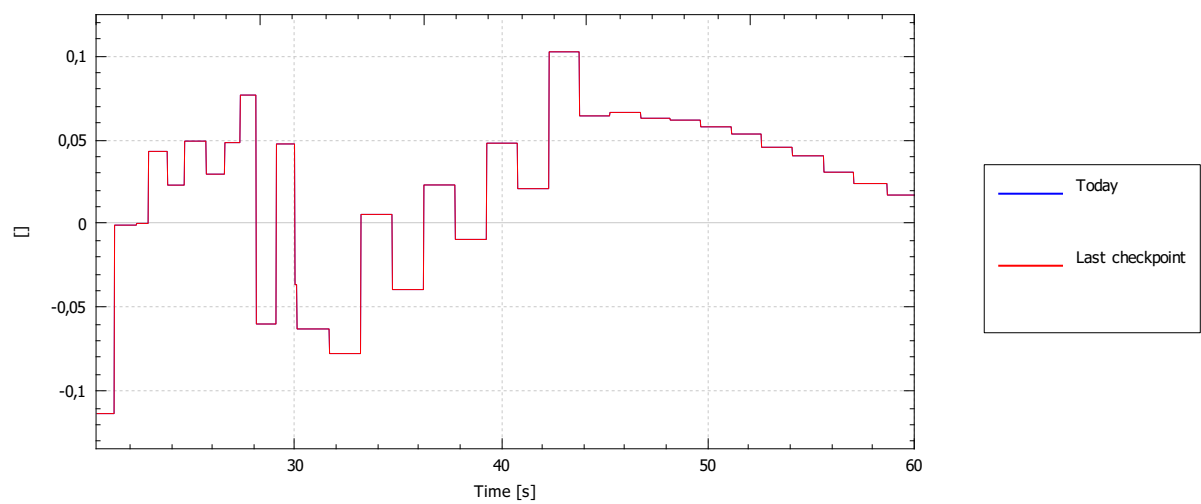
Displacement period



Displacement logarithmic decrement

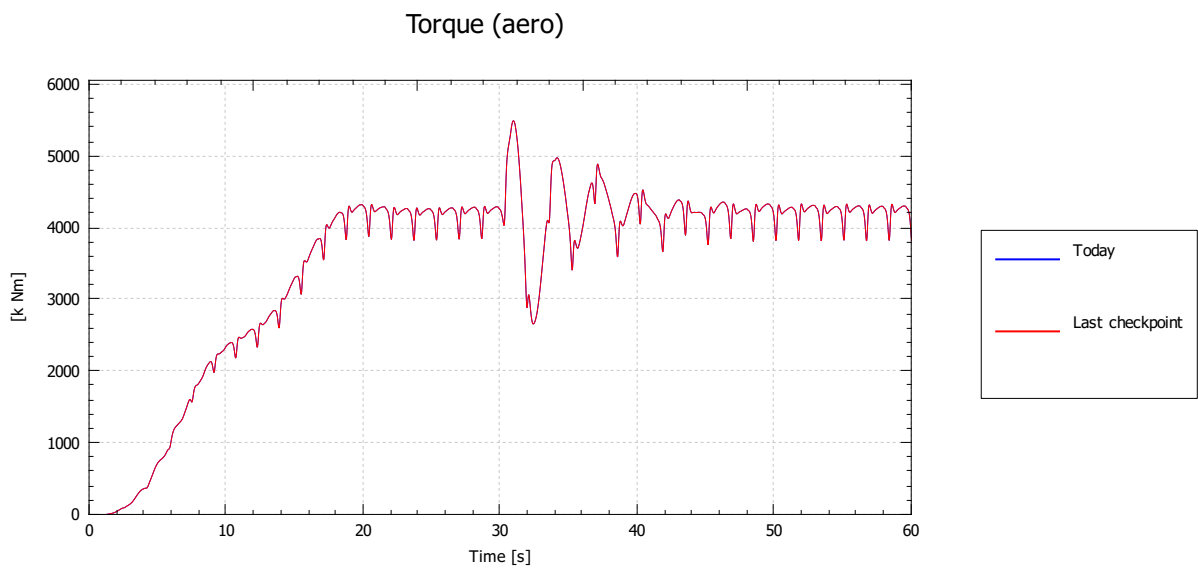
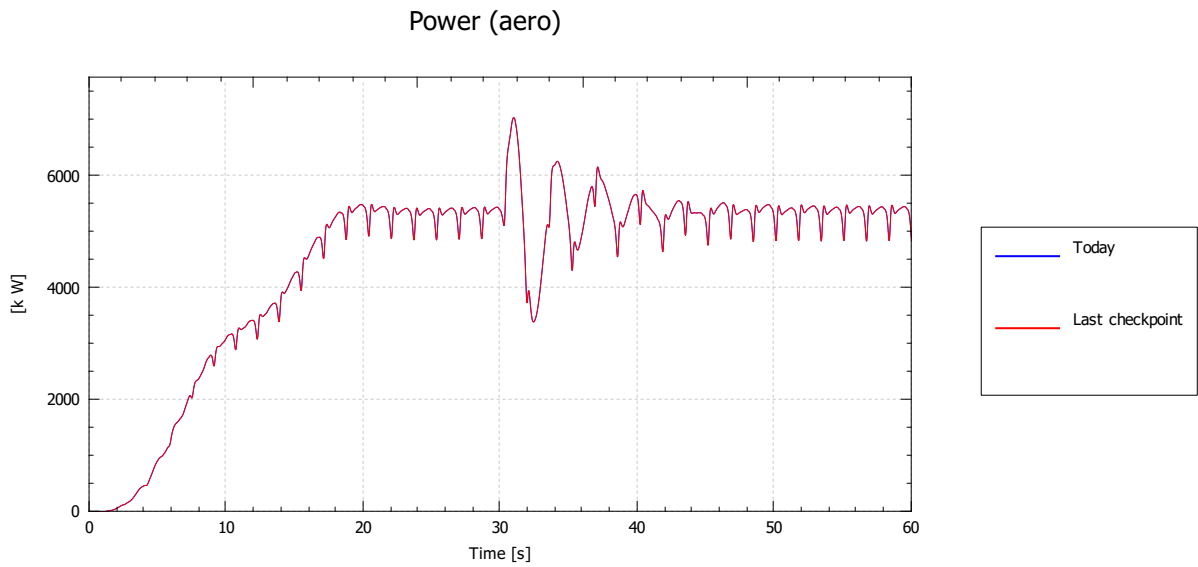


Displacement damping ratio

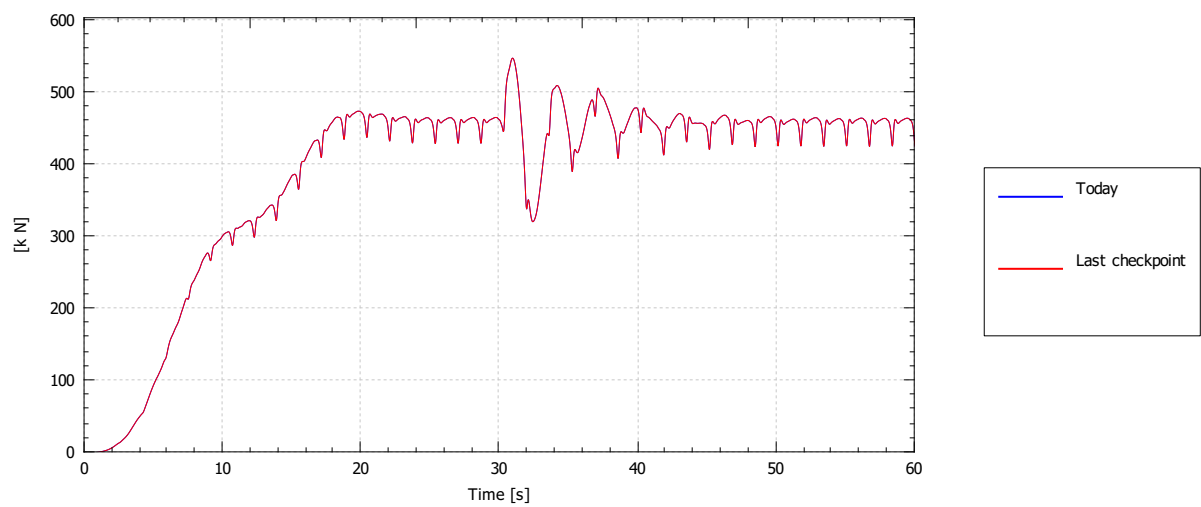


Load case: 14 ms

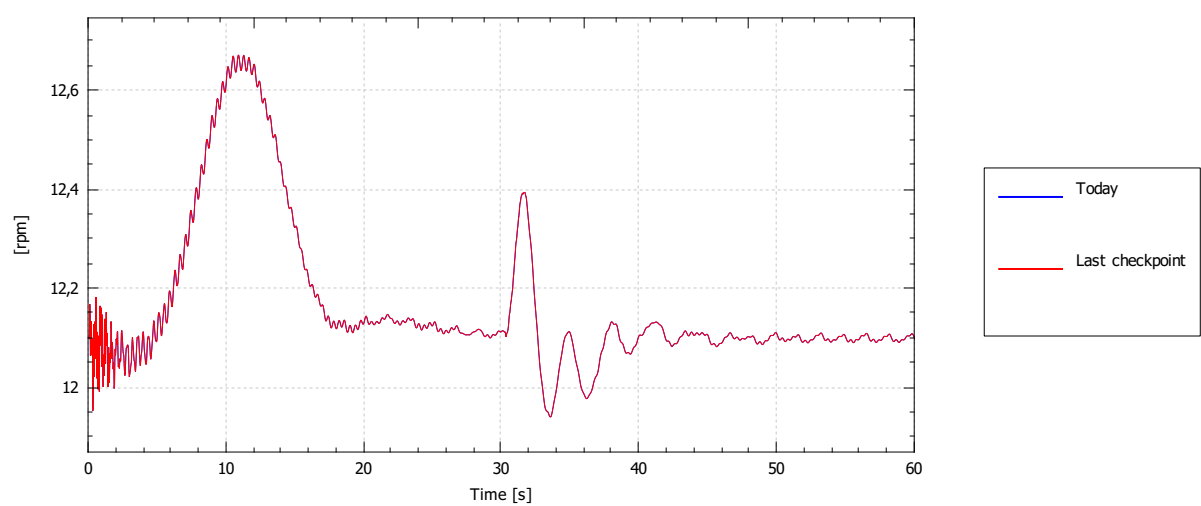
Rotor



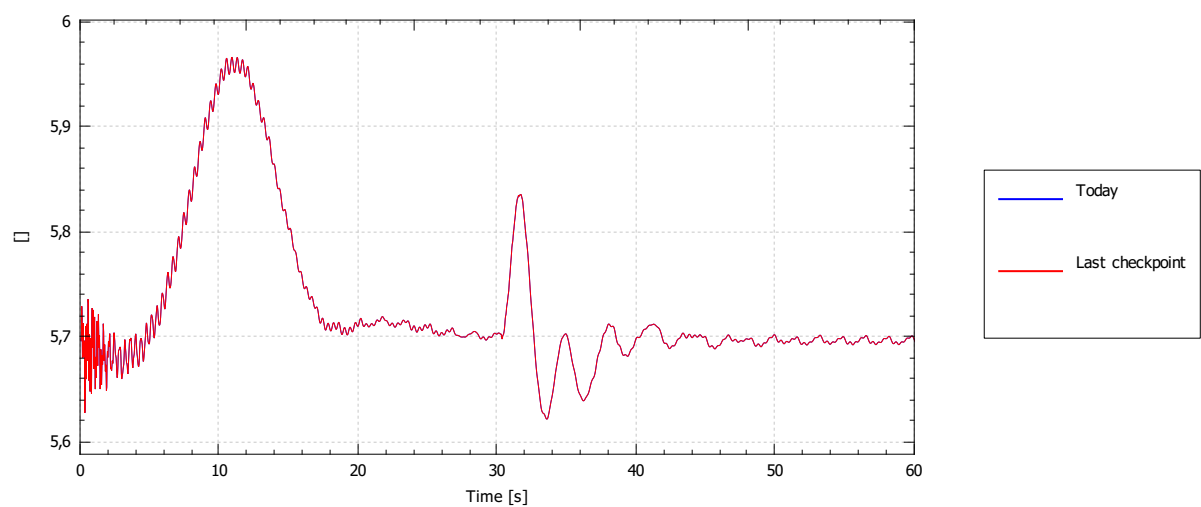
Thrust (aero)



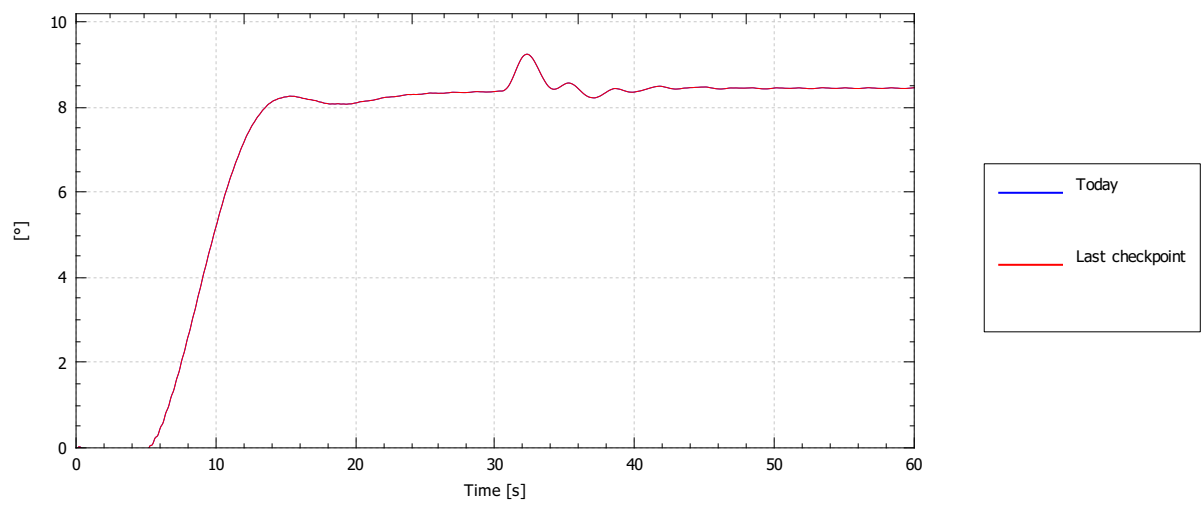
RPM



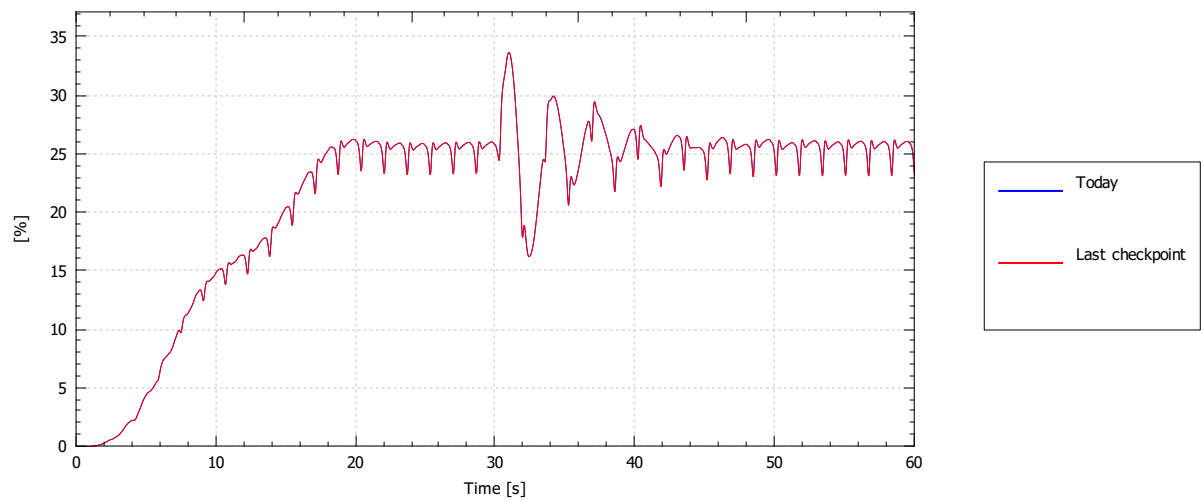
TSR



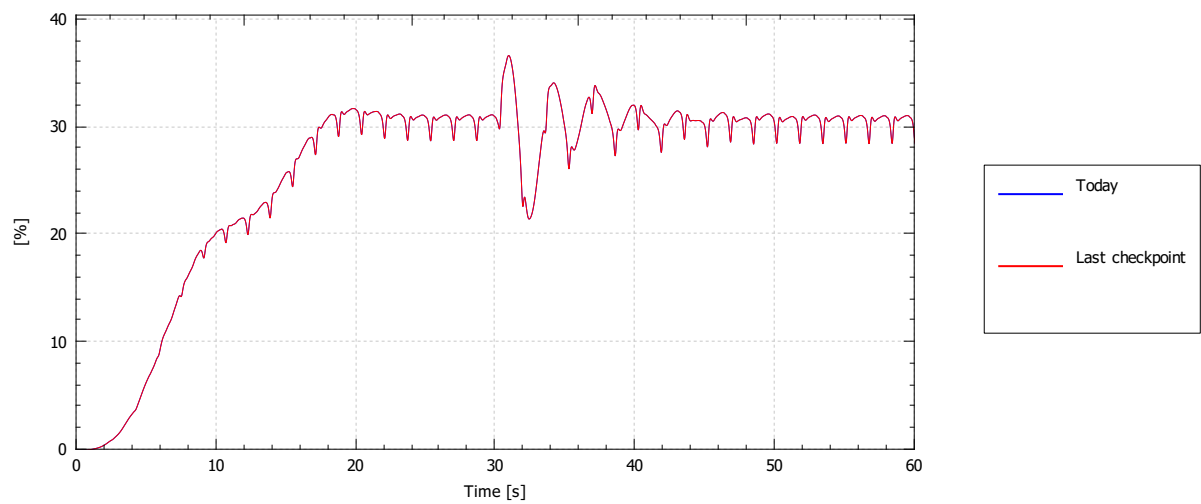
Representative demanded pitch angle



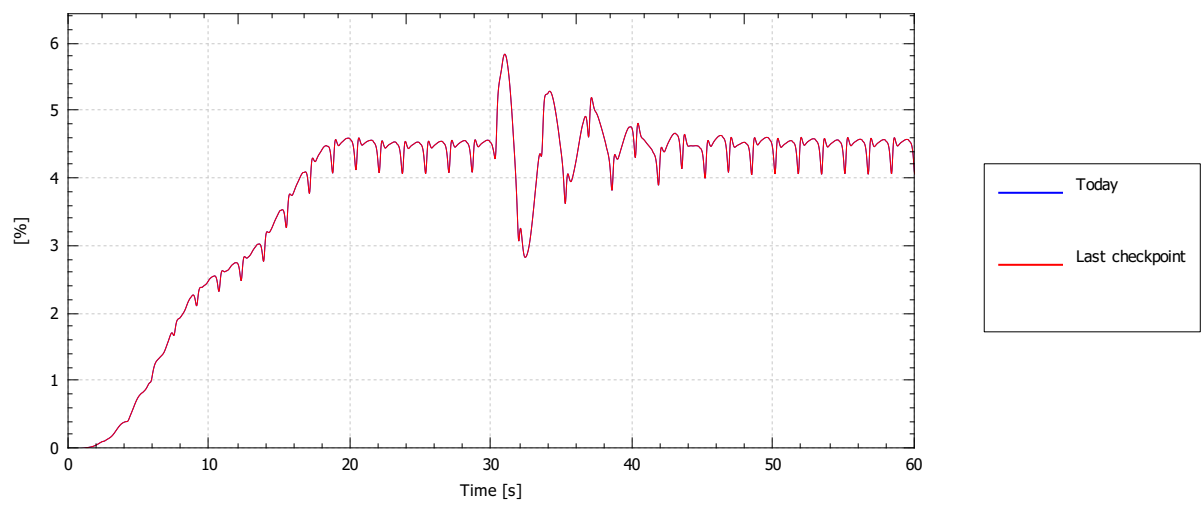
Power coef. (CP)



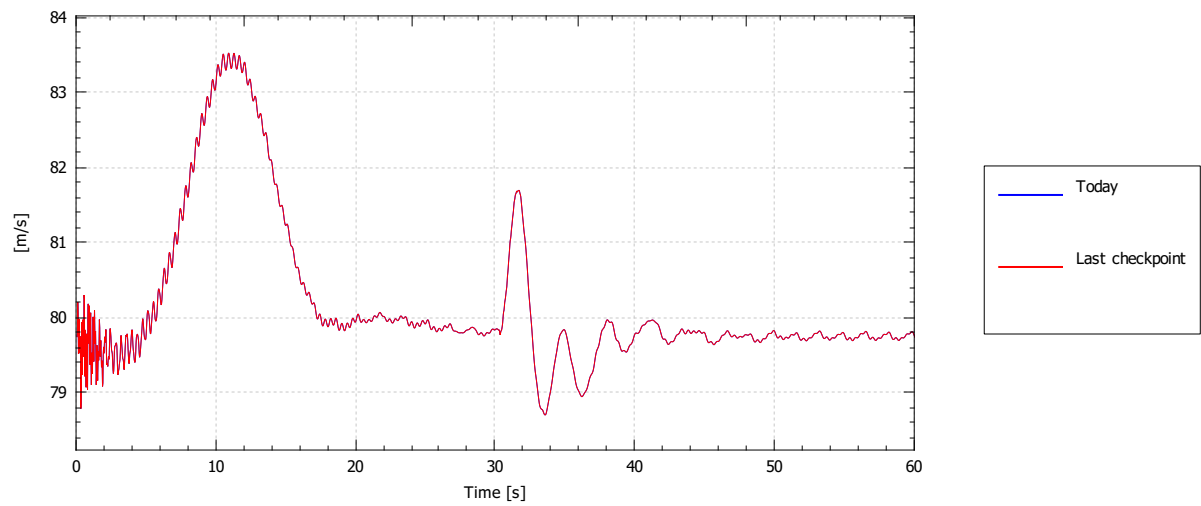
Thrust coef. (CT)



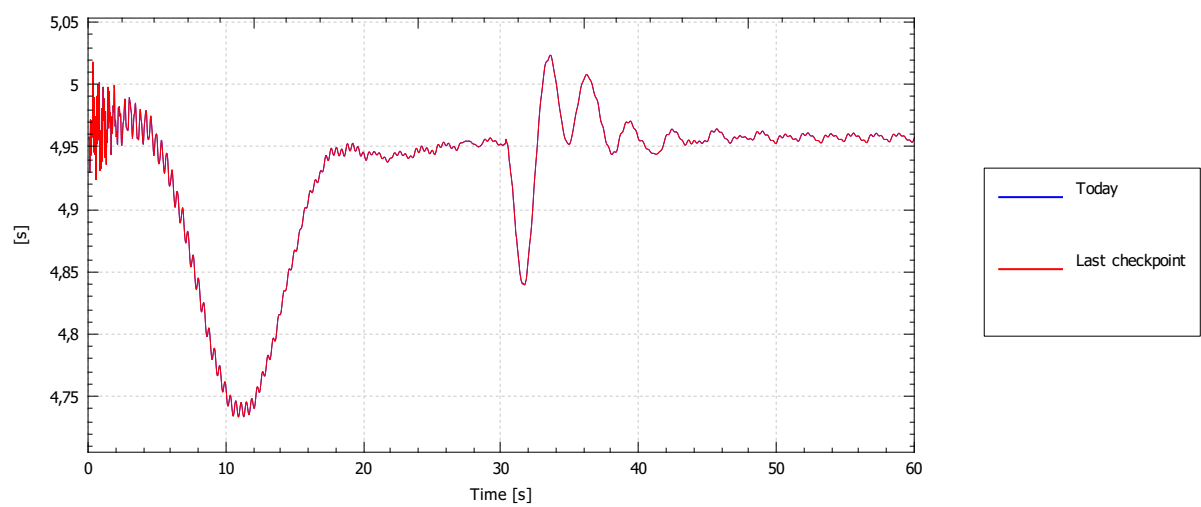
Torque coef. (CQ)



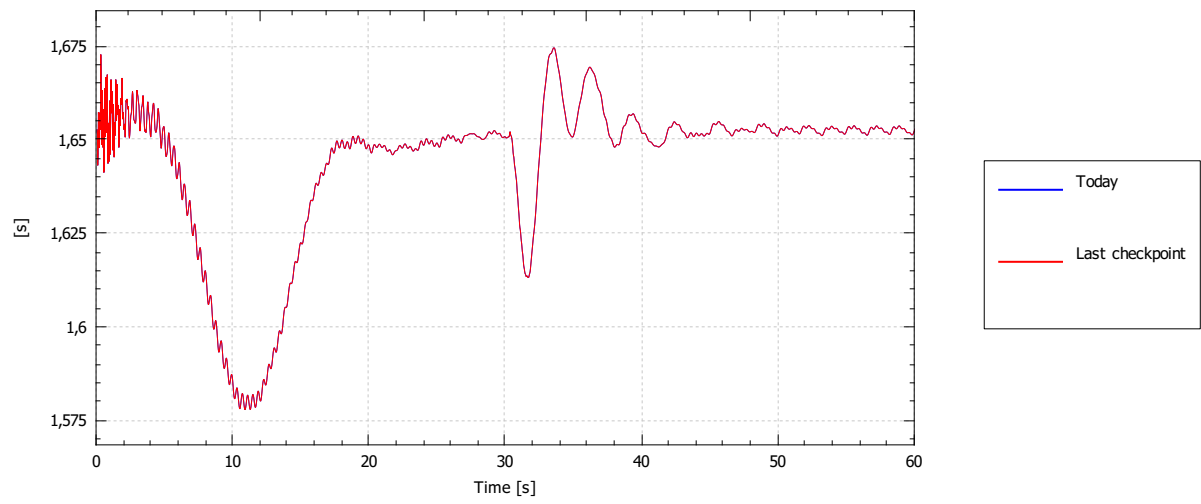
Tip speed



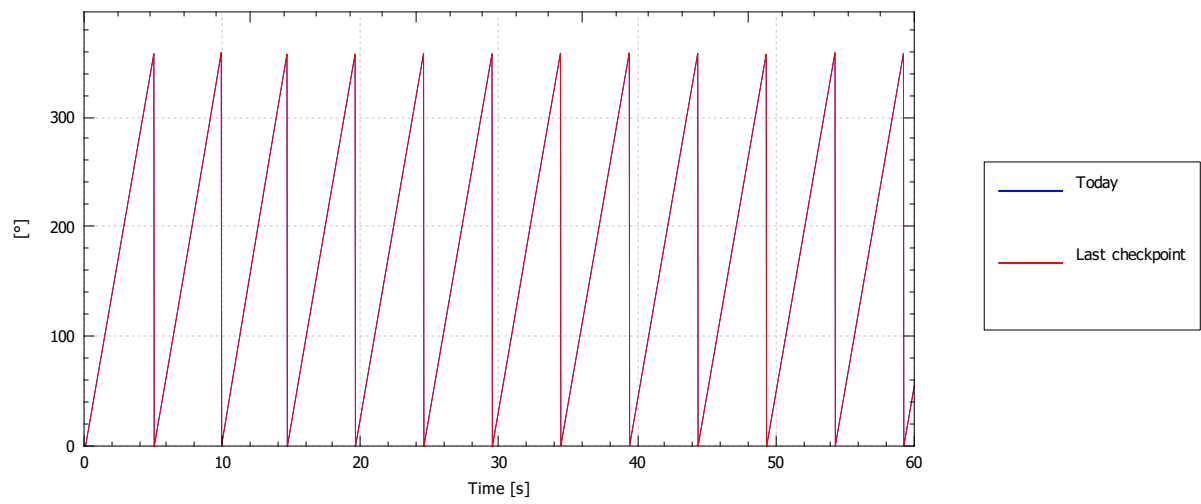
1P (one revolution)



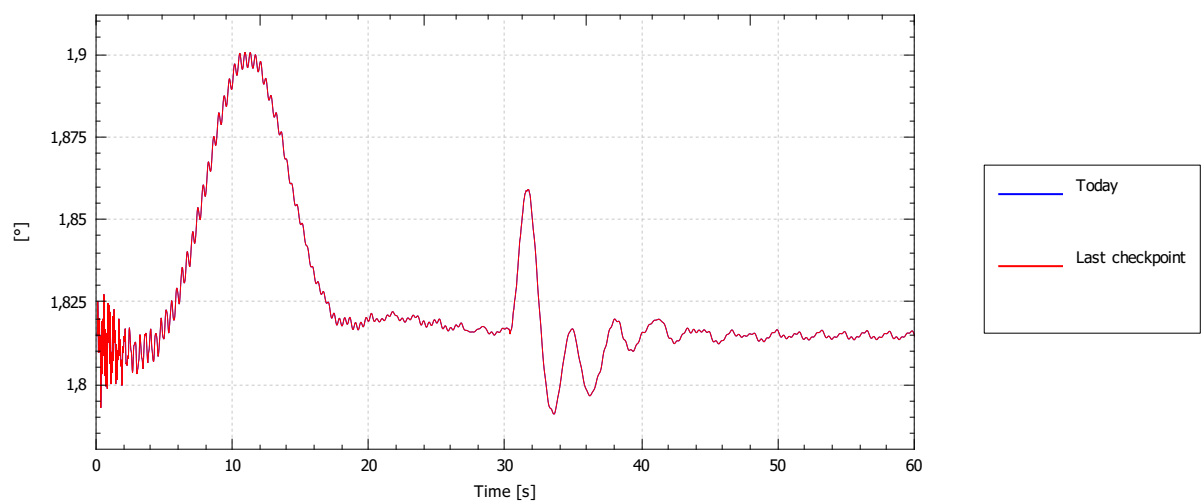
nP (blade passing)



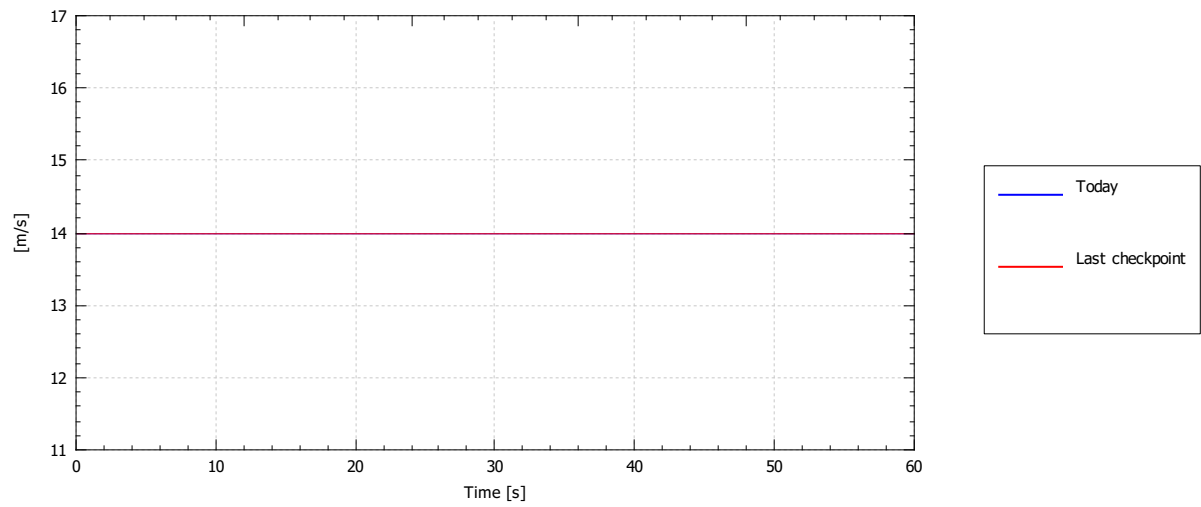
Azimuth angle



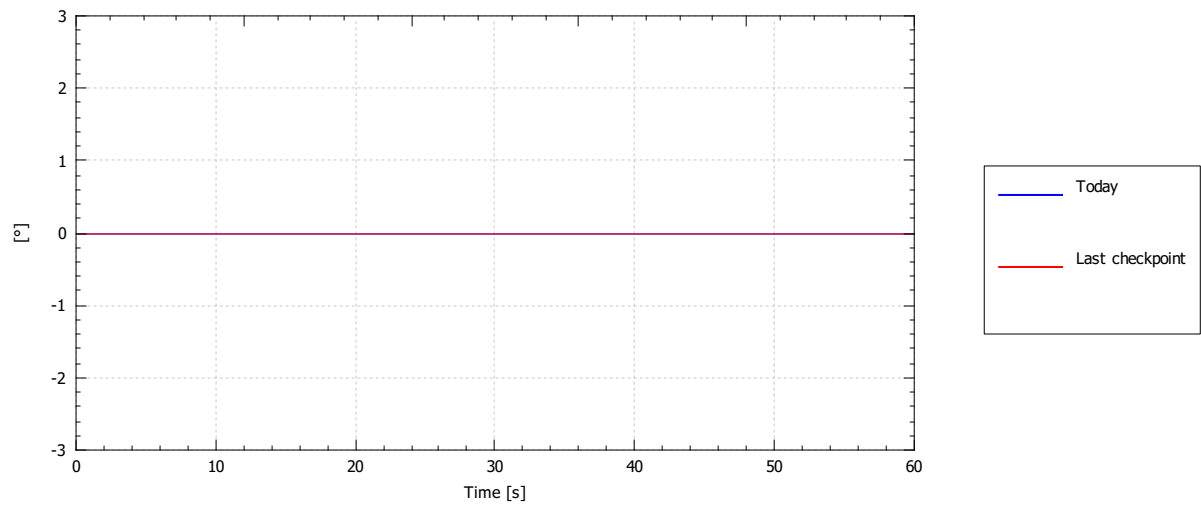
Rotation per timestep



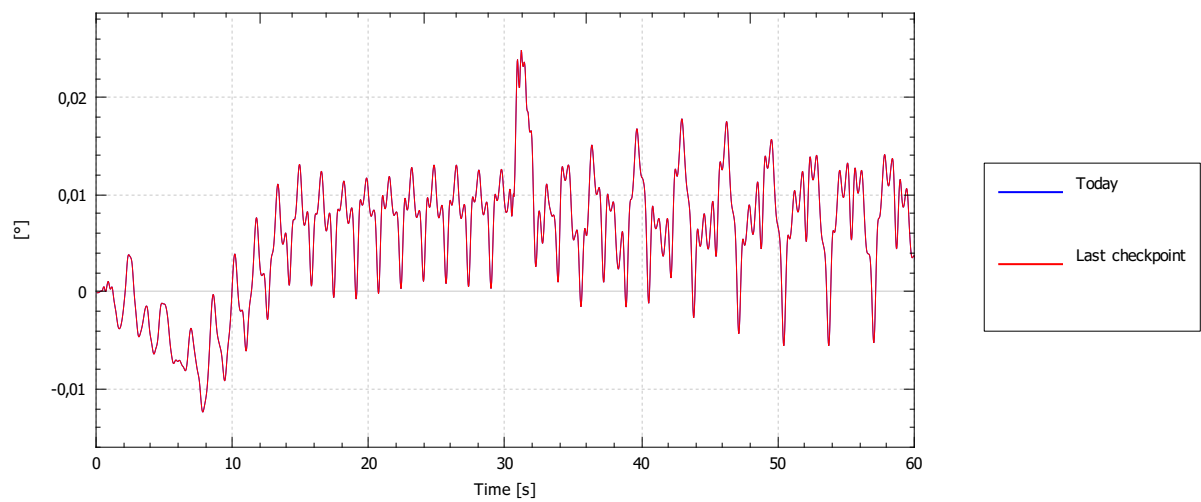
Wind speed at hub, magnitude



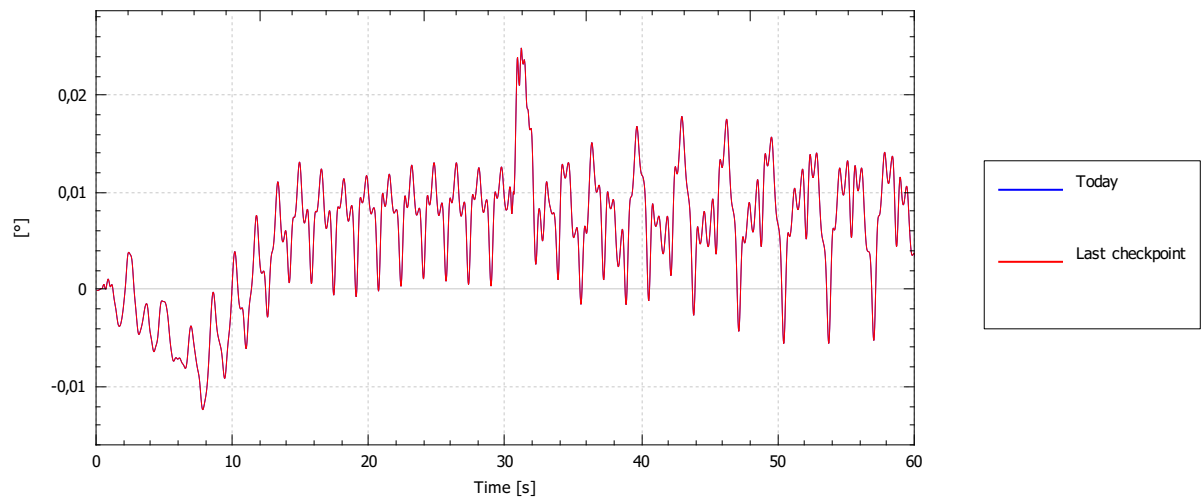
Wind angle at hub



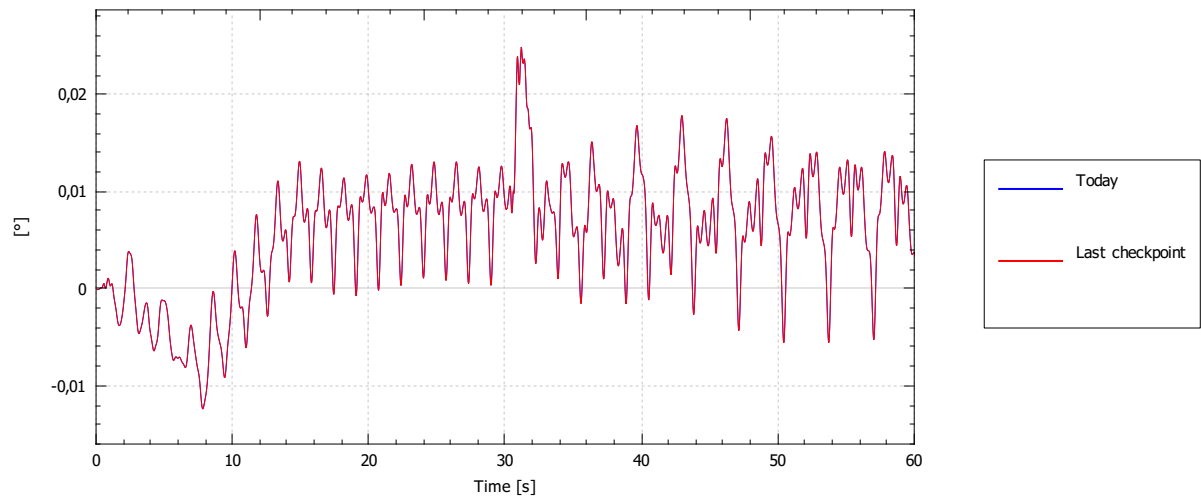
Yaw angle relative to forward



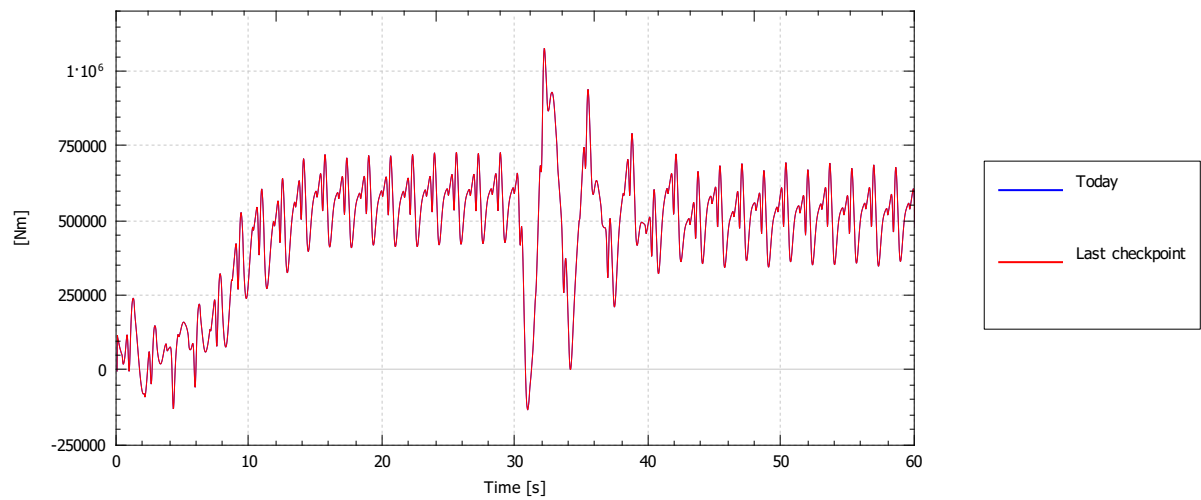
Yaw angle to reference direction



Yaw error

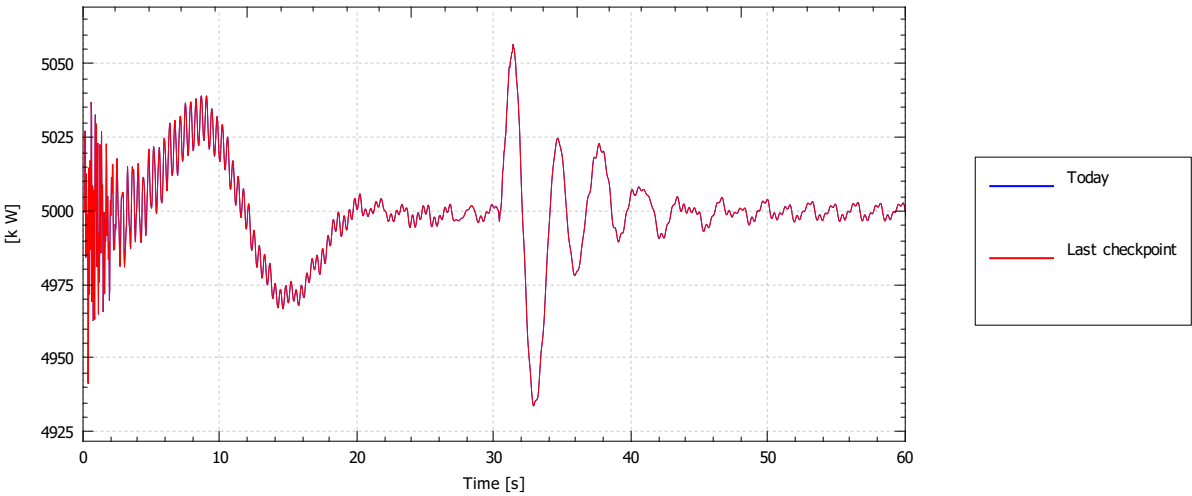


Torque about yaw axis

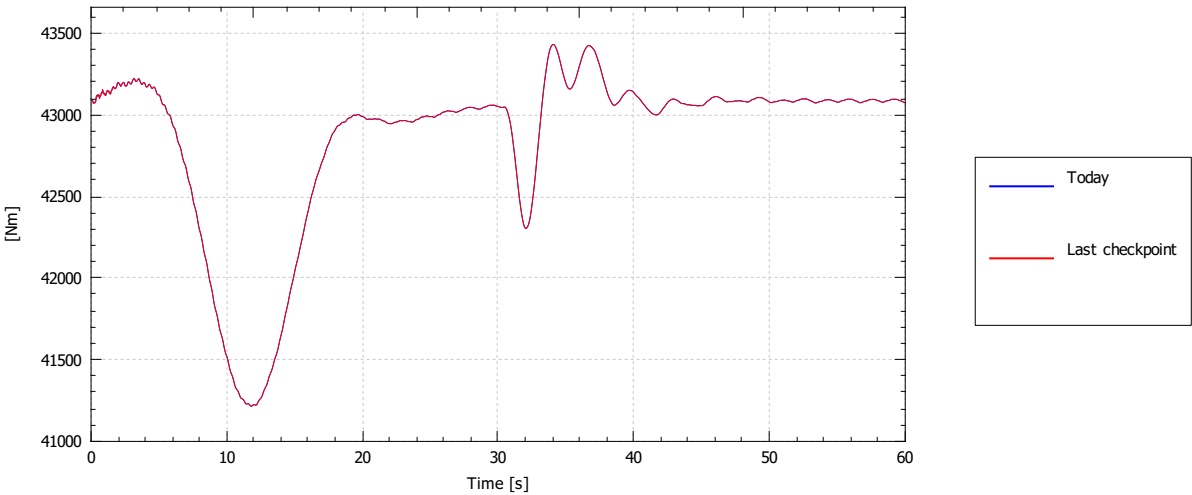


Generator

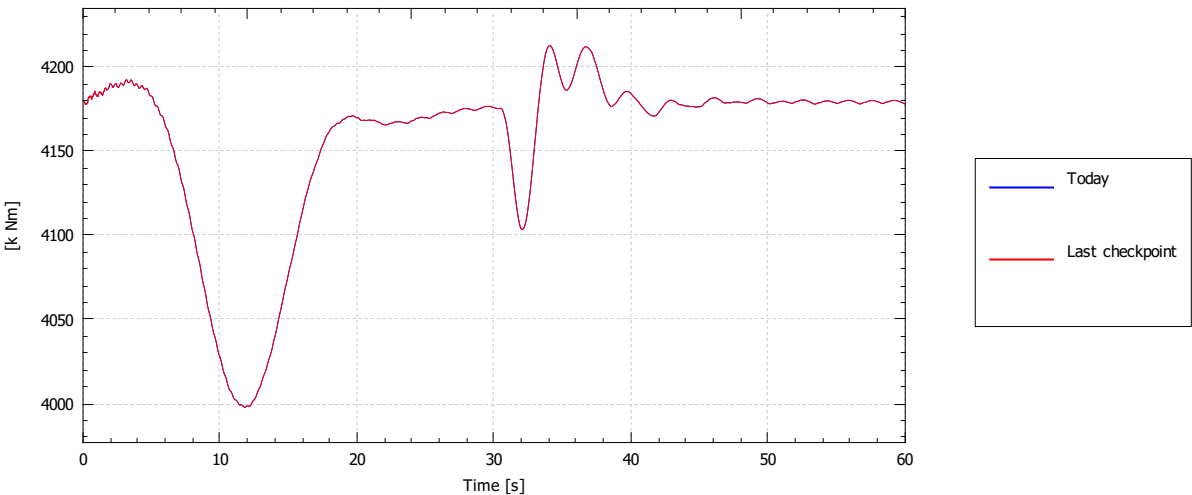
Power (electrical)



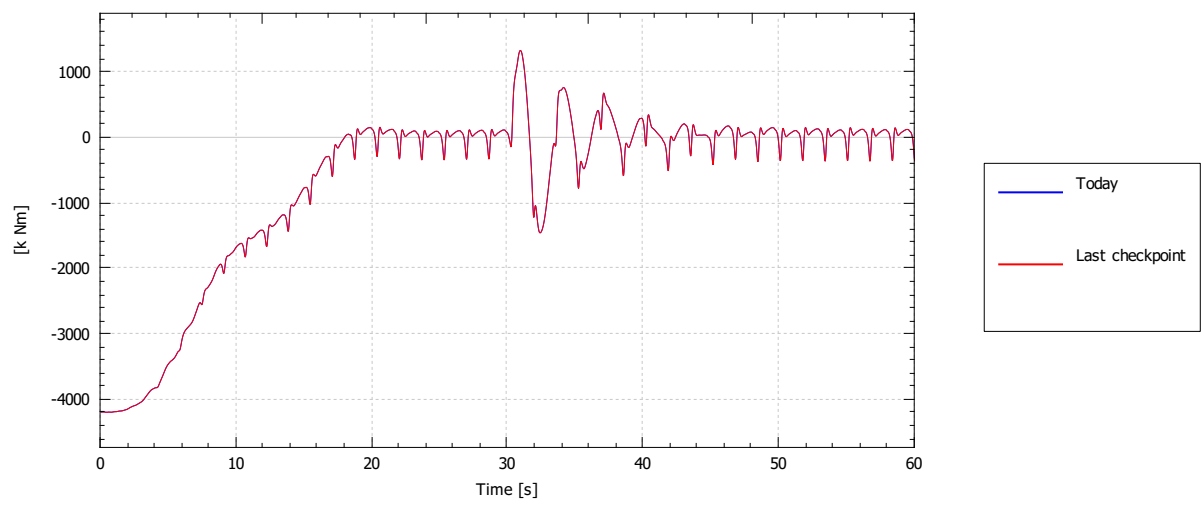
Torque



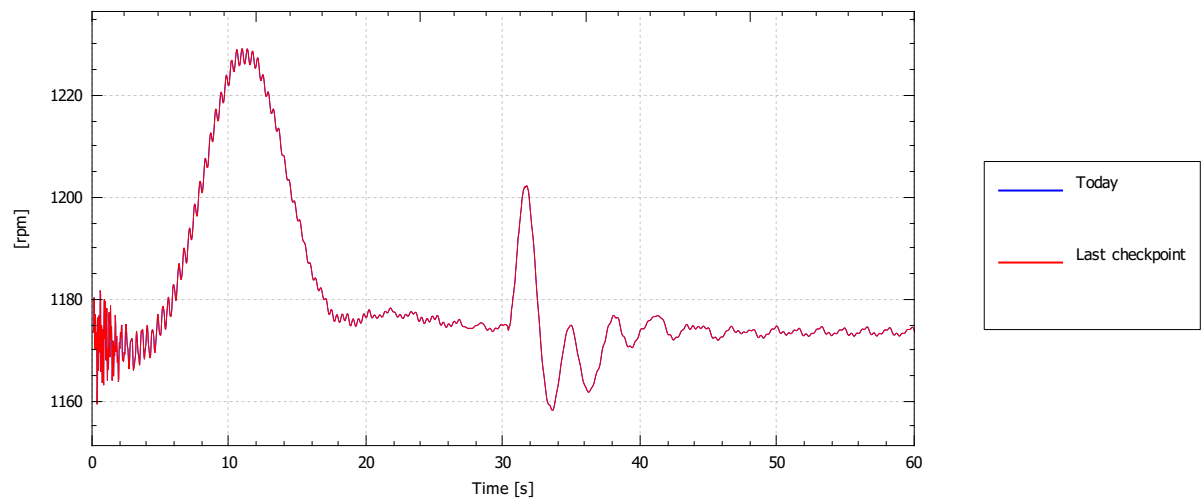
Torque on main shaft



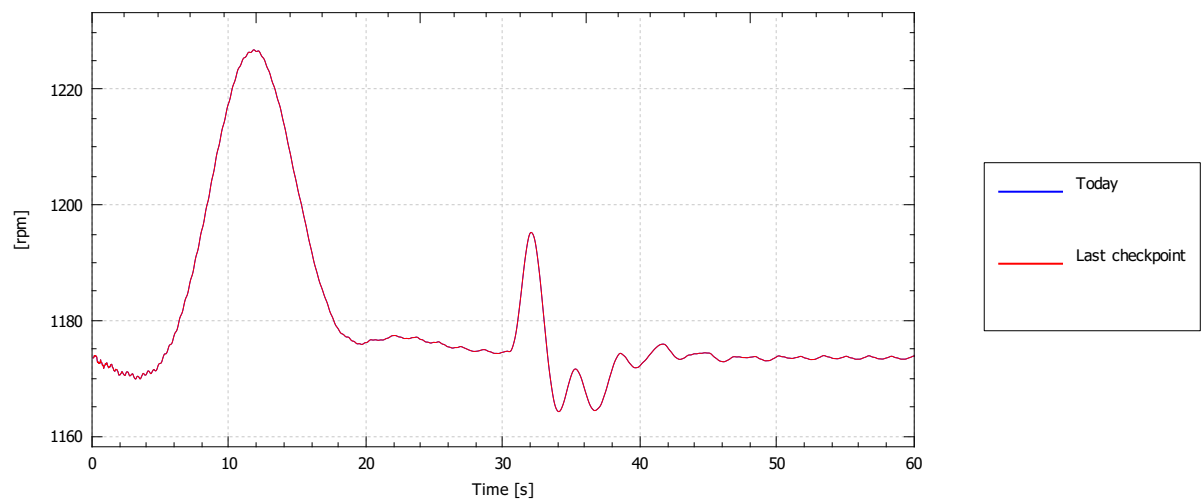
Torque diff. on main shaft



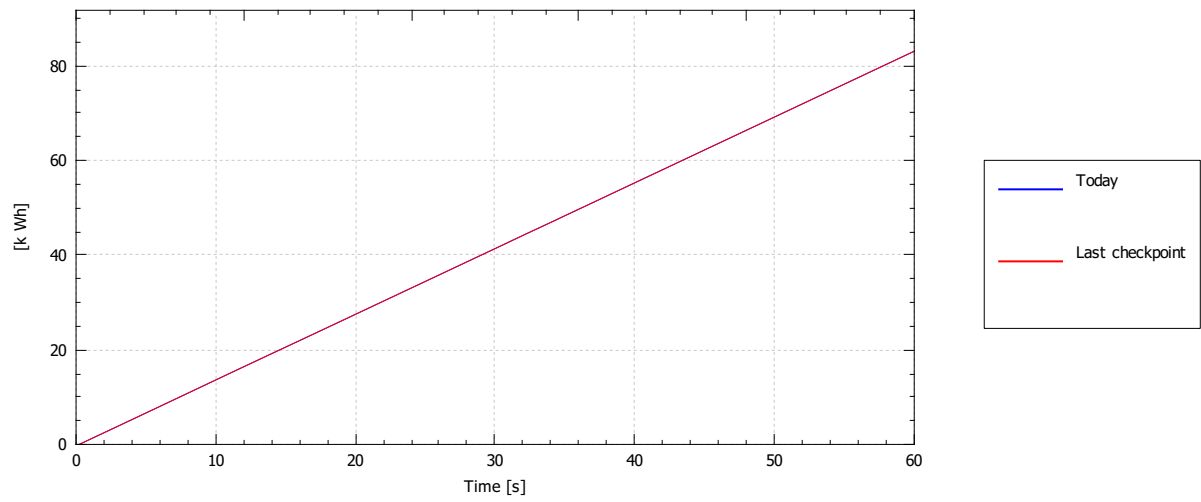
RPM



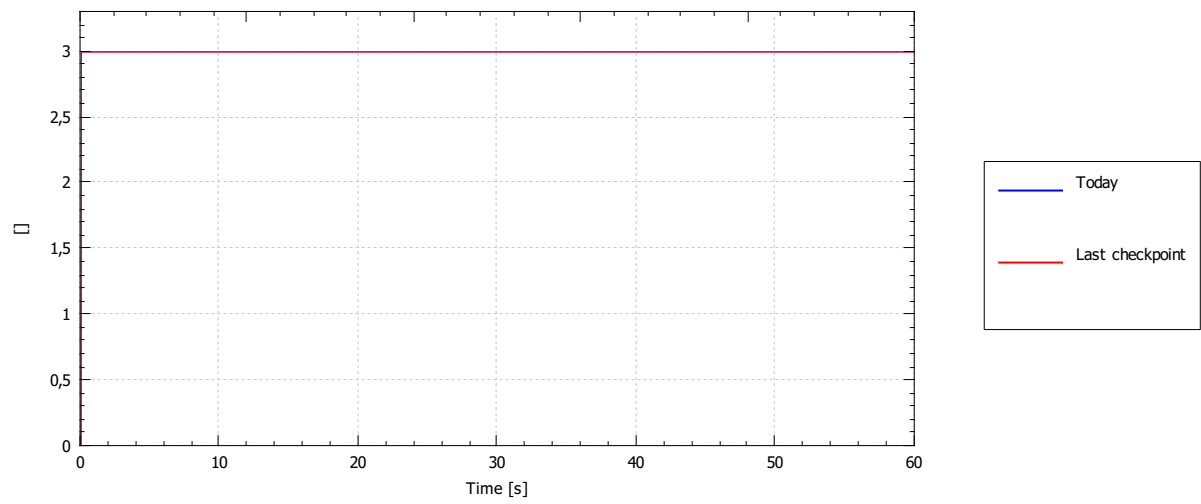
Filtered RPM



Electricity production

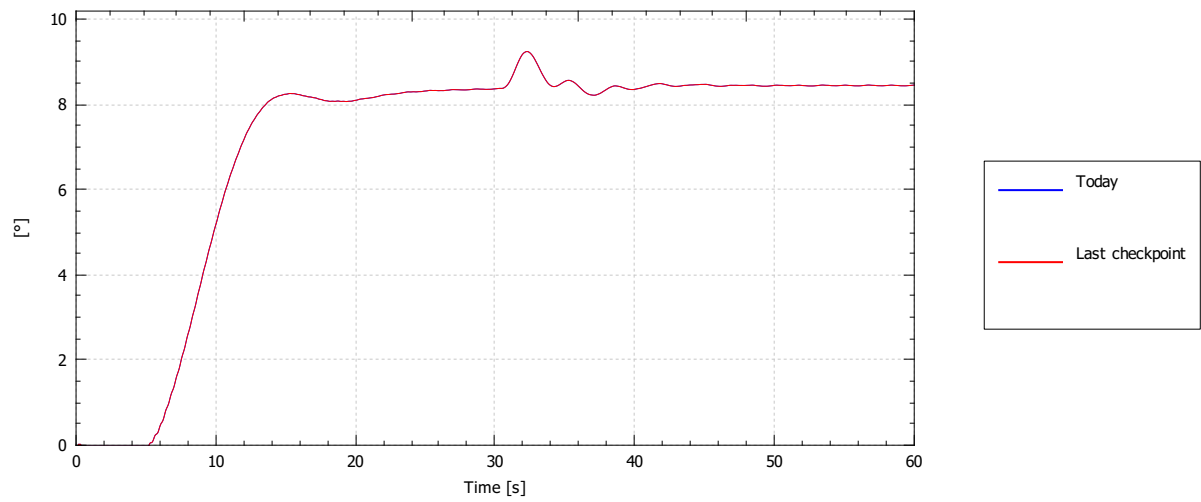


Region

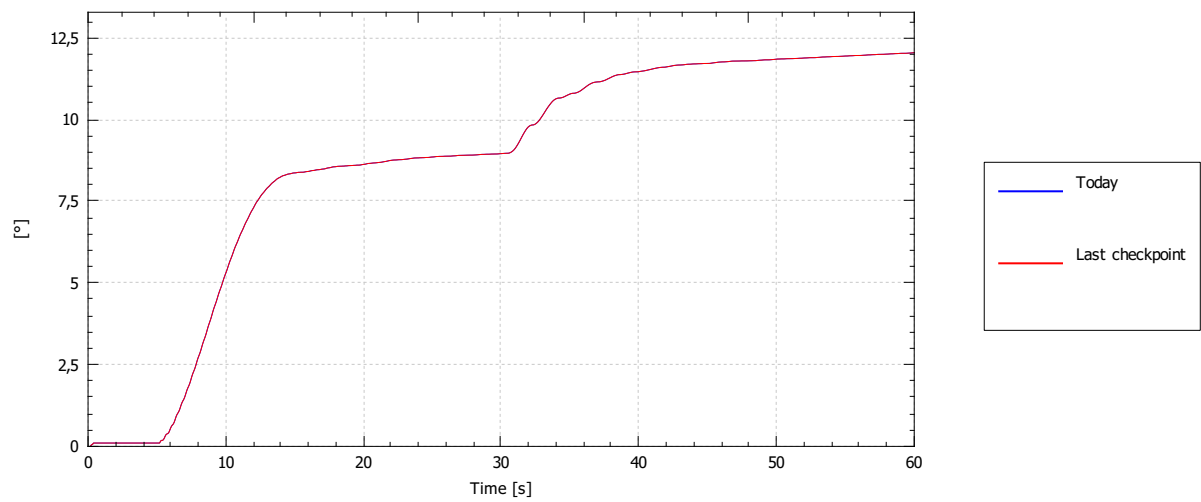


Demanded pitch controller

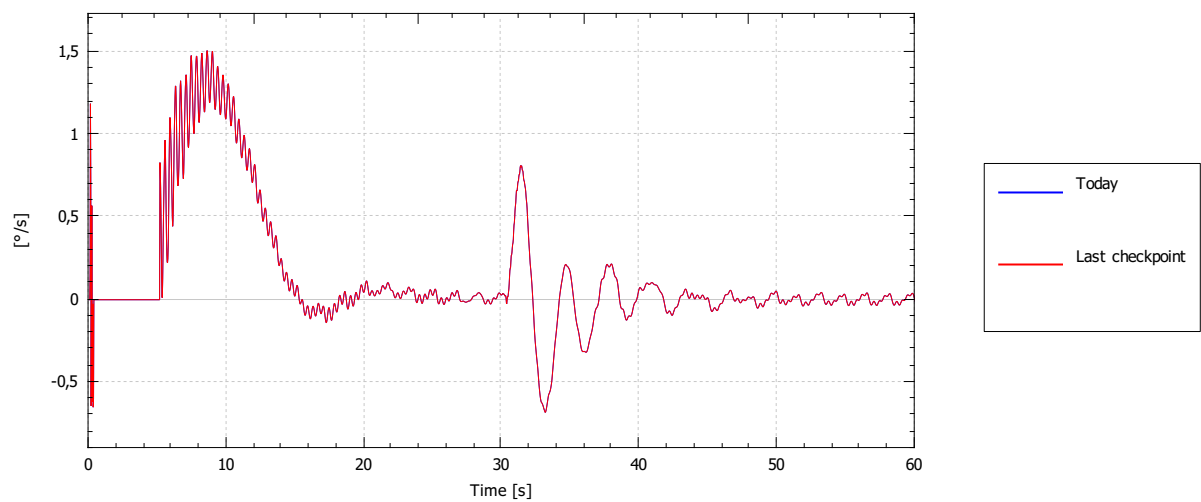
Demanded collective pitch angle



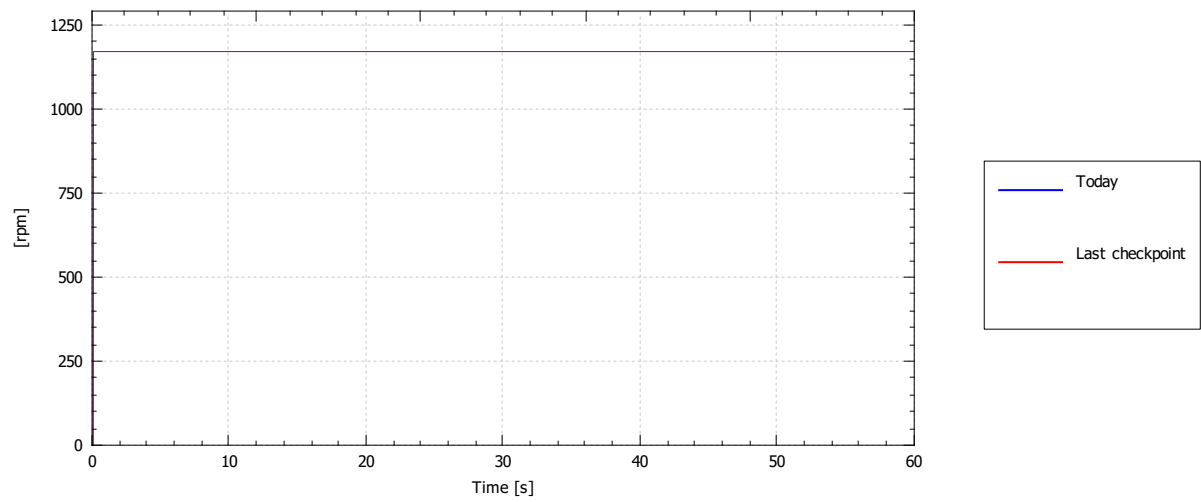
Cumulative demanded collective pitch angle



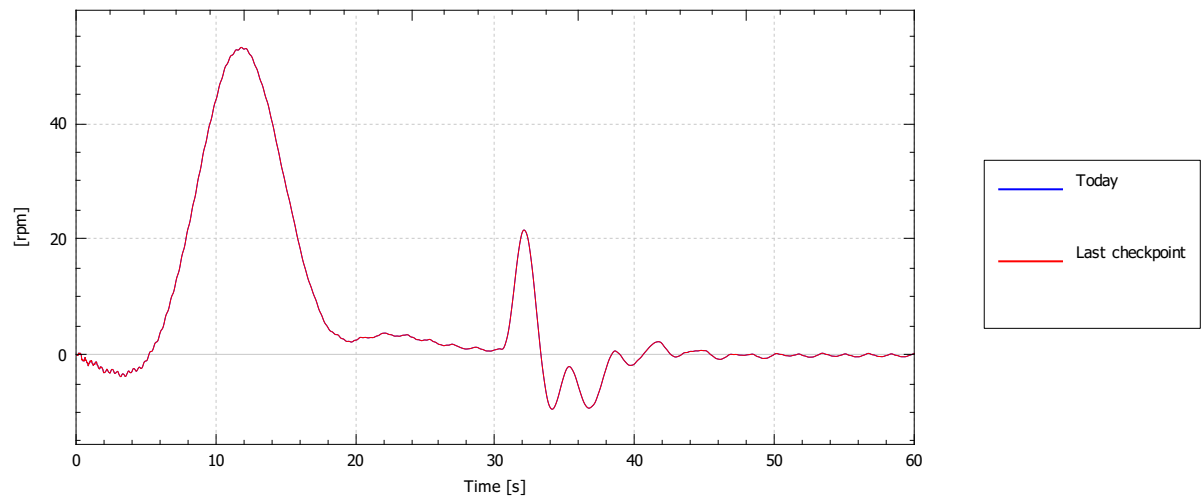
Demanded collective pitch angle rate



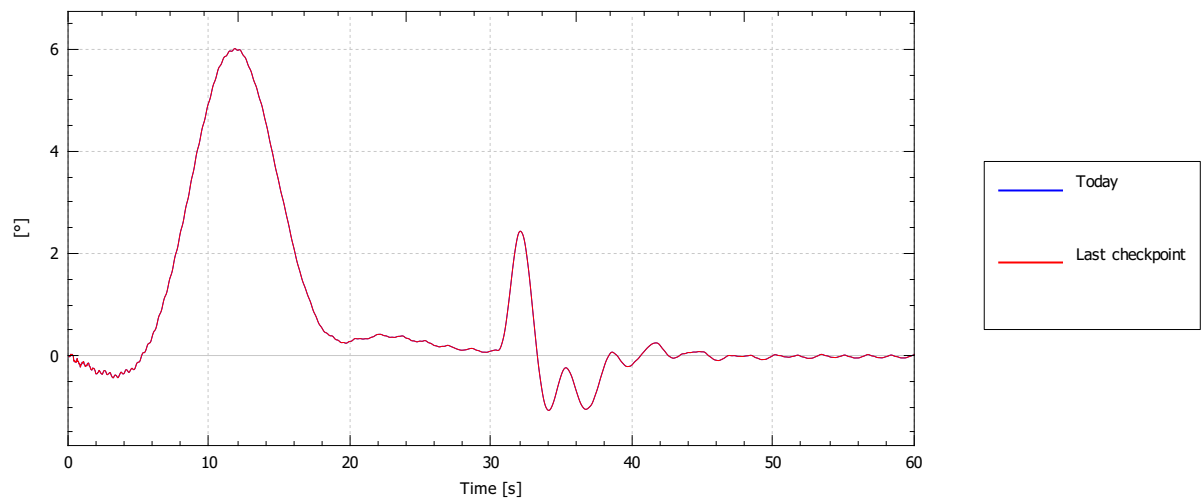
Set point



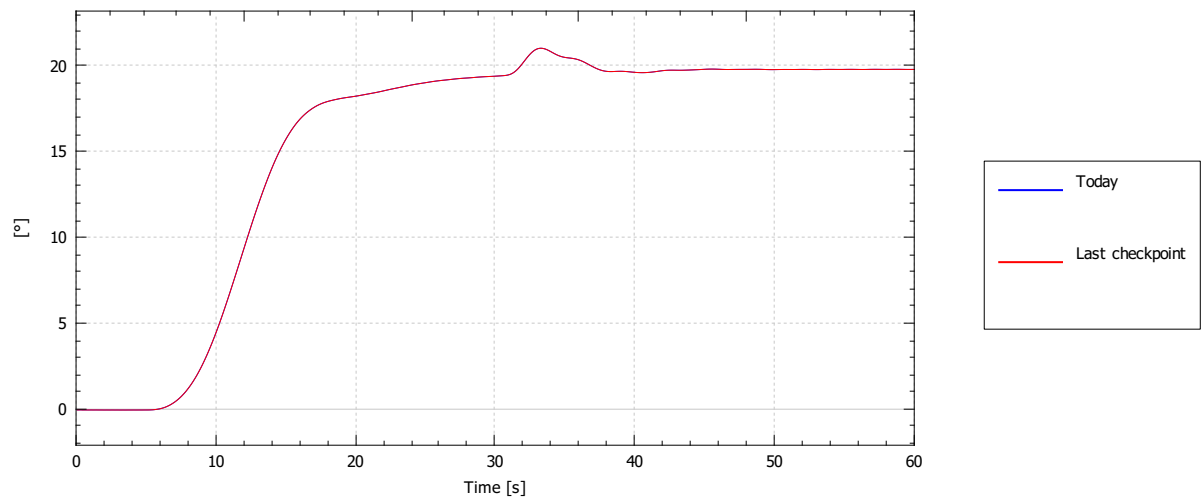
RPM error



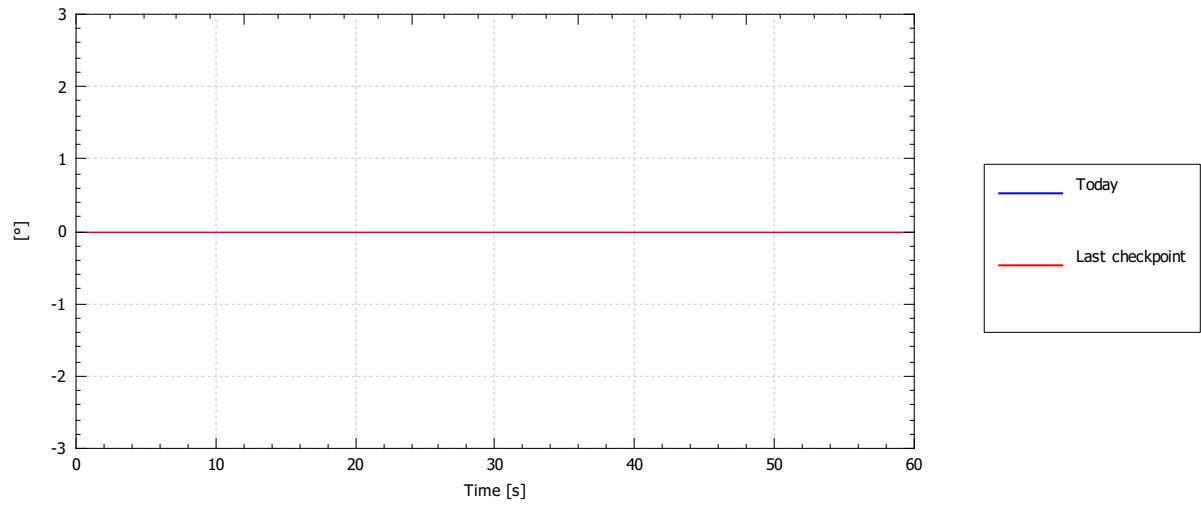
P term



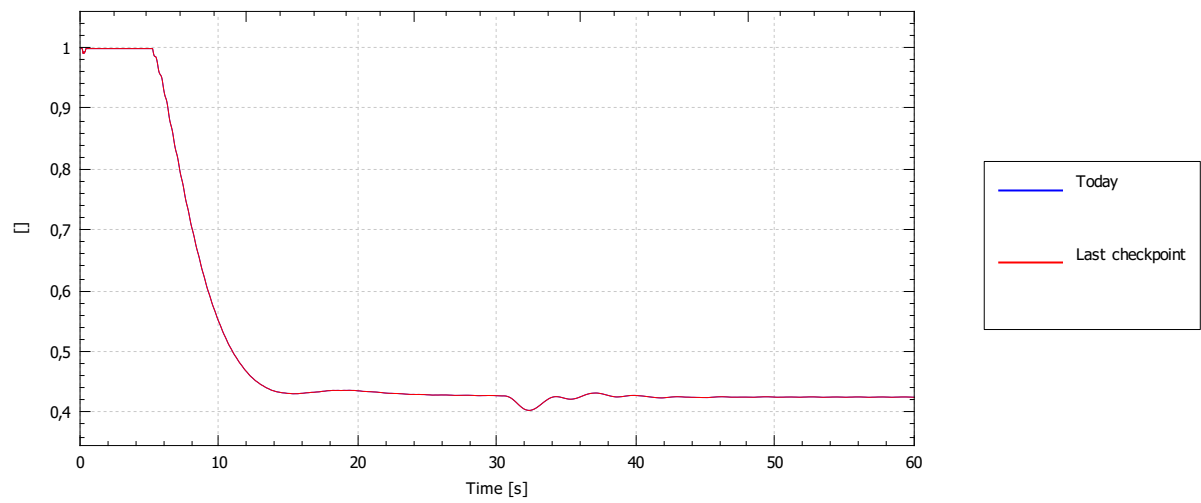
I term



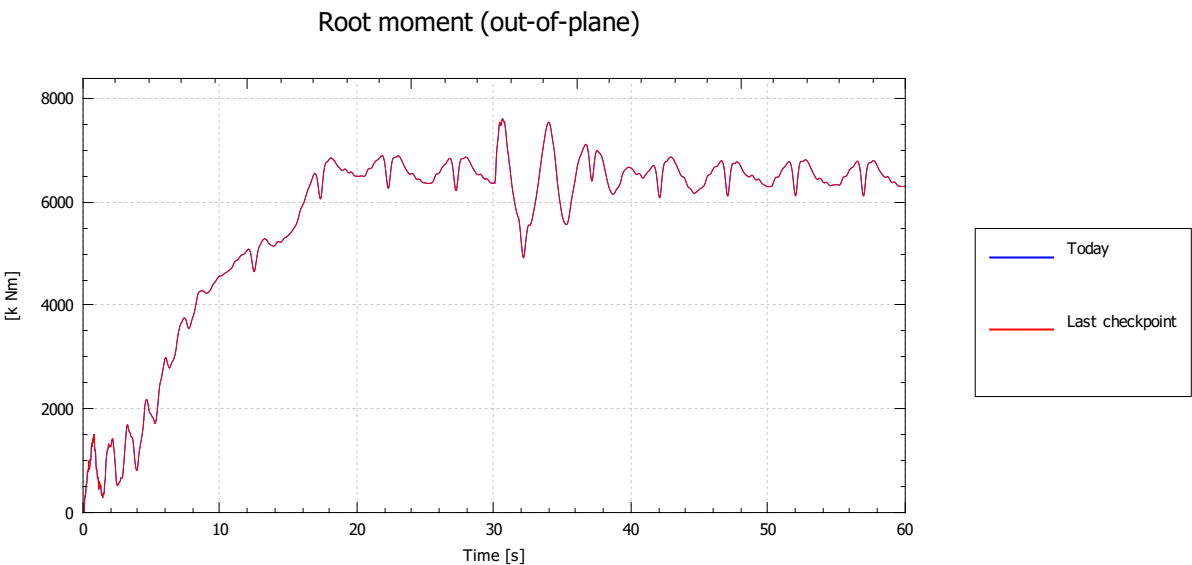
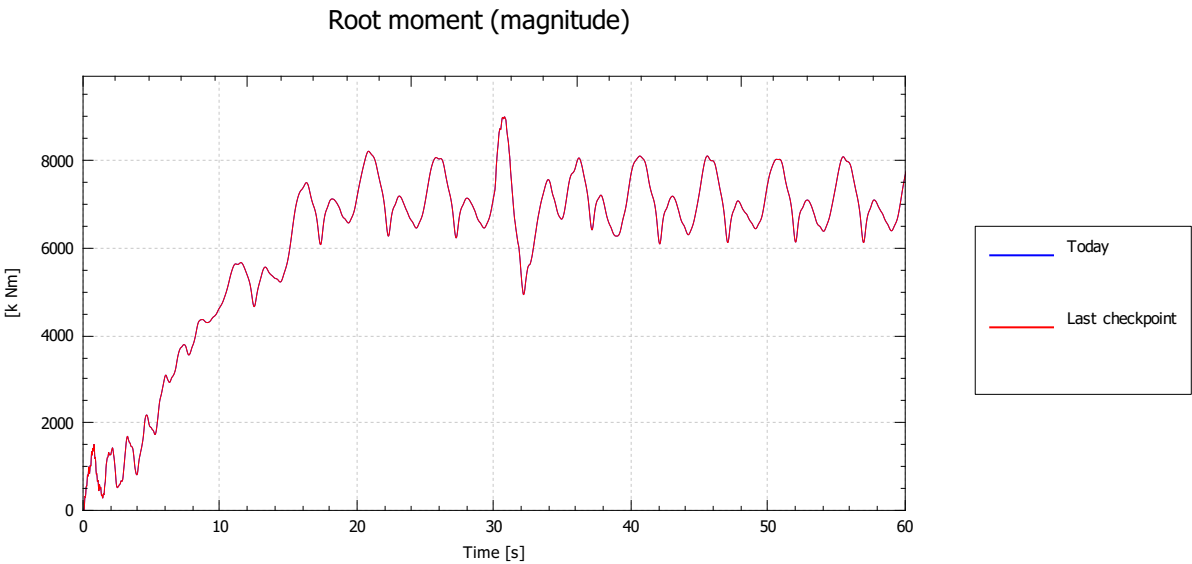
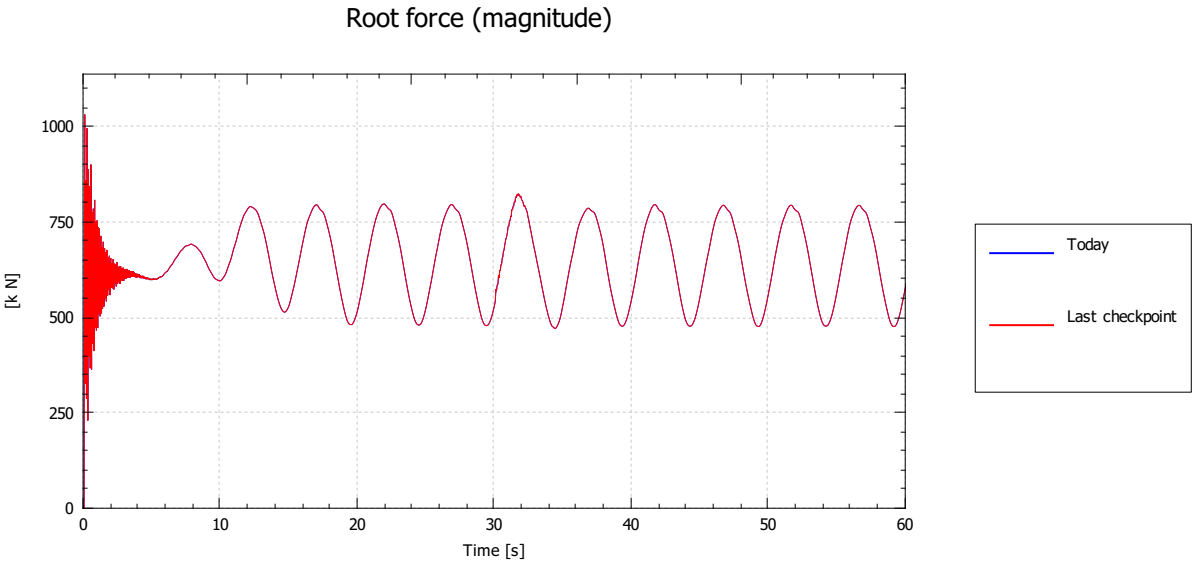
D term



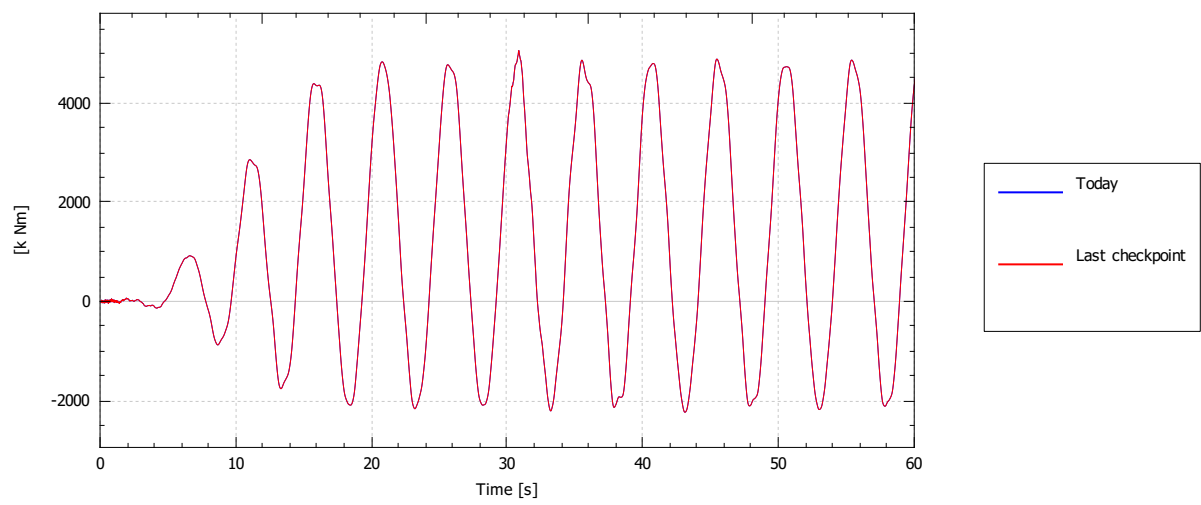
Gain scheduling factor



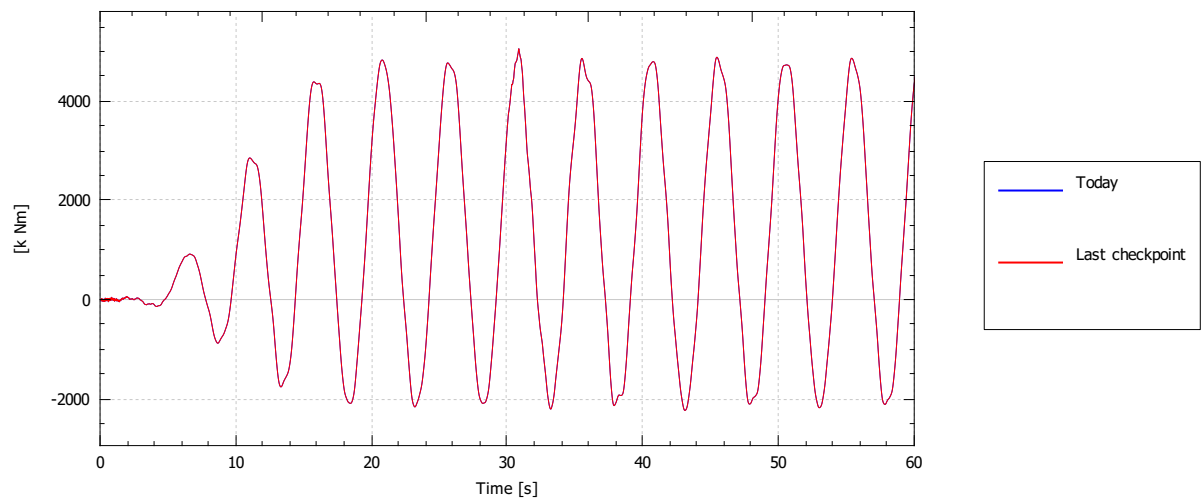
Blade [Time] [Blade 1]



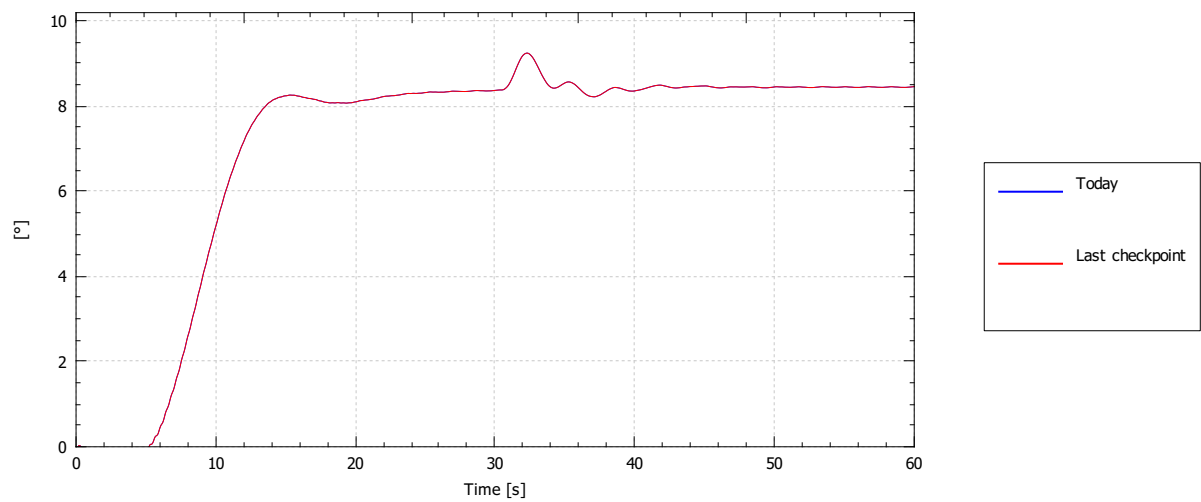
Root moment (in-plane)



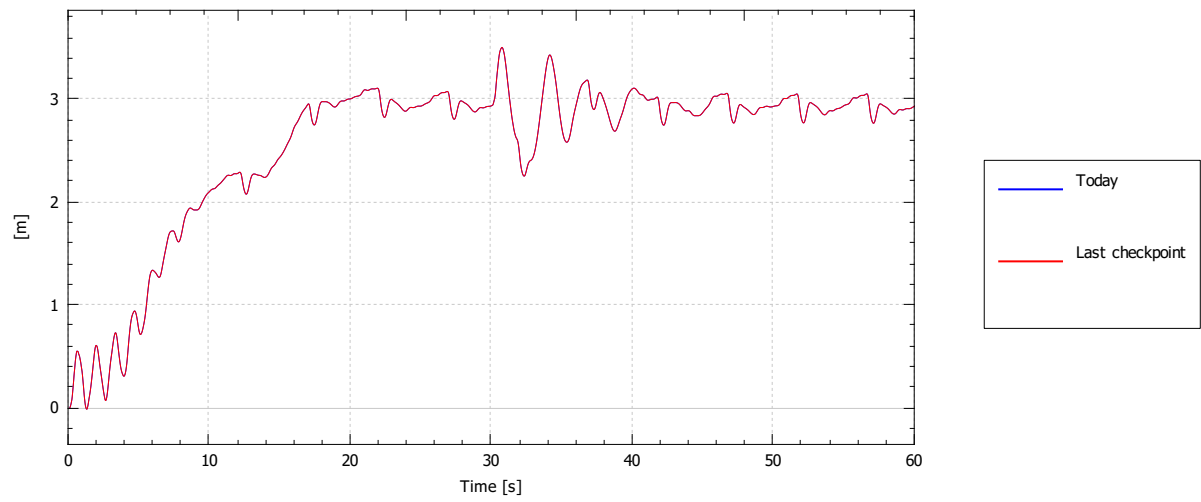
Root moment about shaft



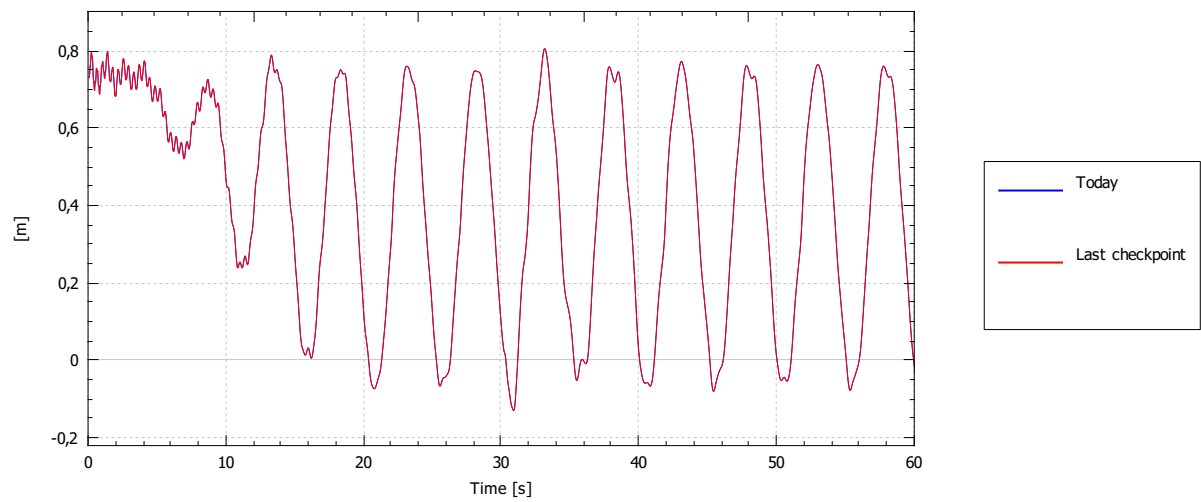
Pitch angle



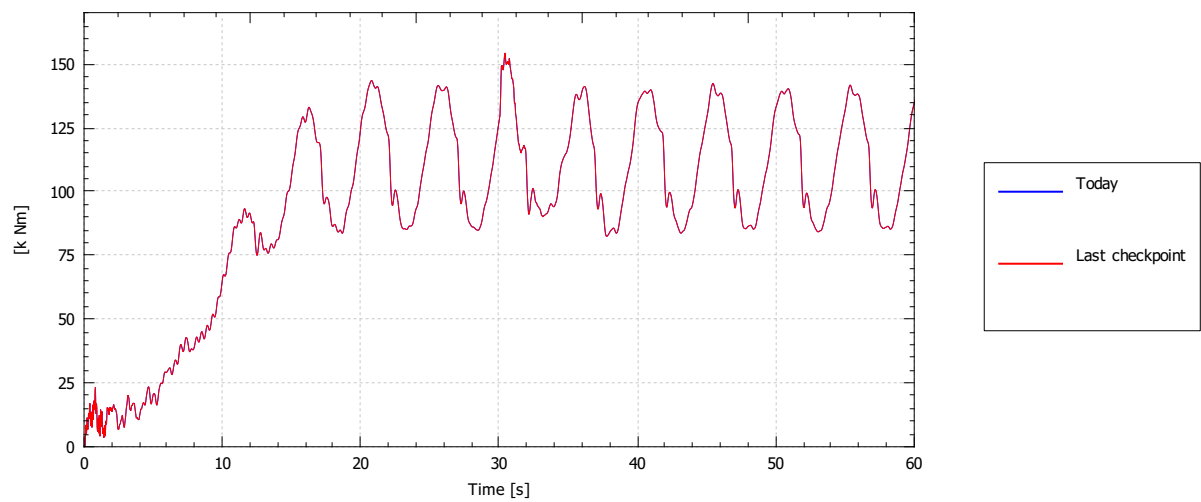
Tip deflection (out-of-plane)

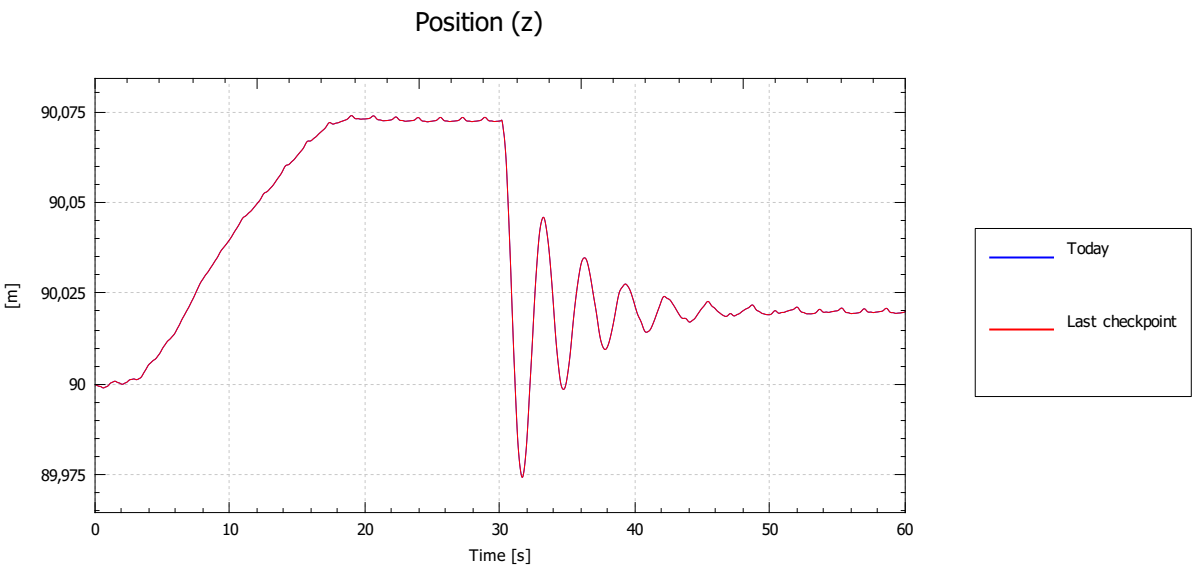
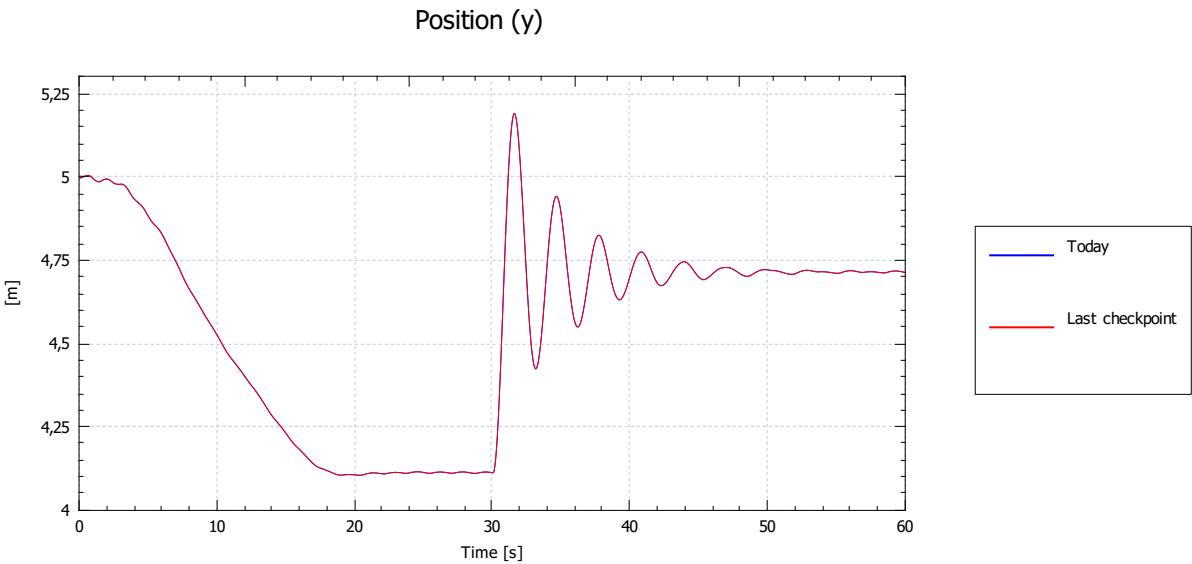
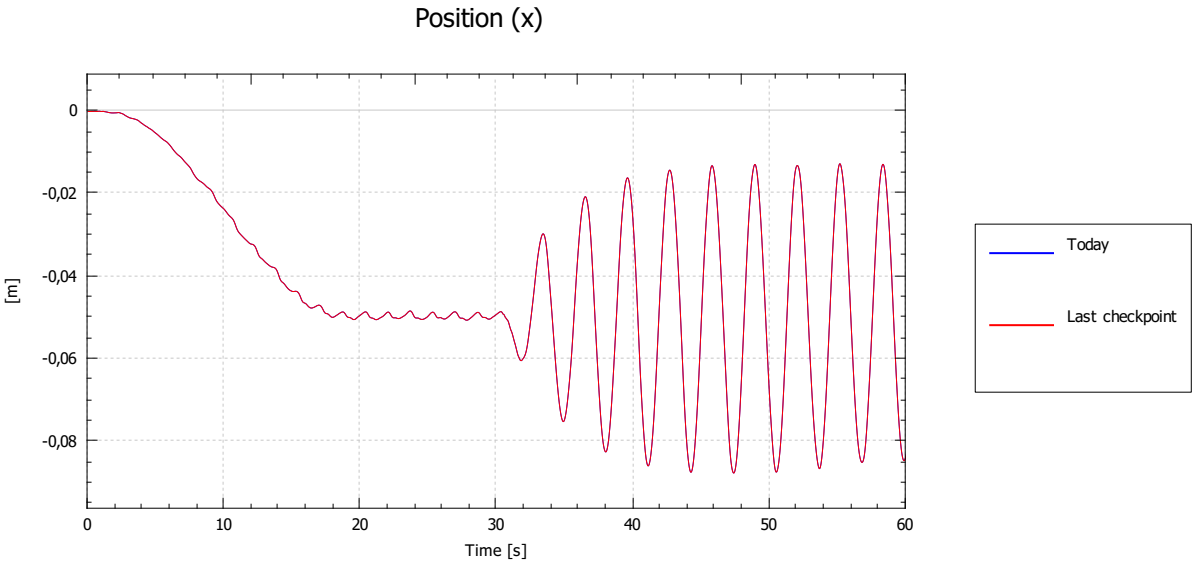


Tip deflection (in-plane)

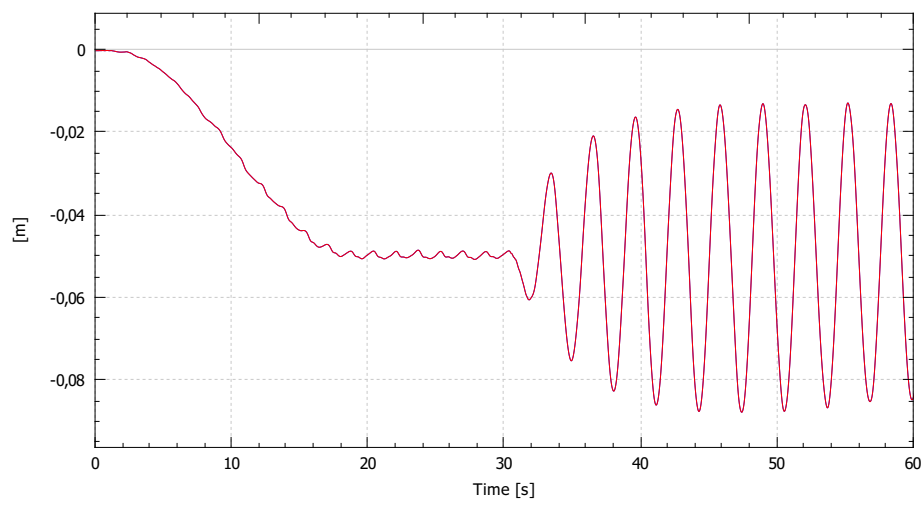


Root torque

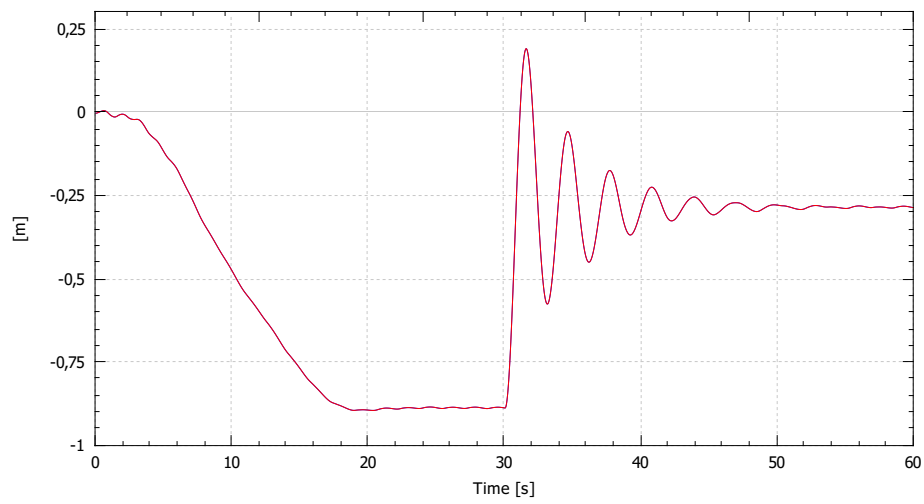




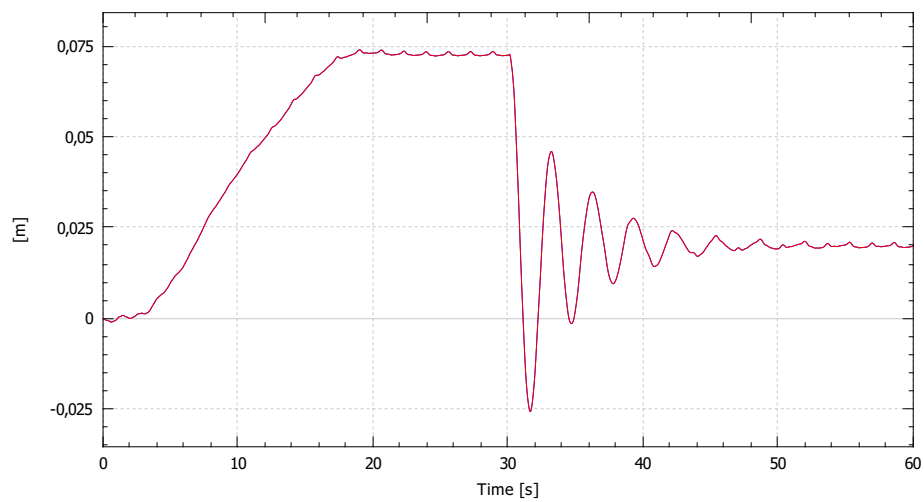
Displacement (u)



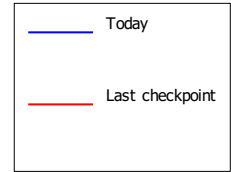
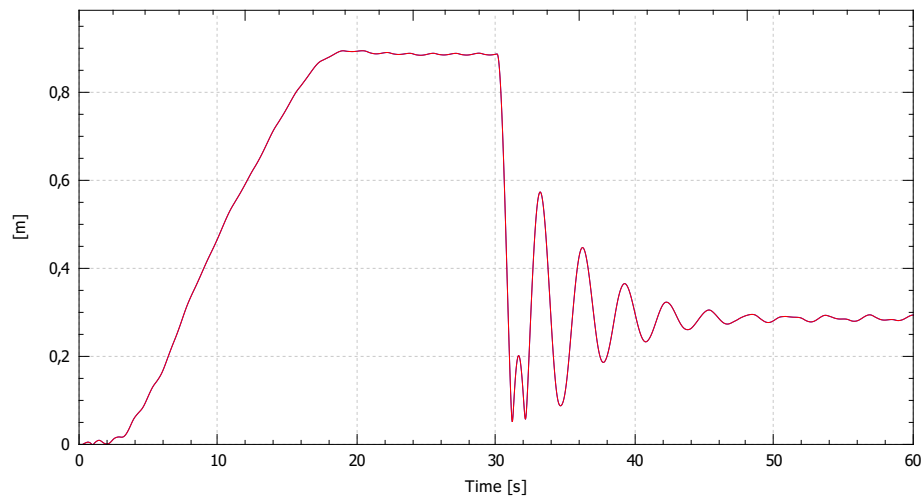
Displacement (v)



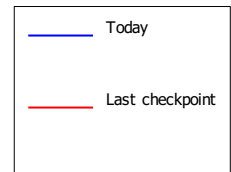
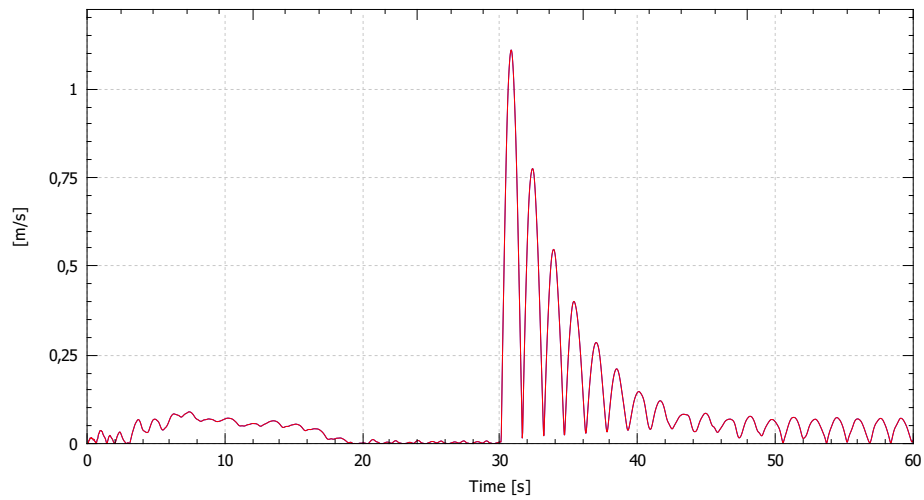
Displacement (w)



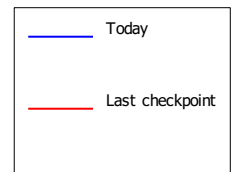
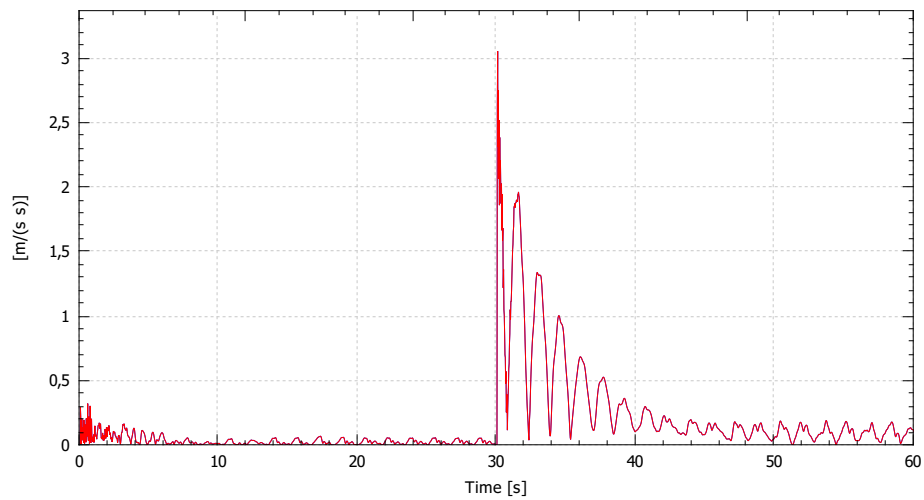
Displacement magnitude



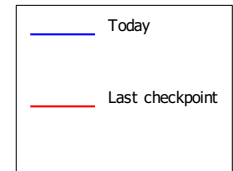
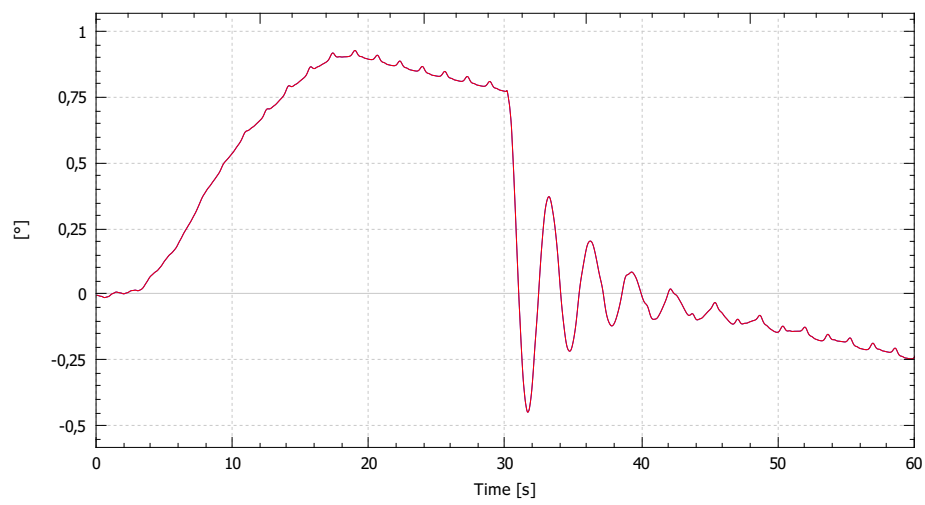
Speed



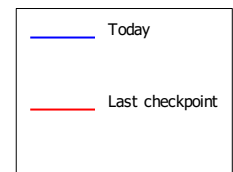
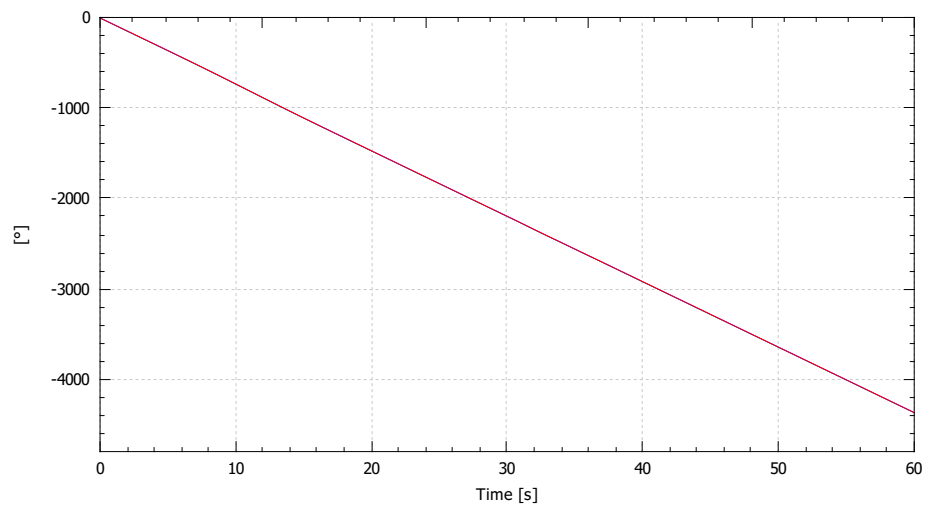
Acceleration, magnitude



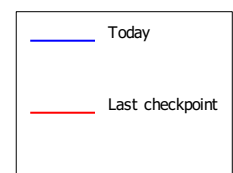
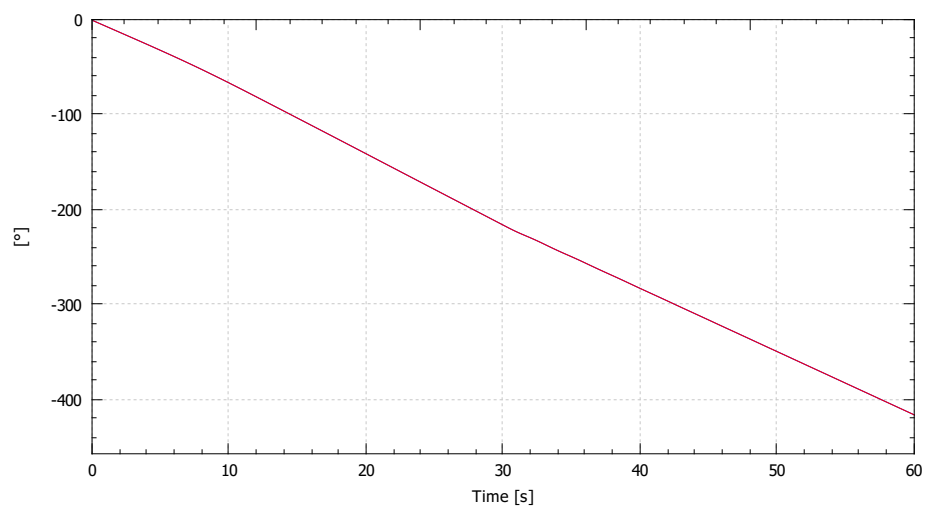
Rotational displacement (ru)



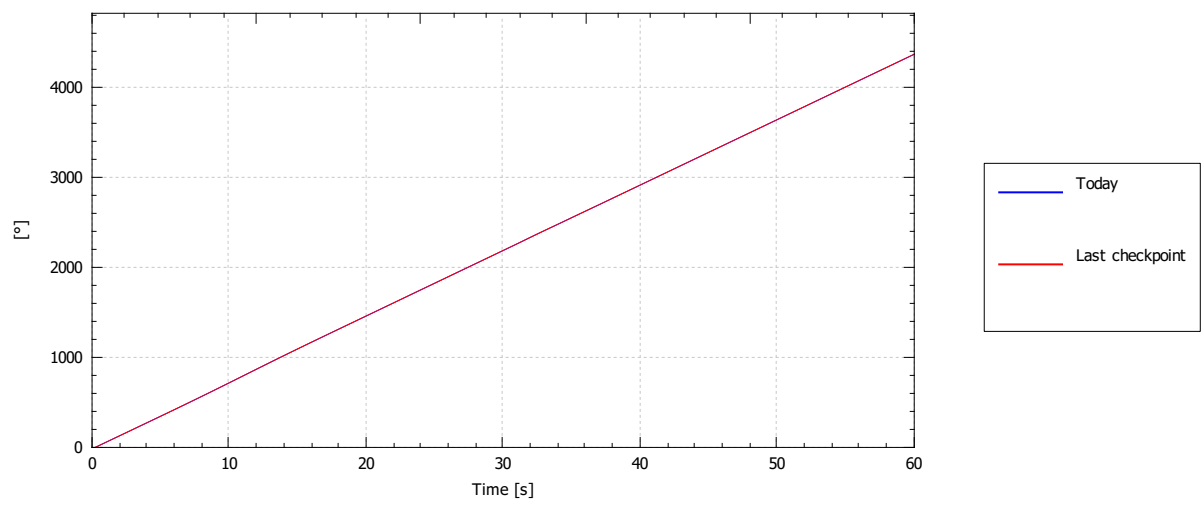
Rotational displacement (rv)



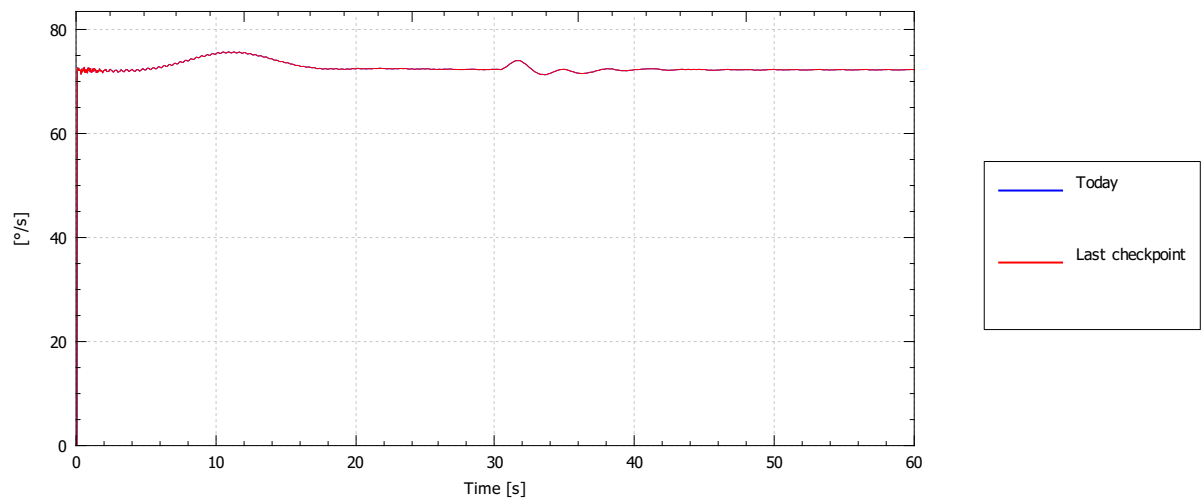
Rotational displacement (rw)



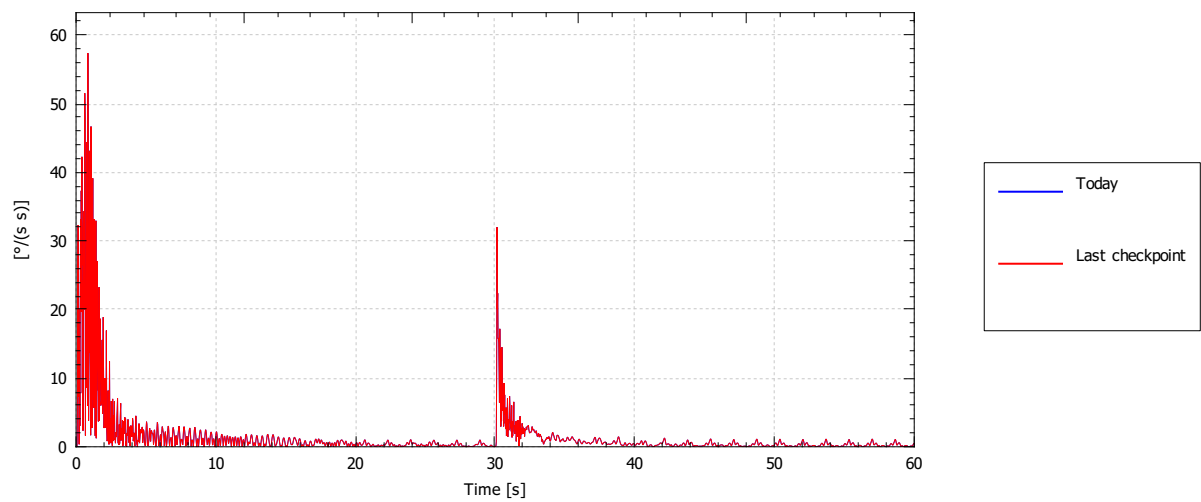
Rotational displacement magnitude



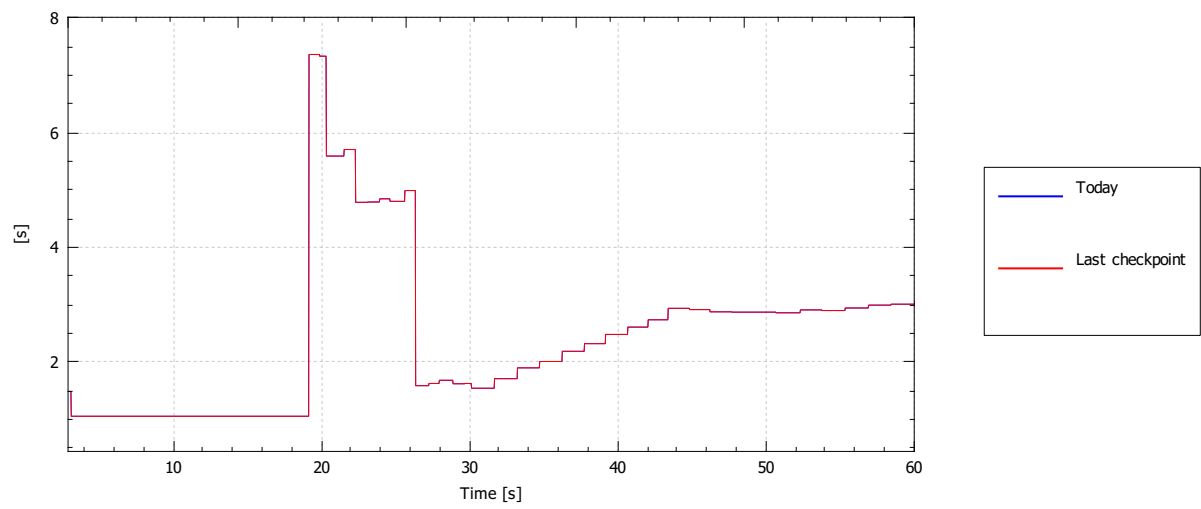
Rotational speed



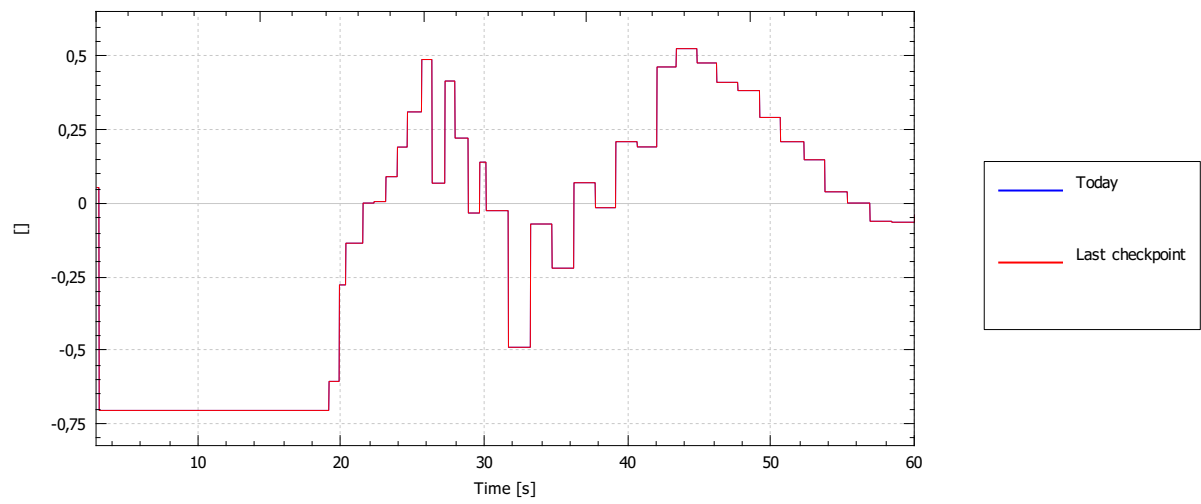
Rotational acceleration mag



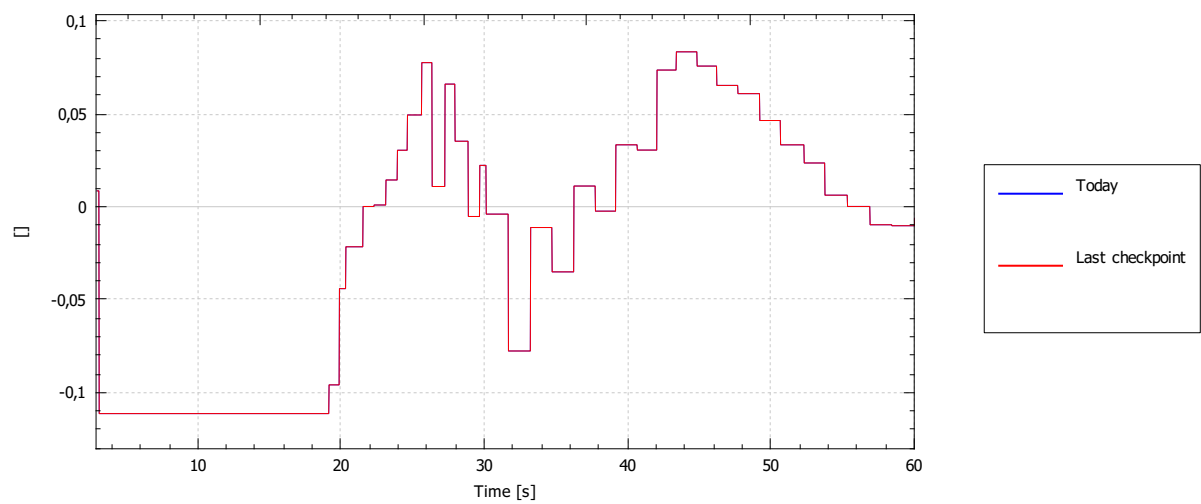
Displacement period



Displacement logarithmic decrement

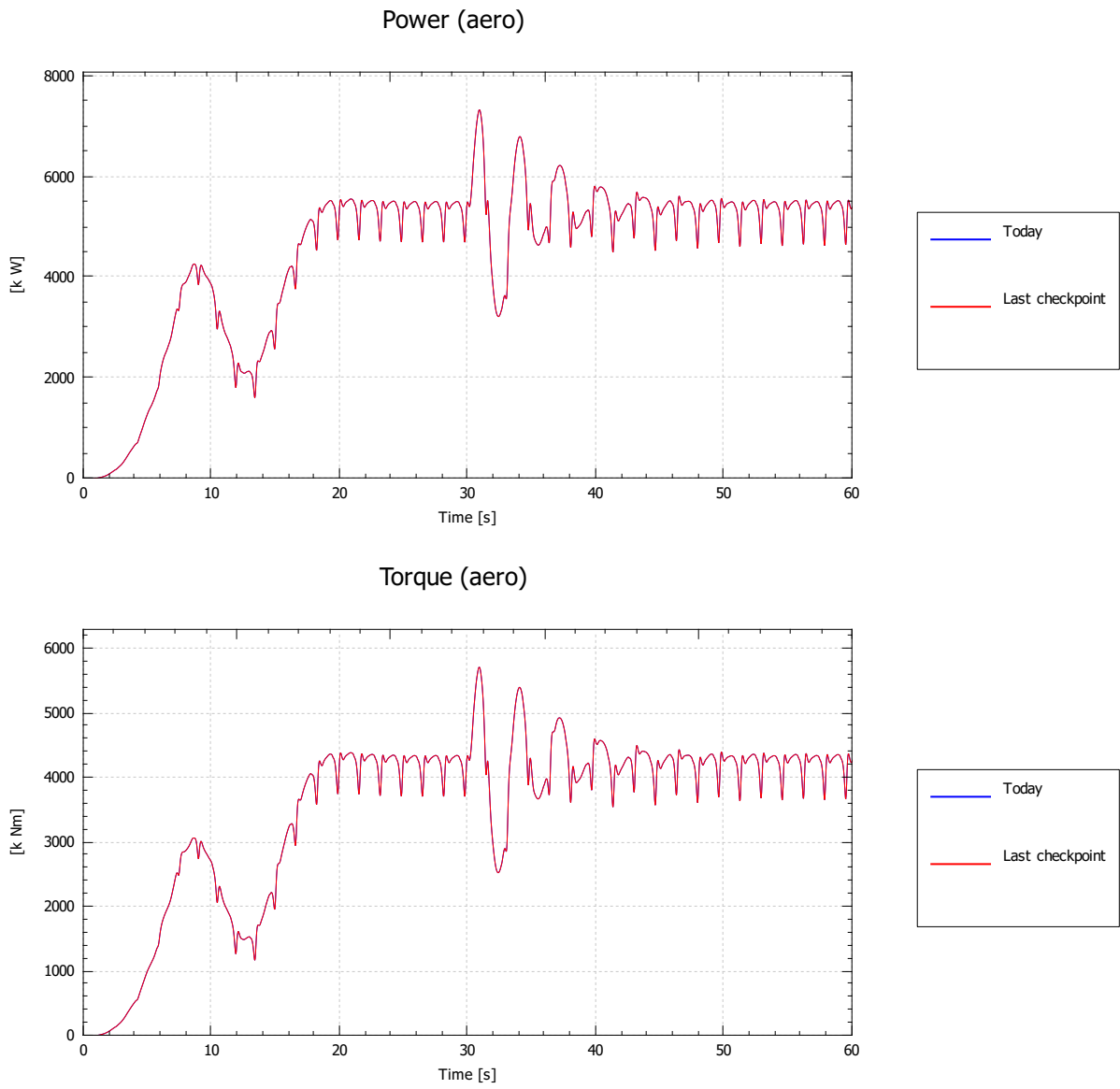


Displacement damping ratio

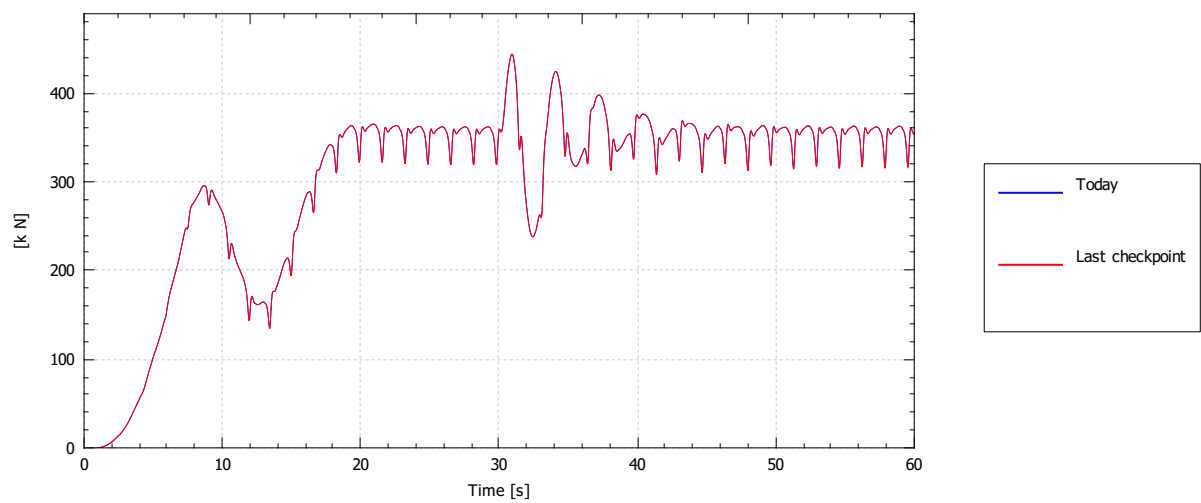


Load case: 18 ms

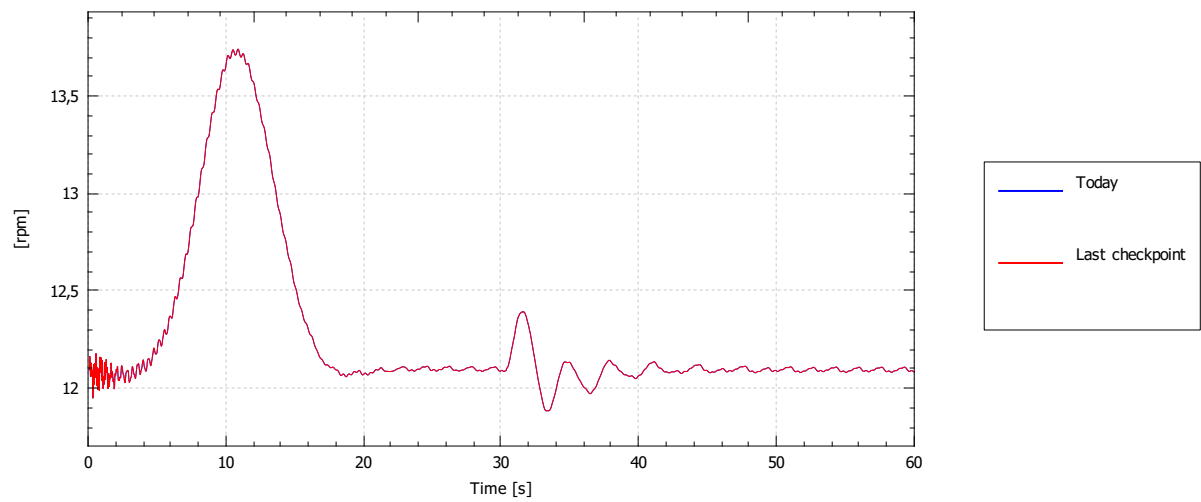
Rotor



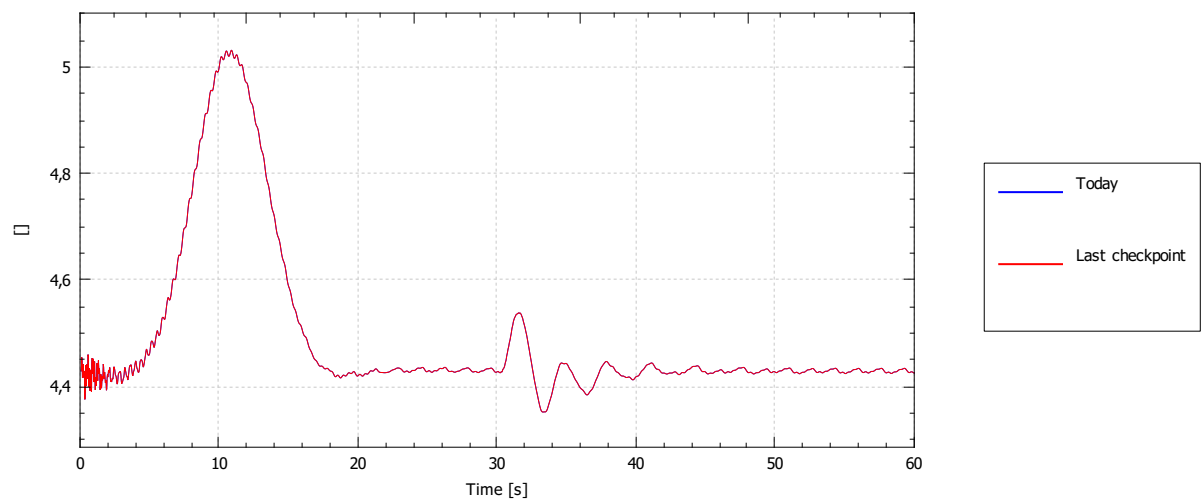
Thrust (aero)



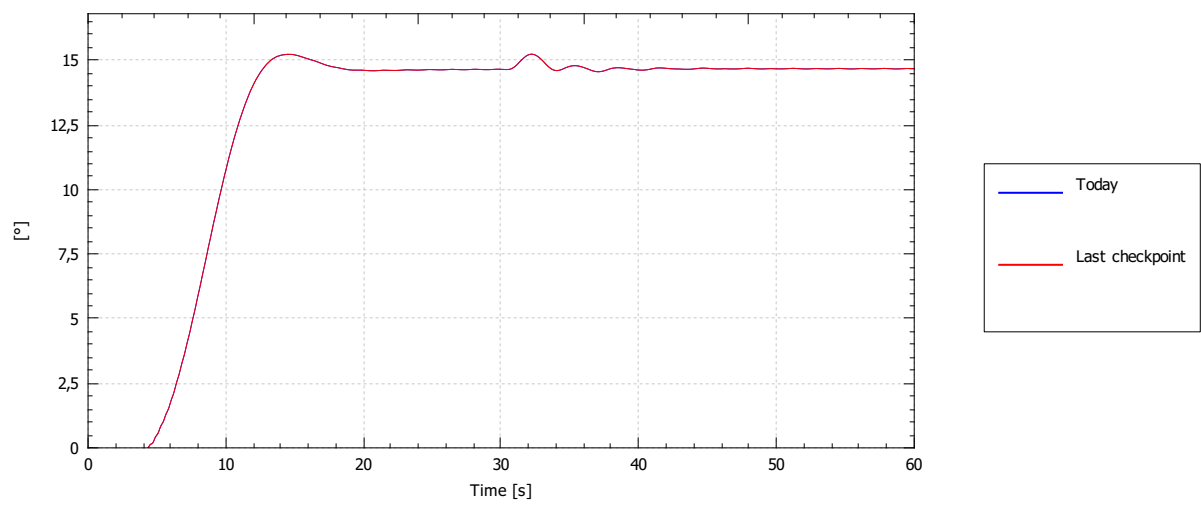
RPM



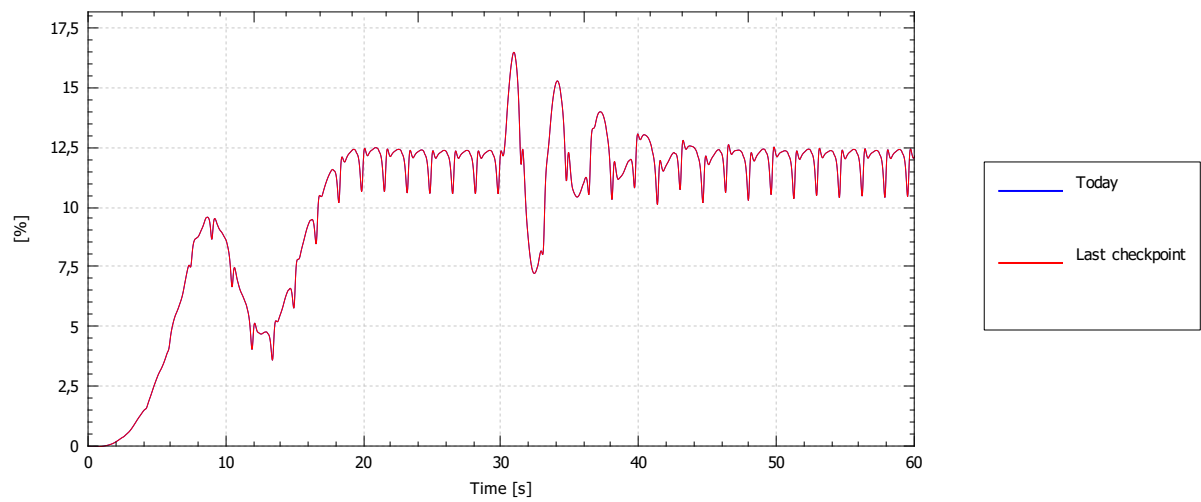
TSR



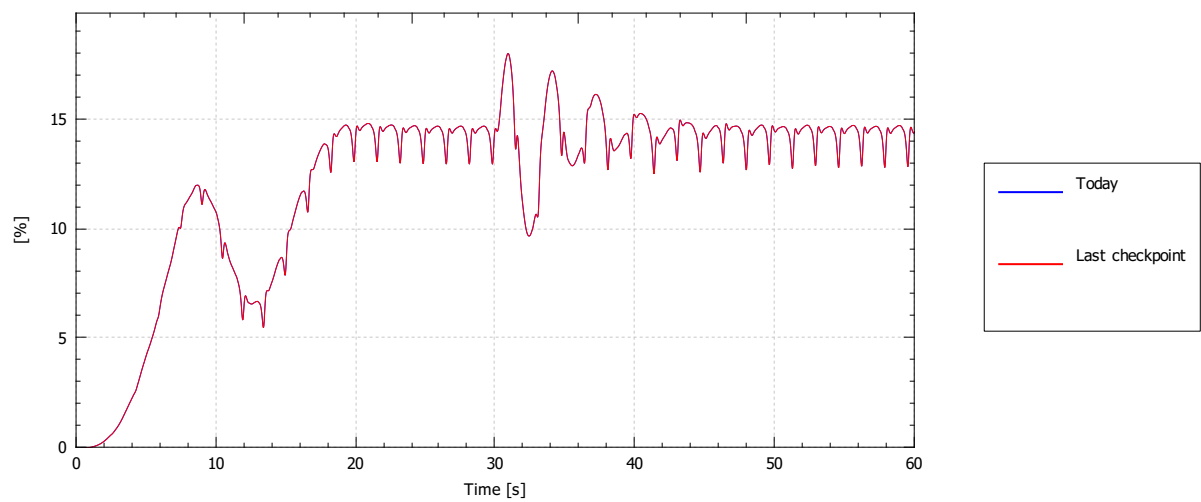
Representative demanded pitch angle



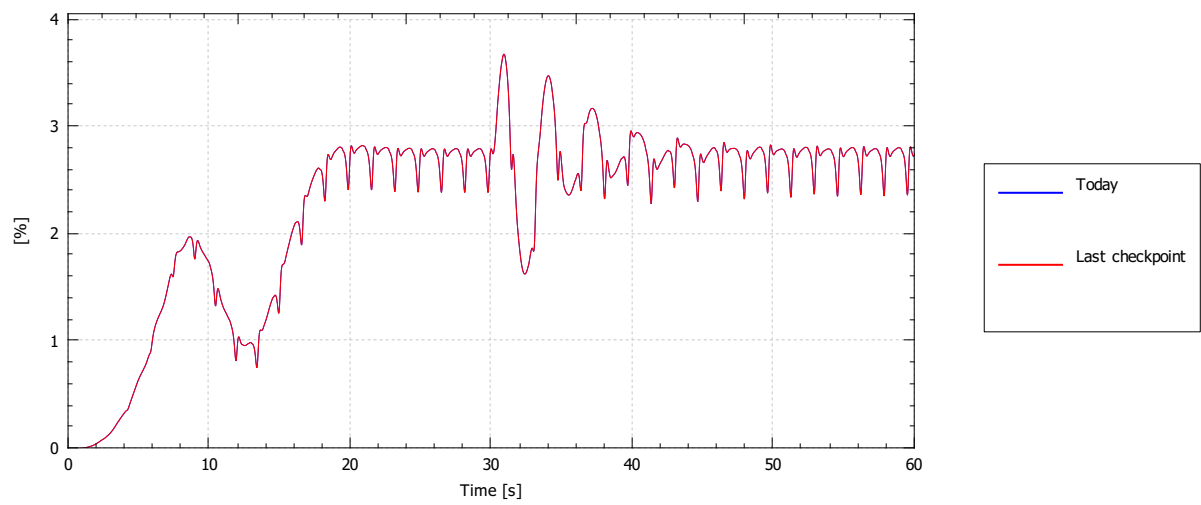
Power coef. (CP)



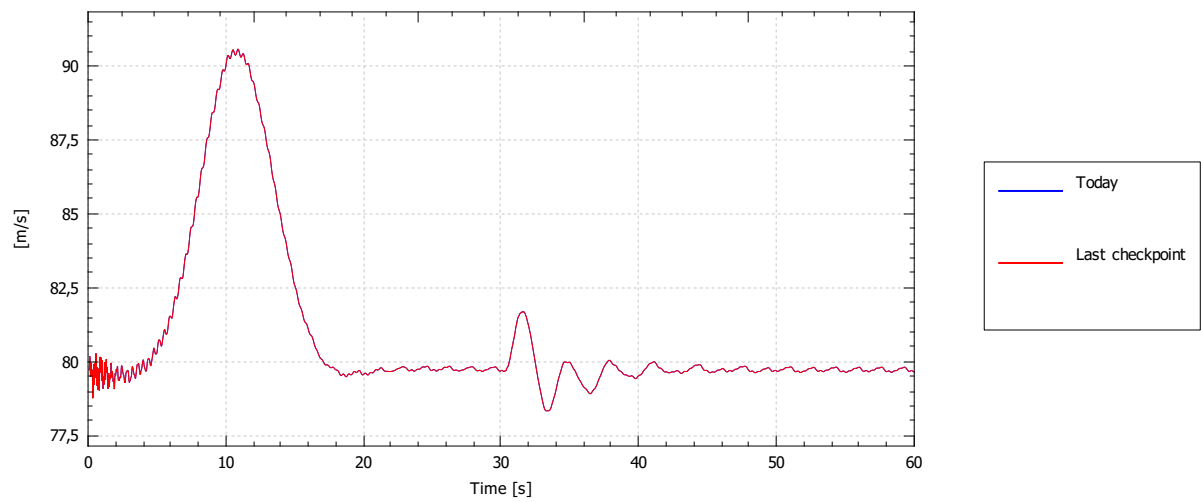
Thrust coef. (CT)



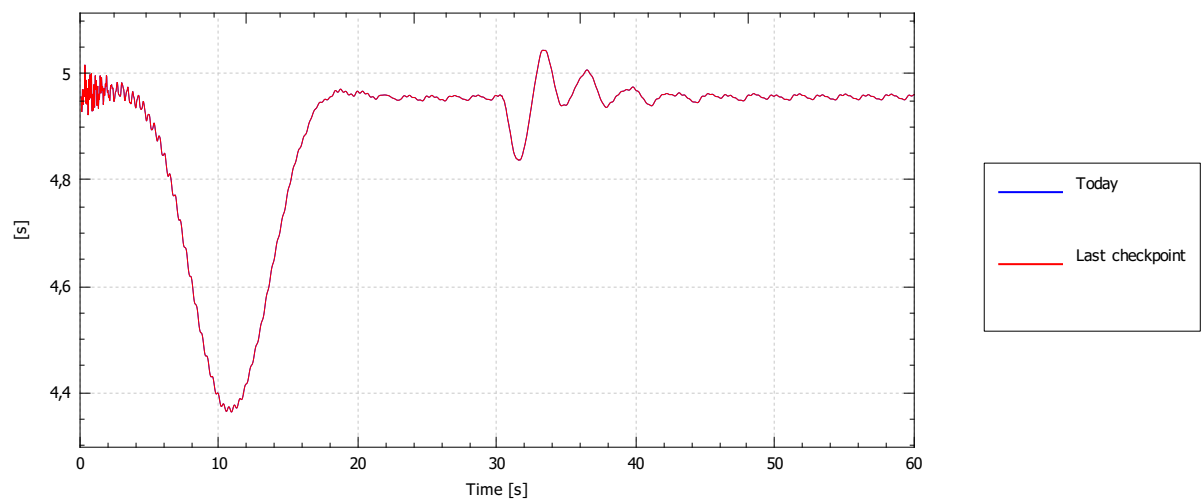
Torque coef. (CQ)



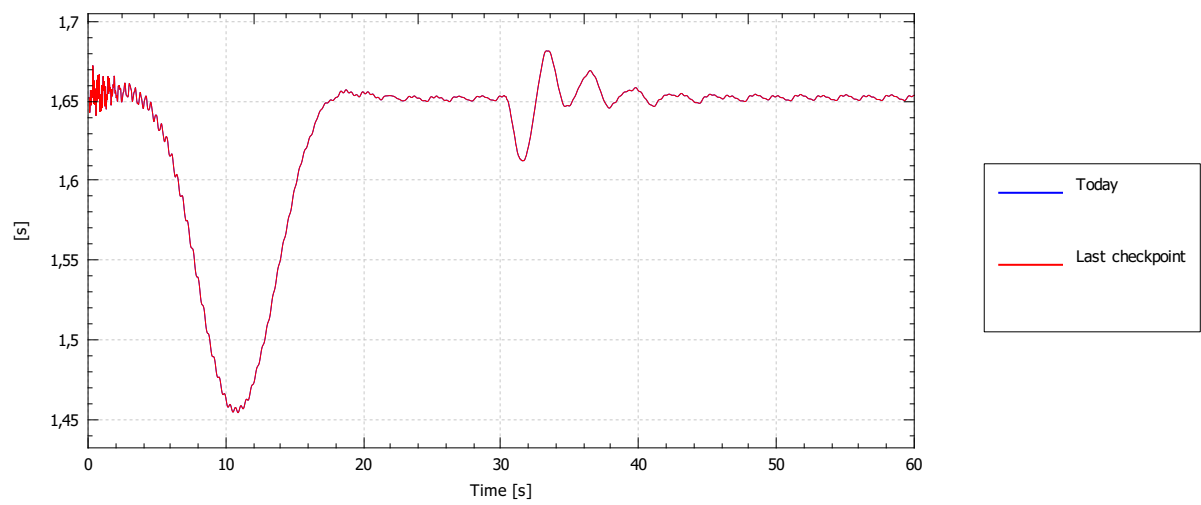
Tip speed



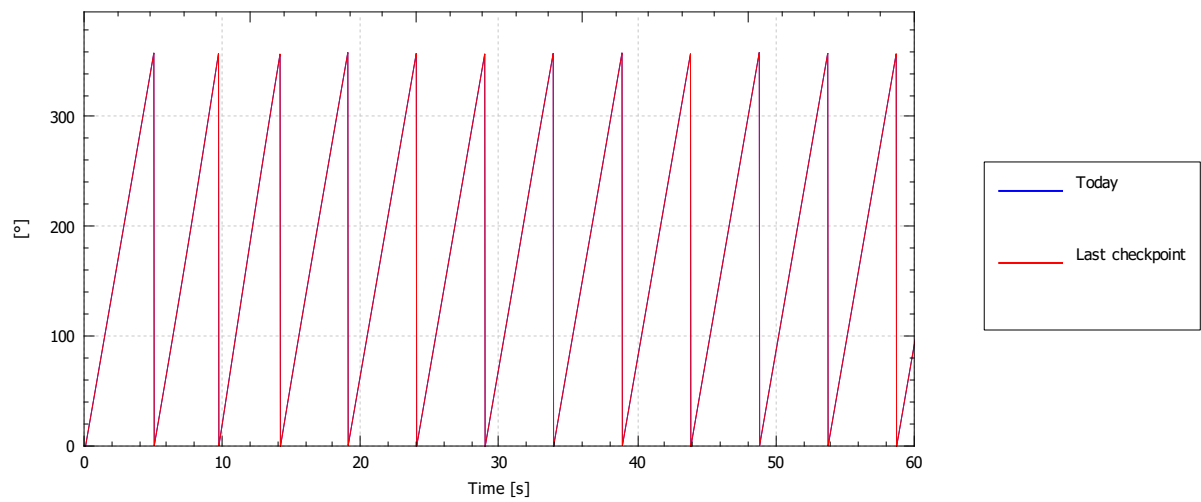
1P (one revolution)



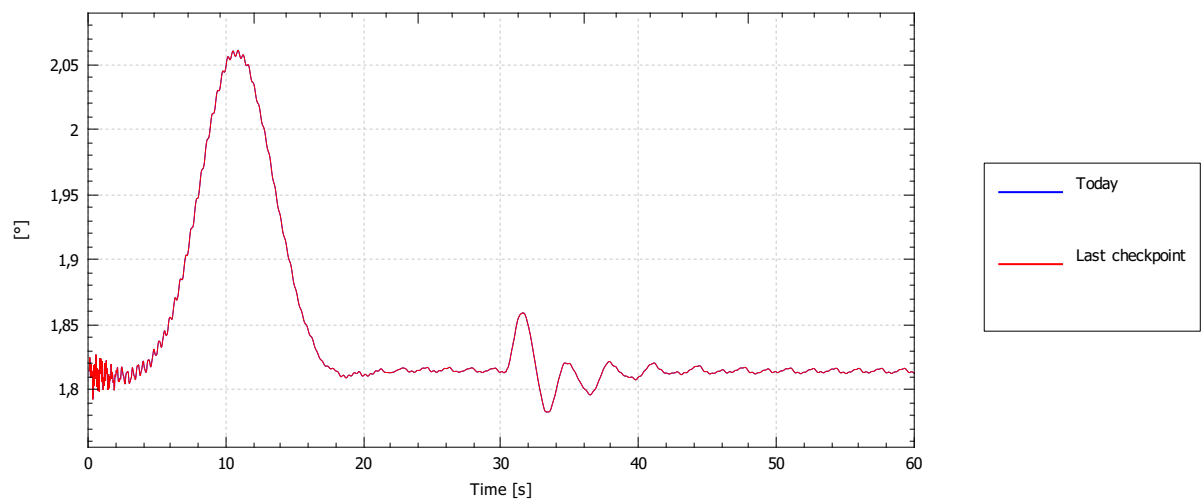
nP (blade passing)



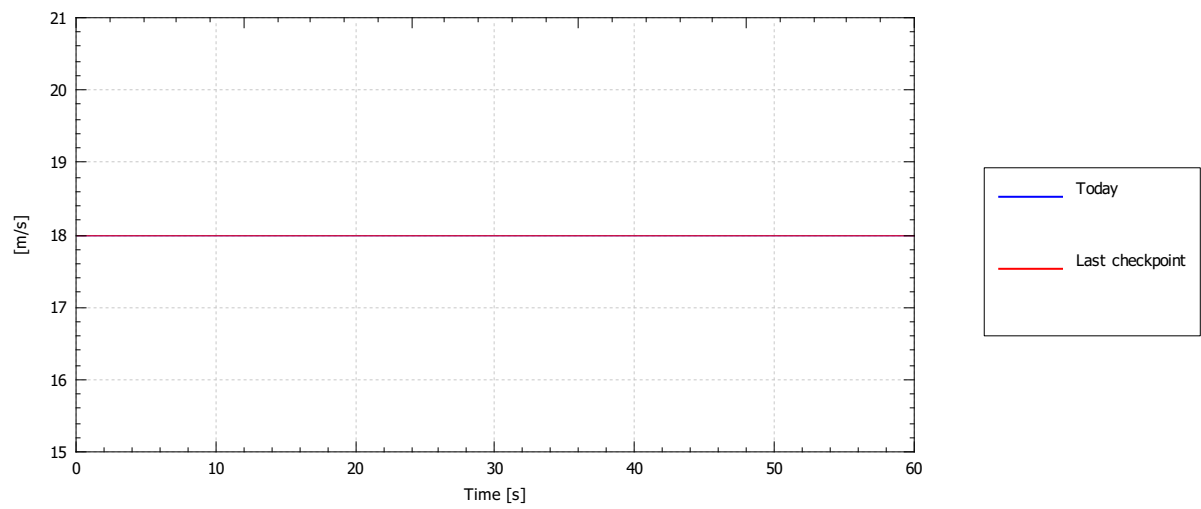
Azimuth angle



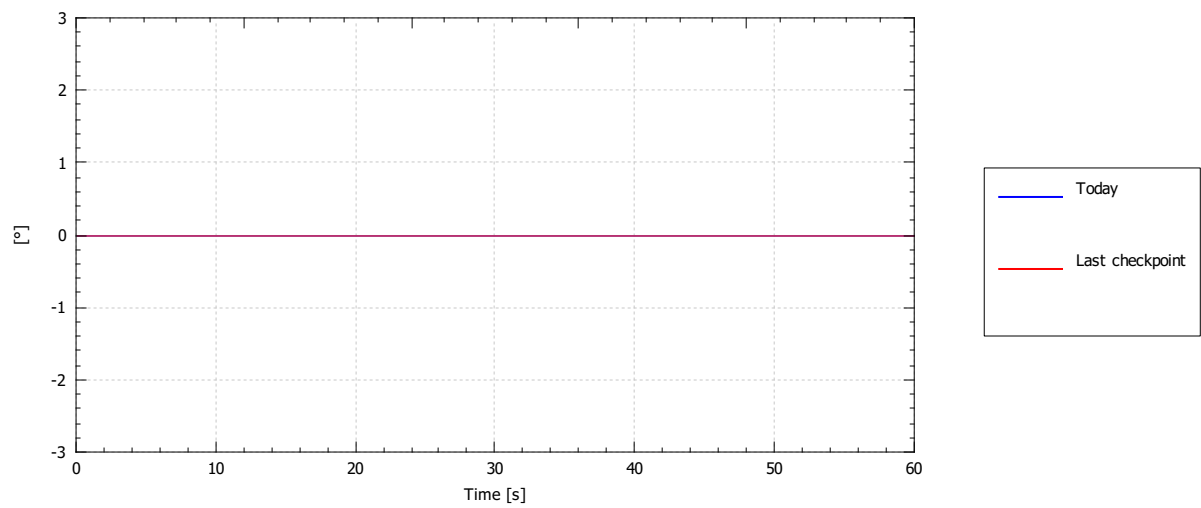
Rotation per timestep



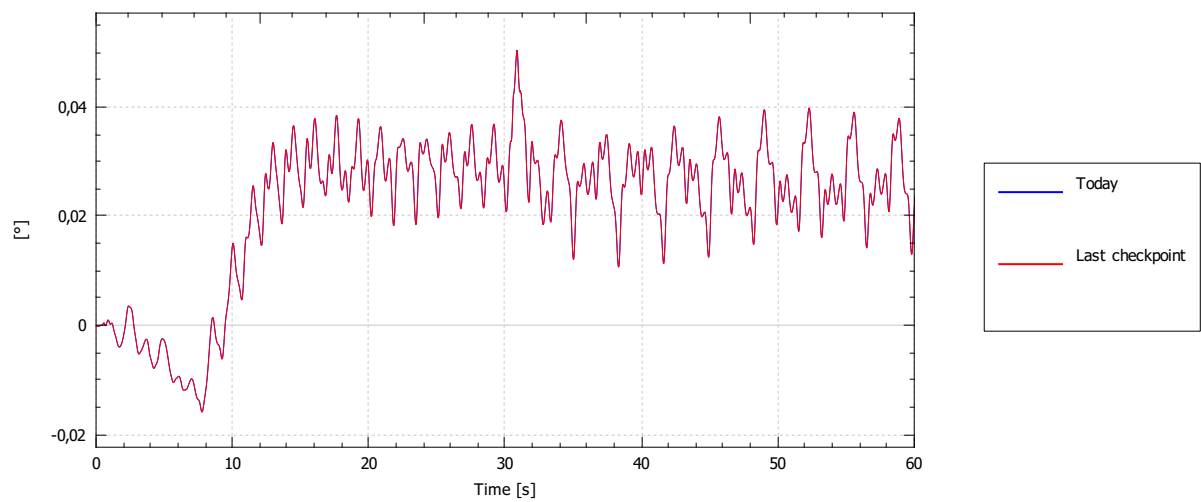
Wind speed at hub, magnitude



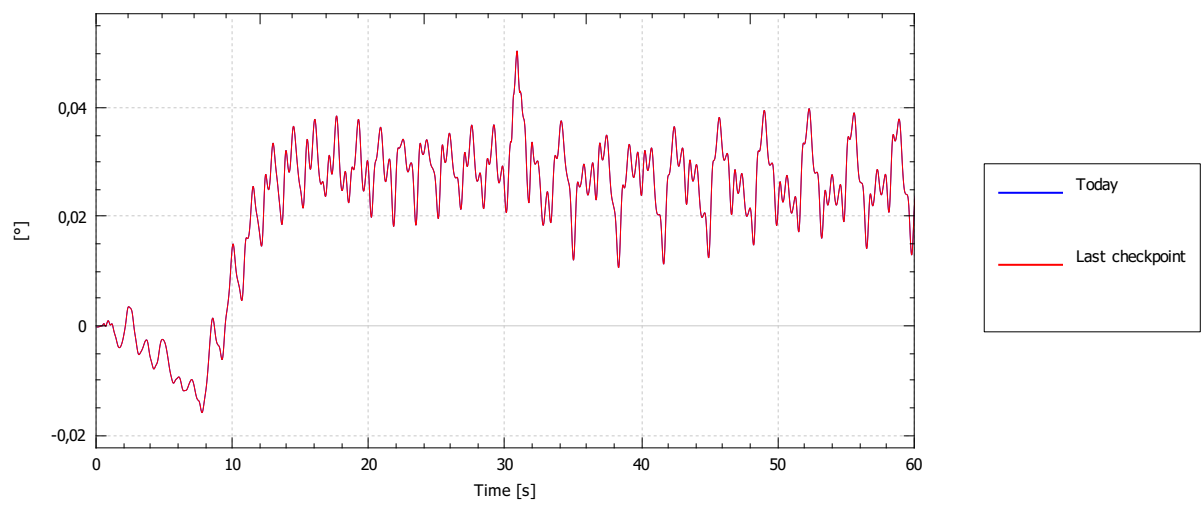
Wind angle at hub



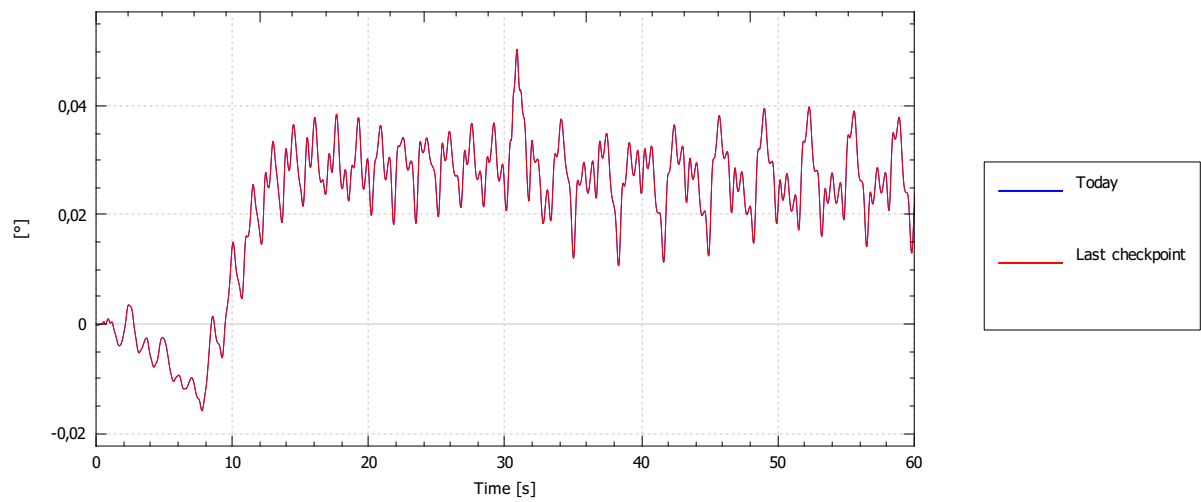
Yaw angle relative to forward



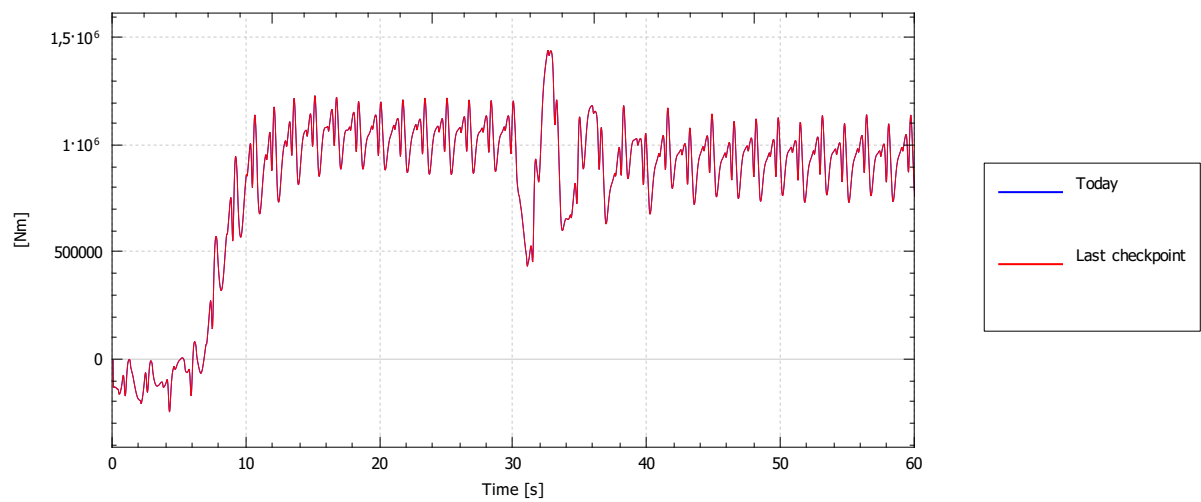
Yaw angle to reference direction



Yaw error

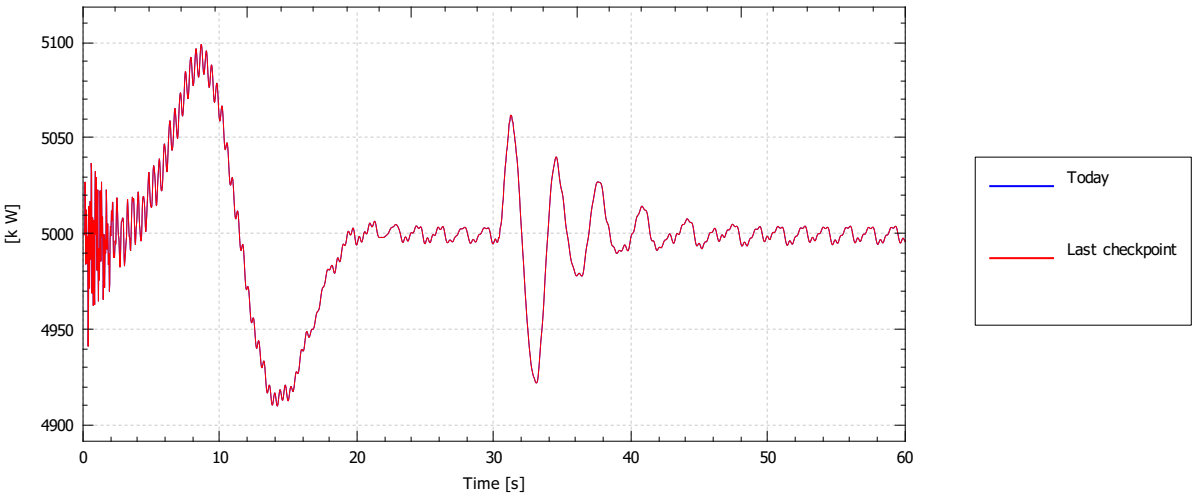


Torque about yaw axis

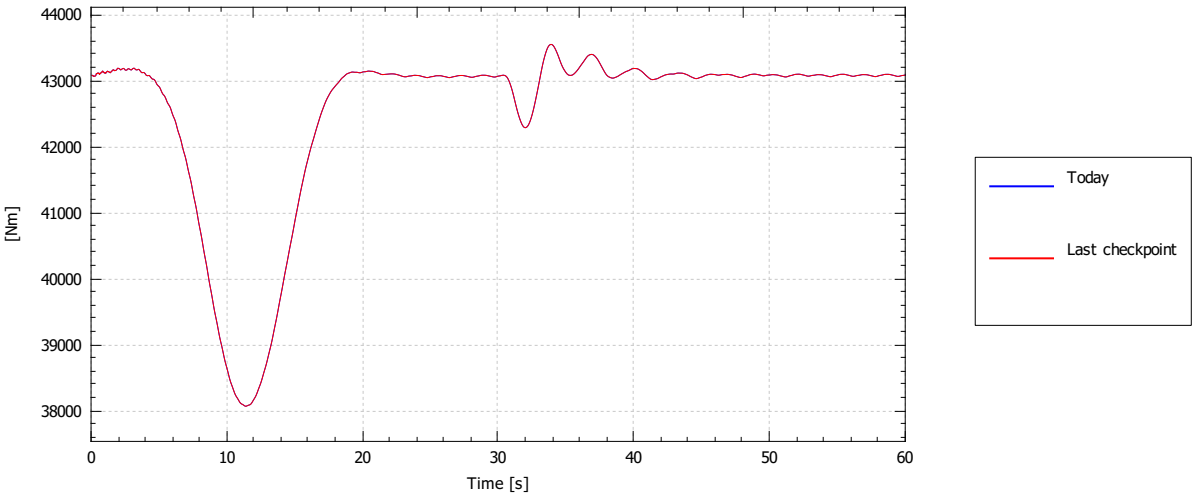


Generator

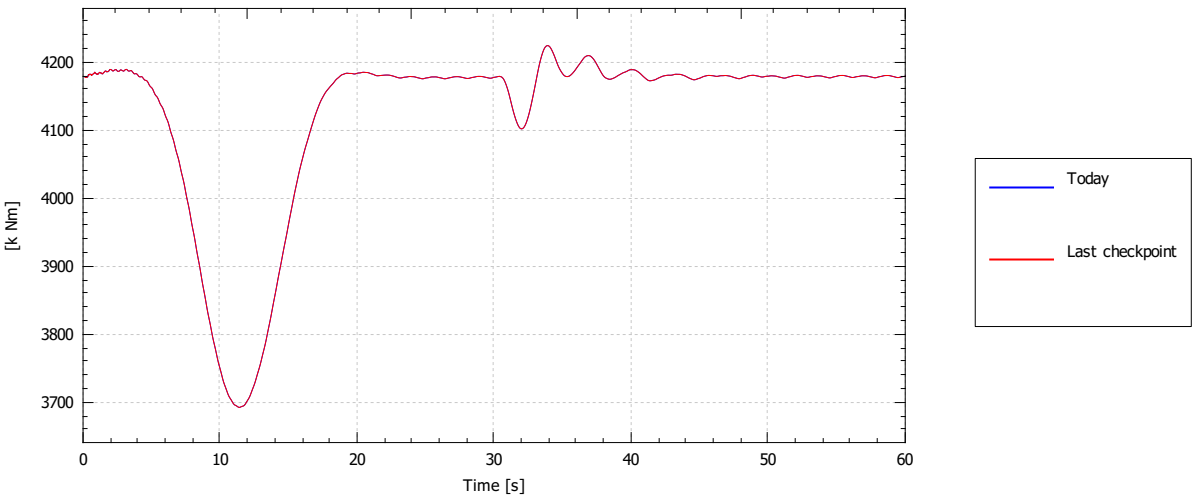
Power (electrical)



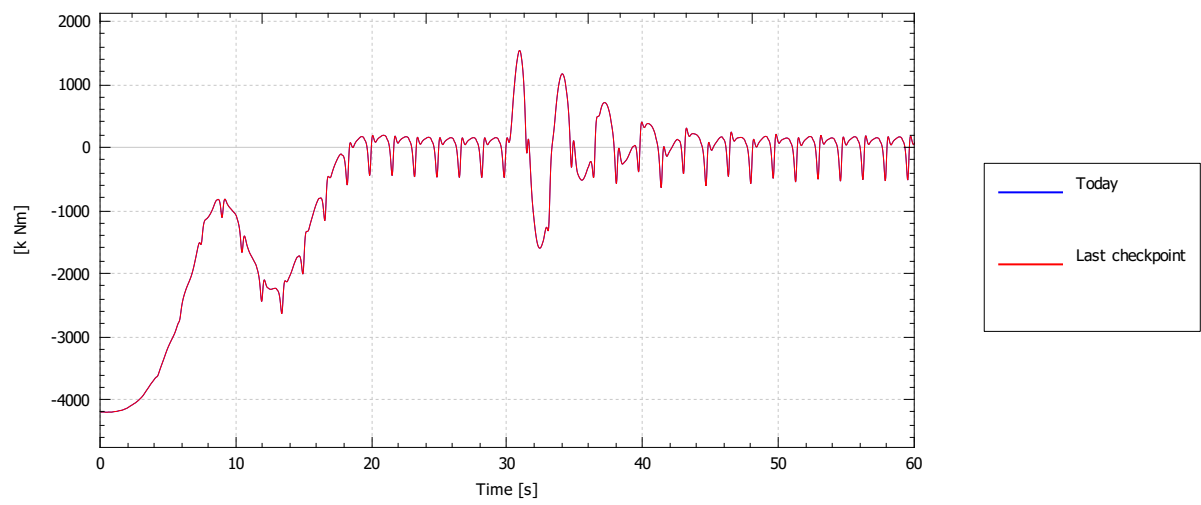
Torque



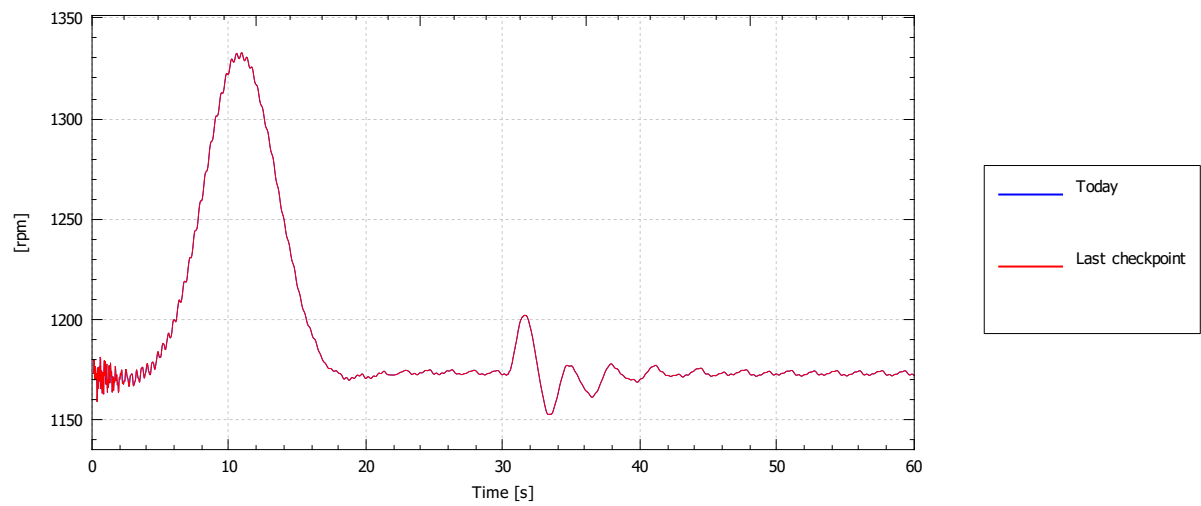
Torque on main shaft



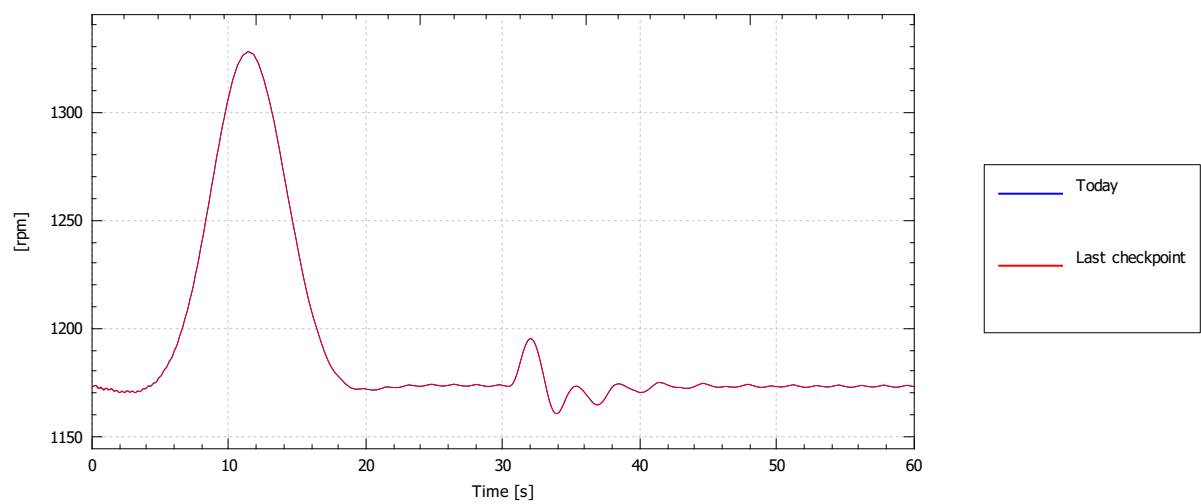
Torque diff. on main shaft



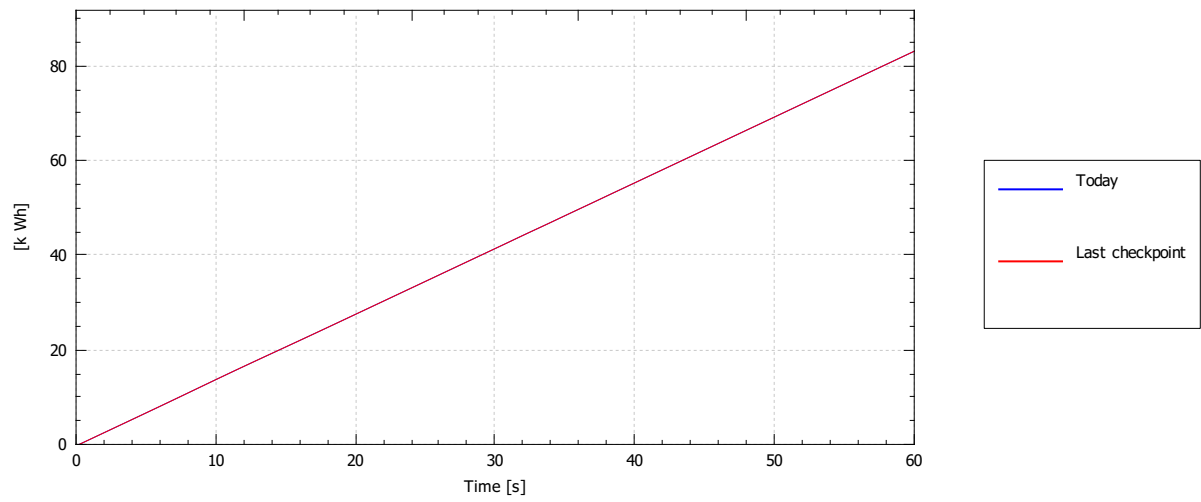
RPM



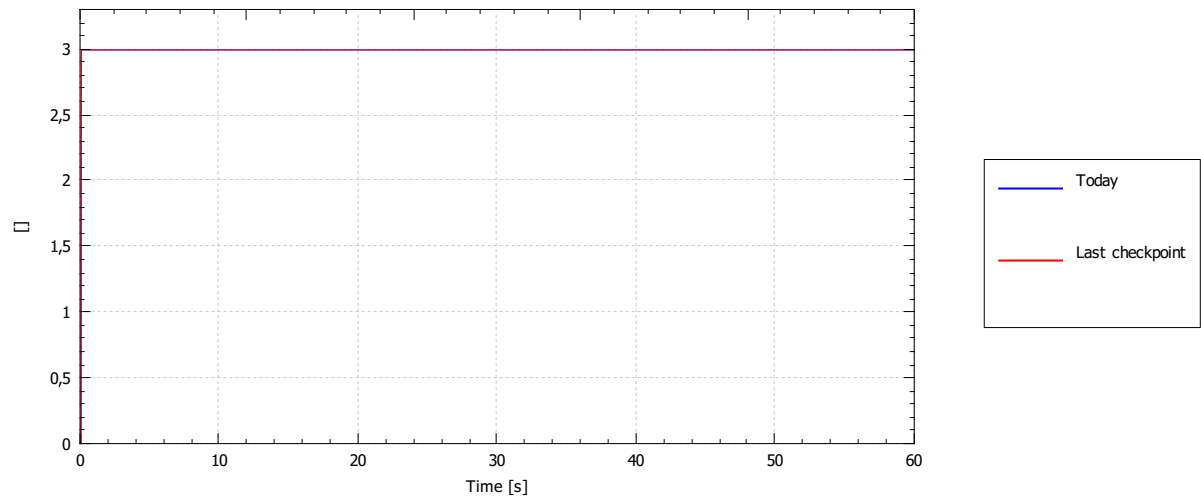
Filtered RPM



Electricity production

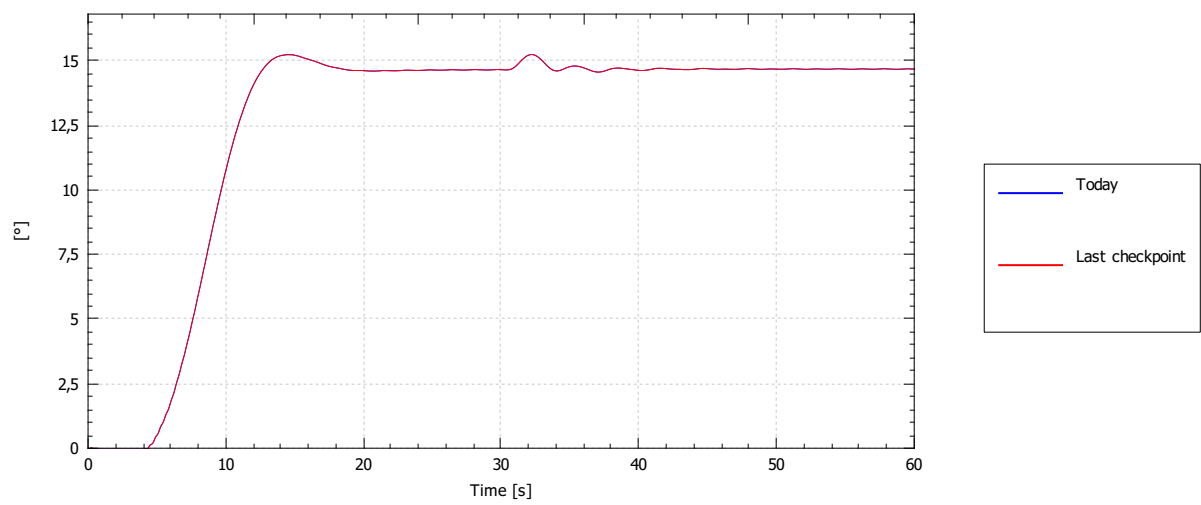


Region

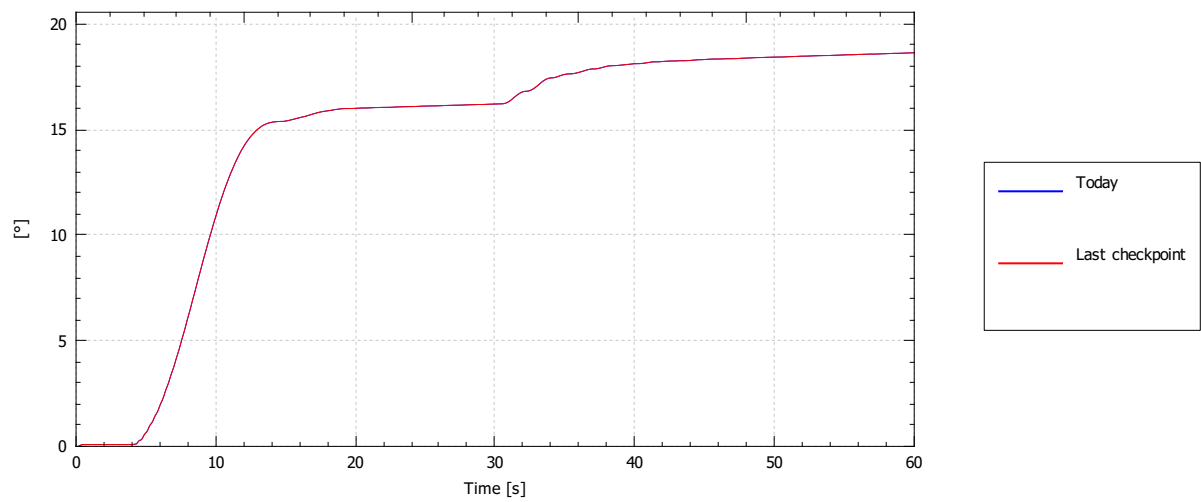


Demanded pitch controller

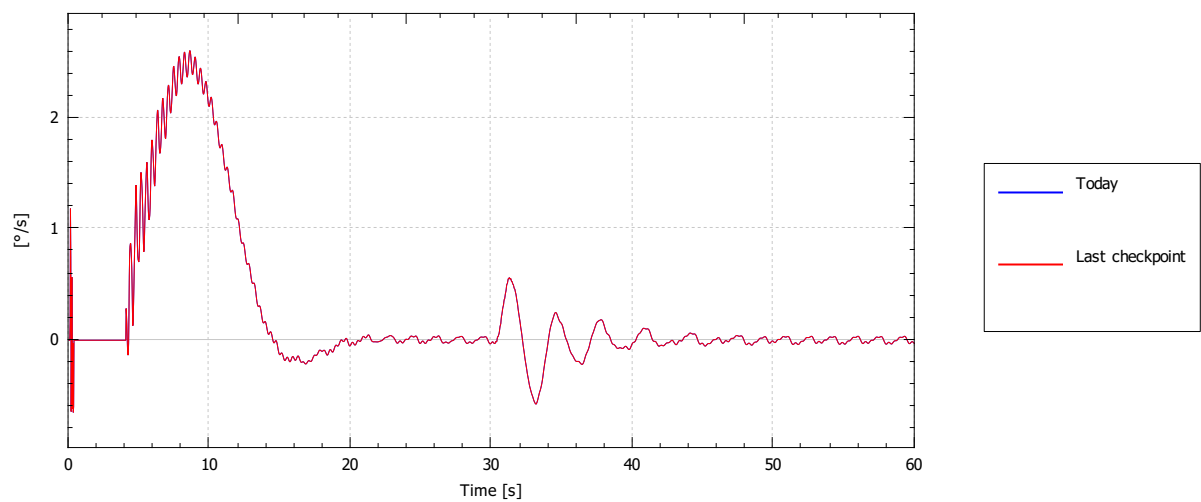
Demanded collective pitch angle



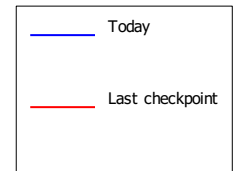
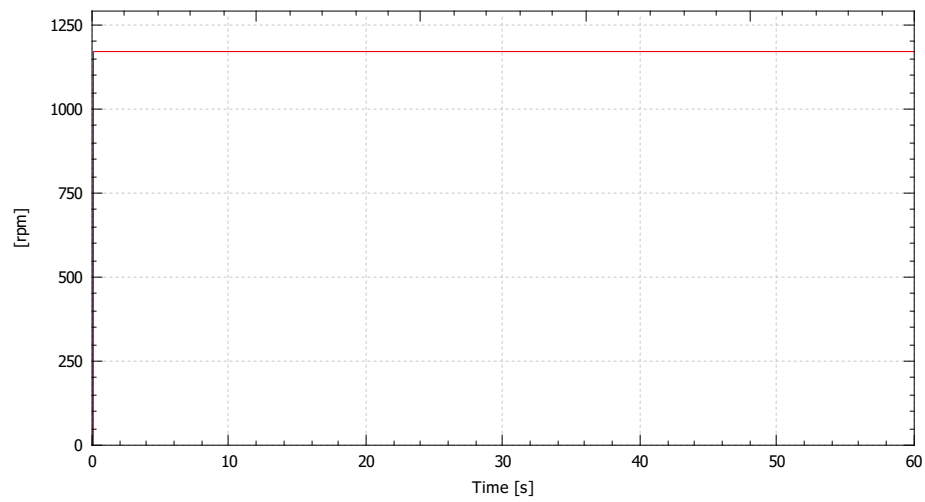
Cumulative demanded collective pitch angle



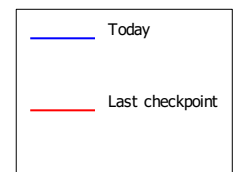
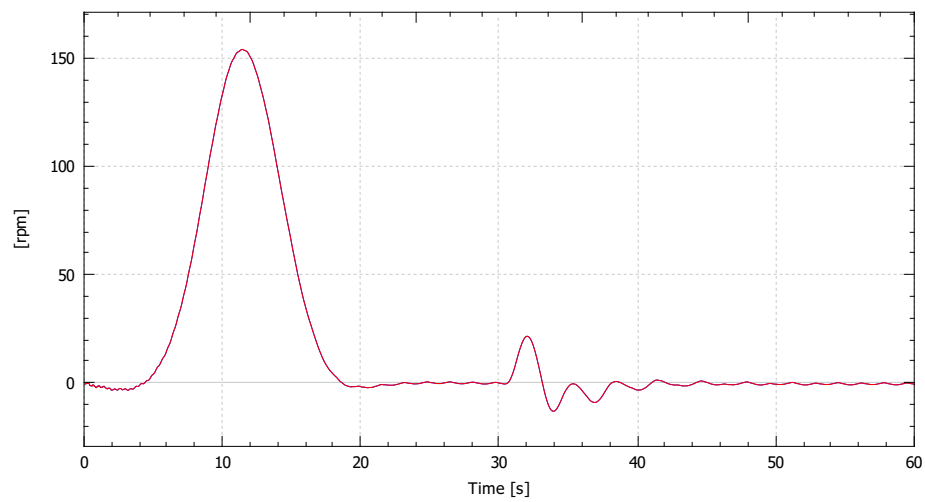
Demanded collective pitch angle rate



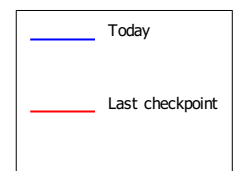
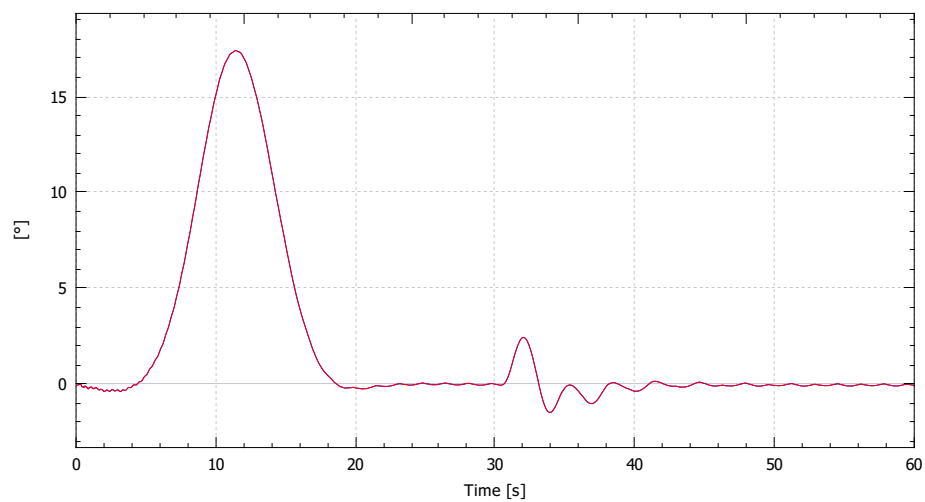
Set point



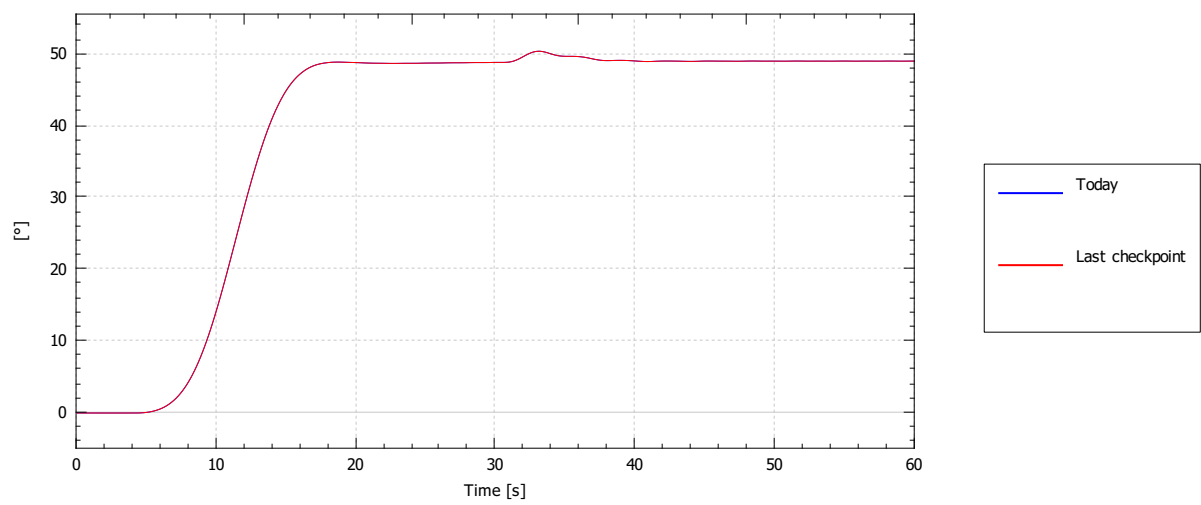
RPM error



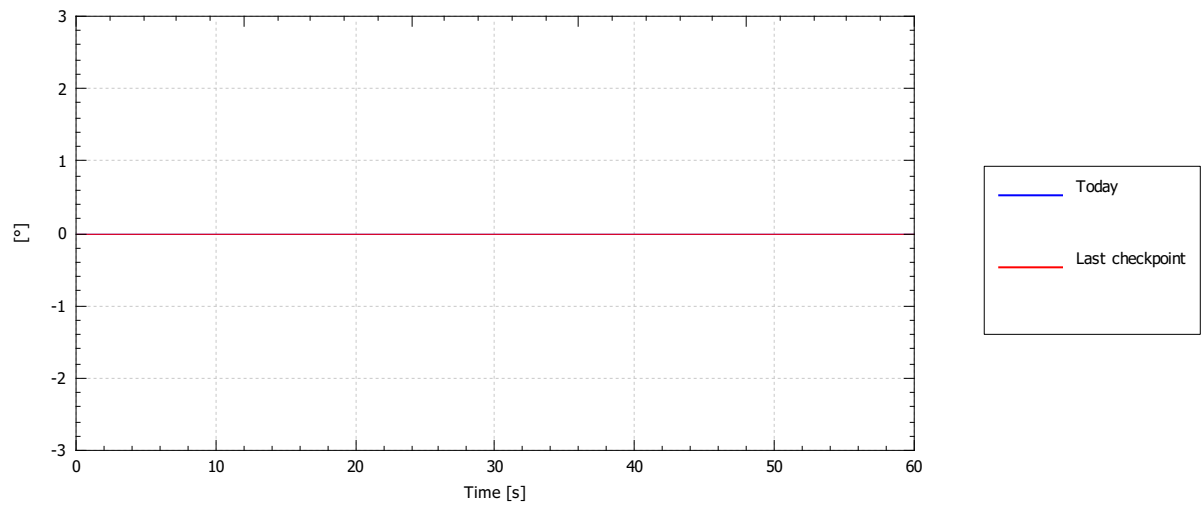
P term



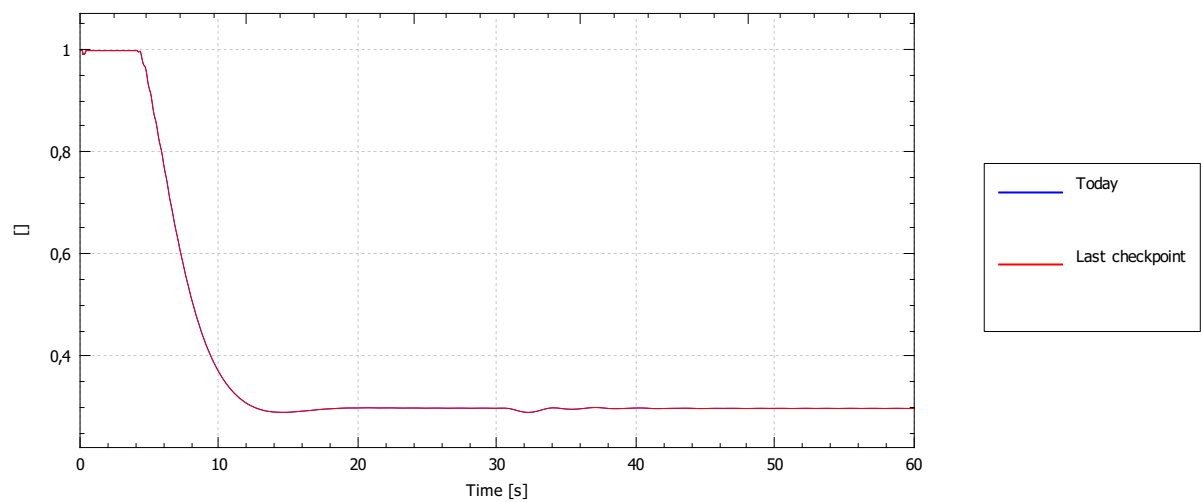
I term

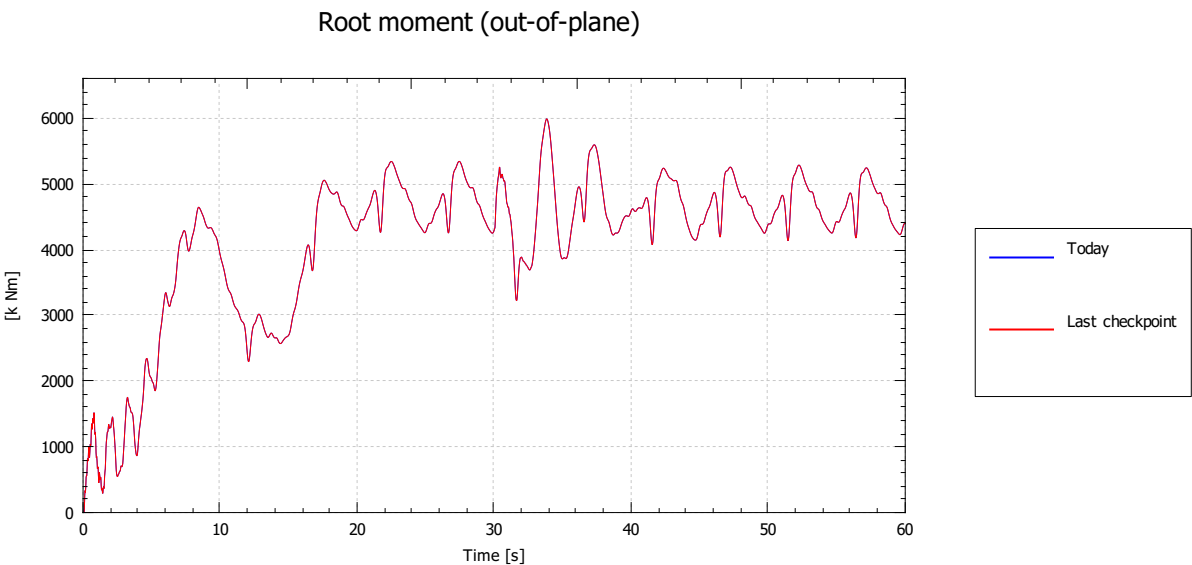
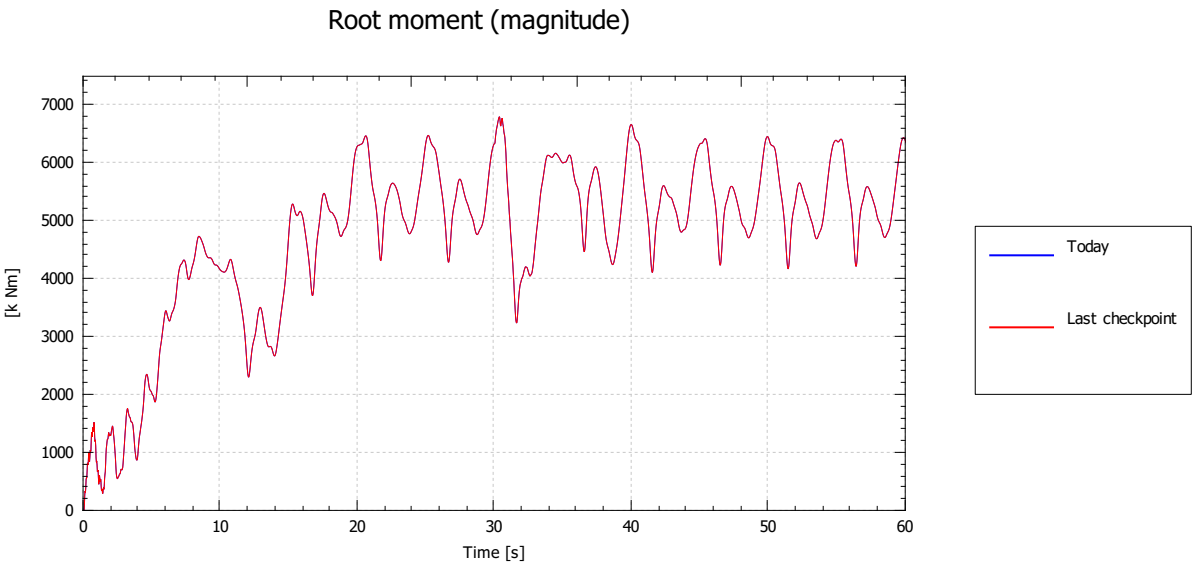
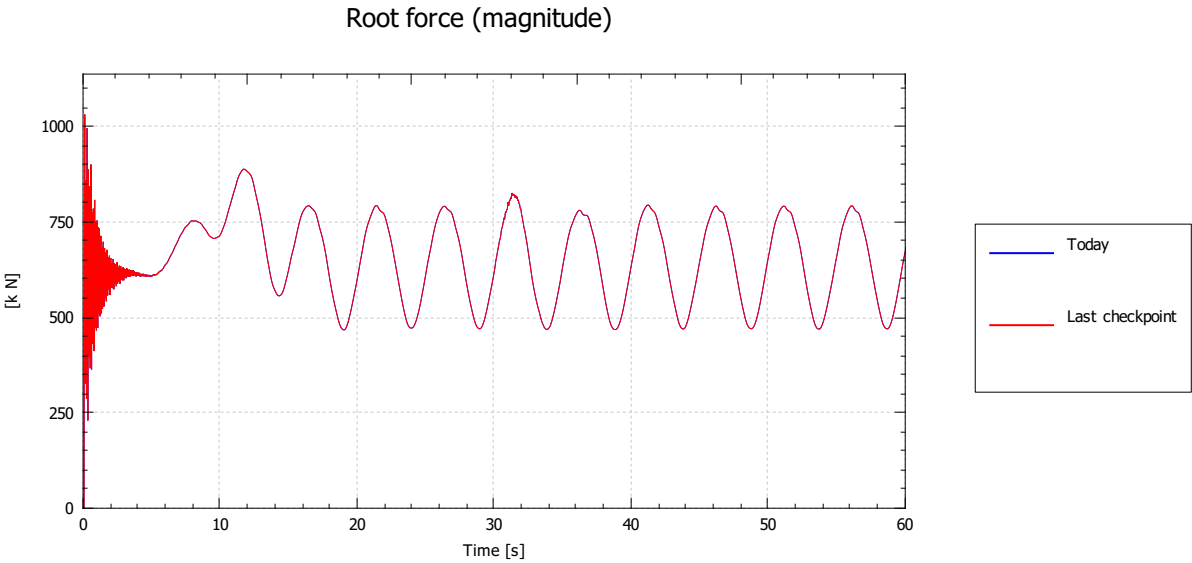


D term

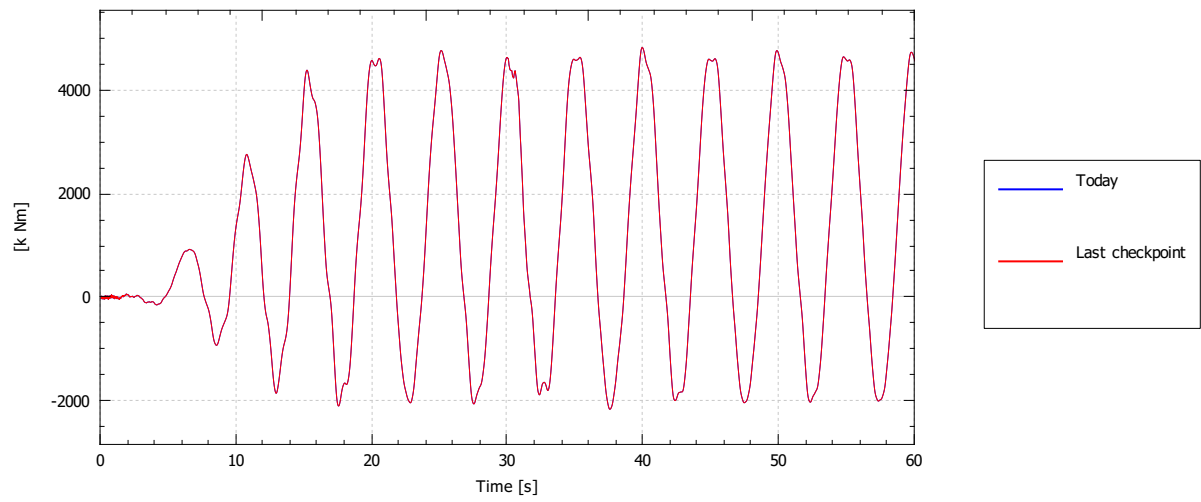


Gain scheduling factor

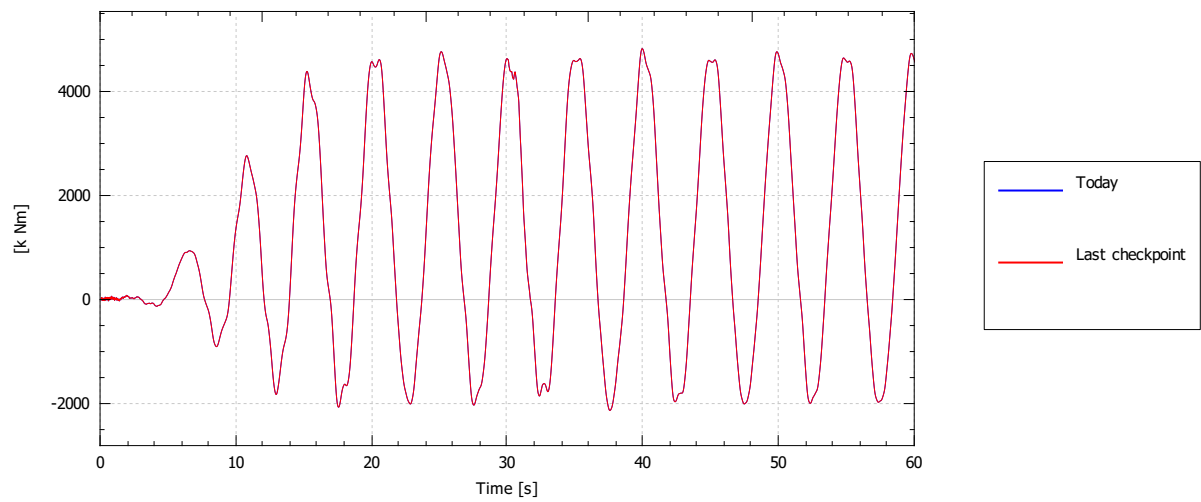




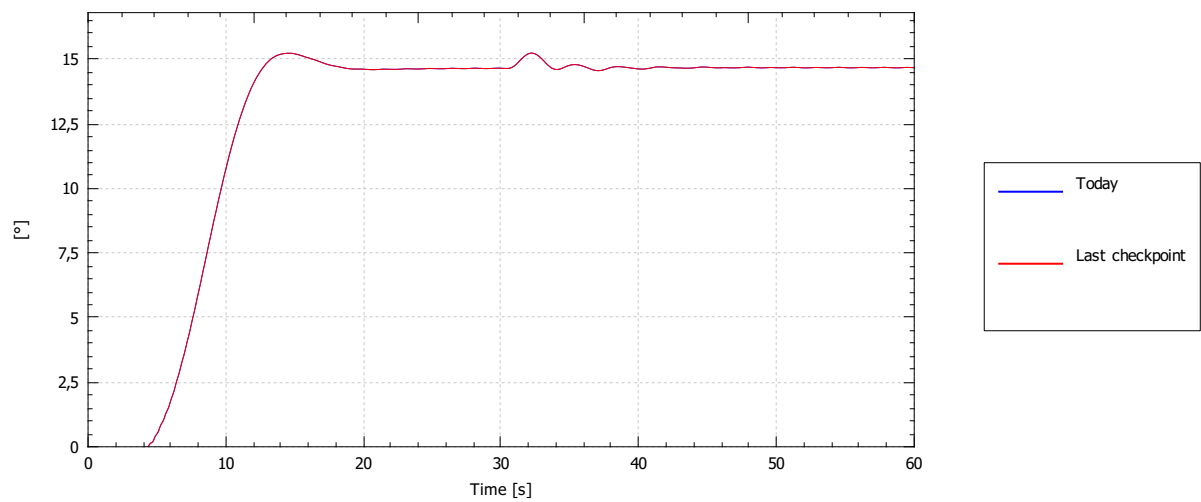
Root moment (in-plane)



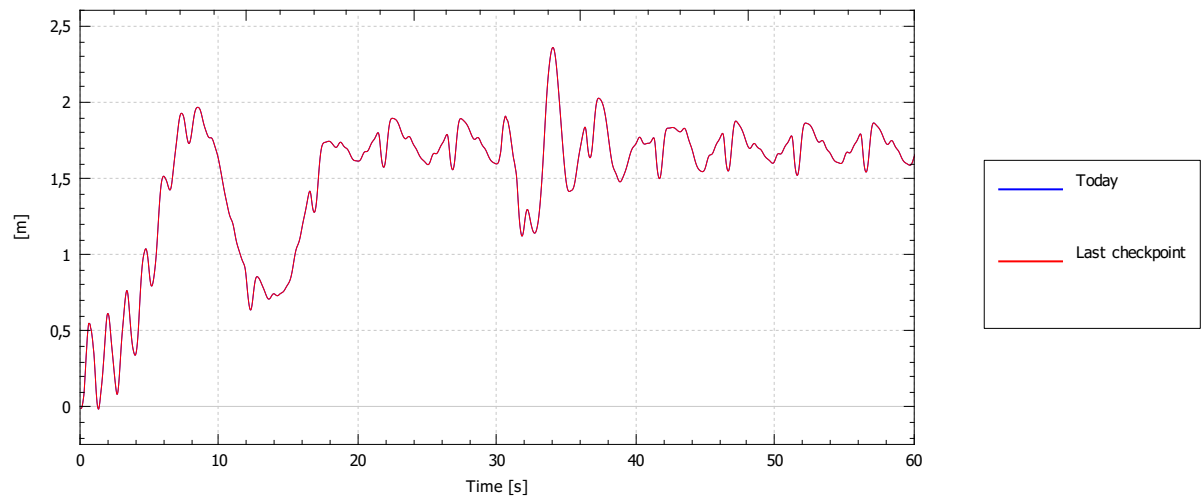
Root moment about shaft



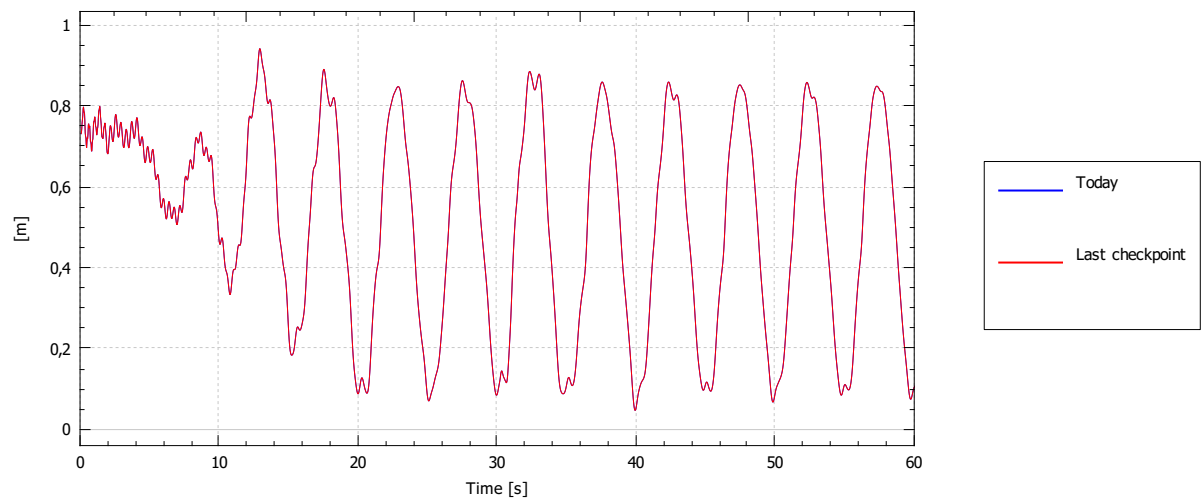
Pitch angle



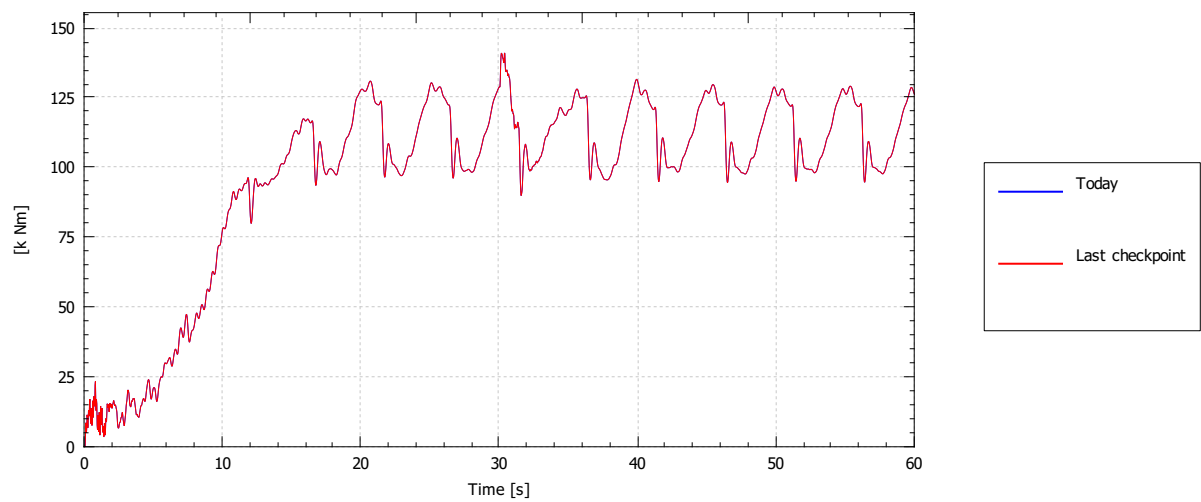
Tip deflection (out-of-plane)

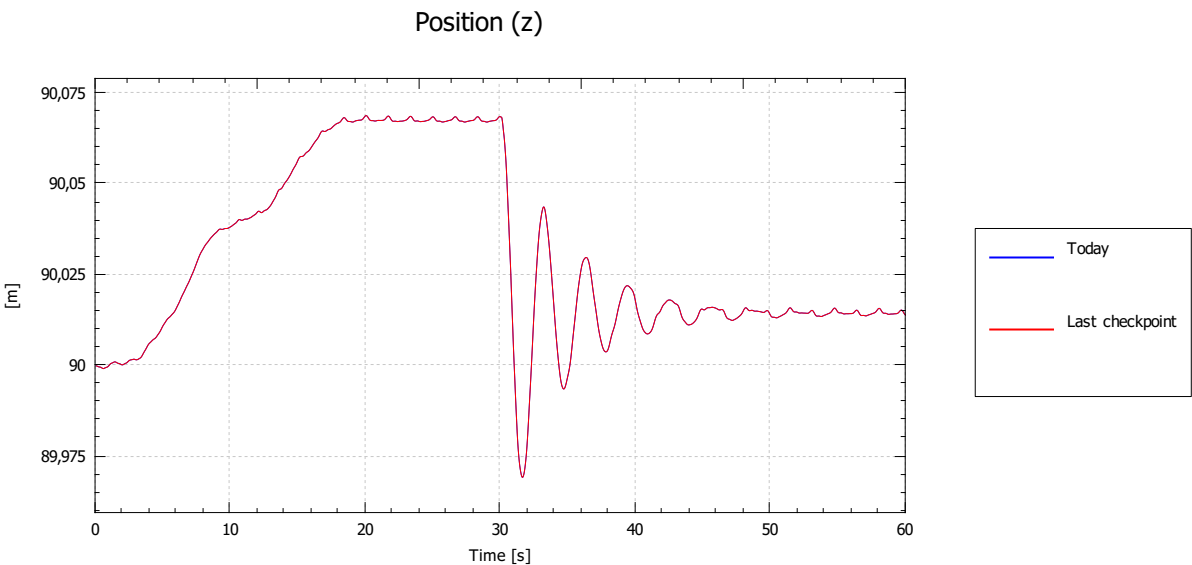
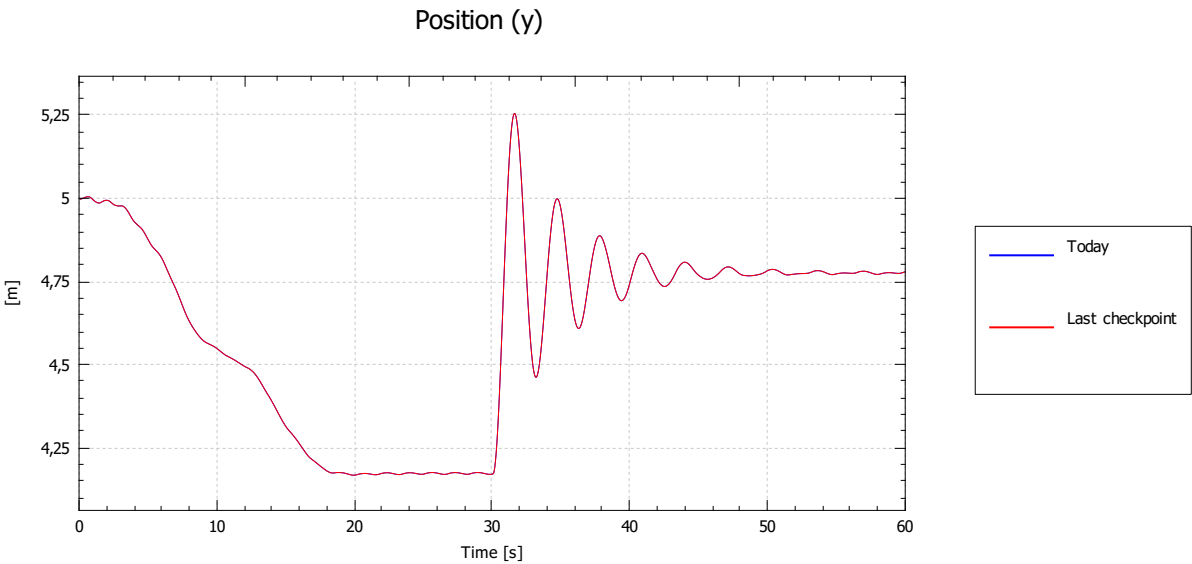
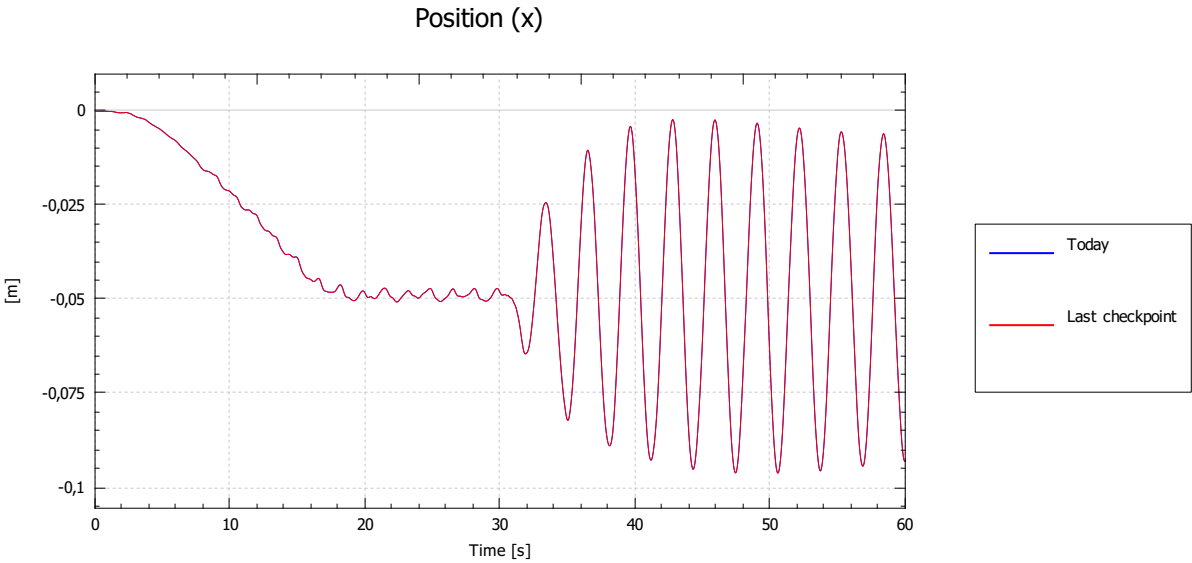


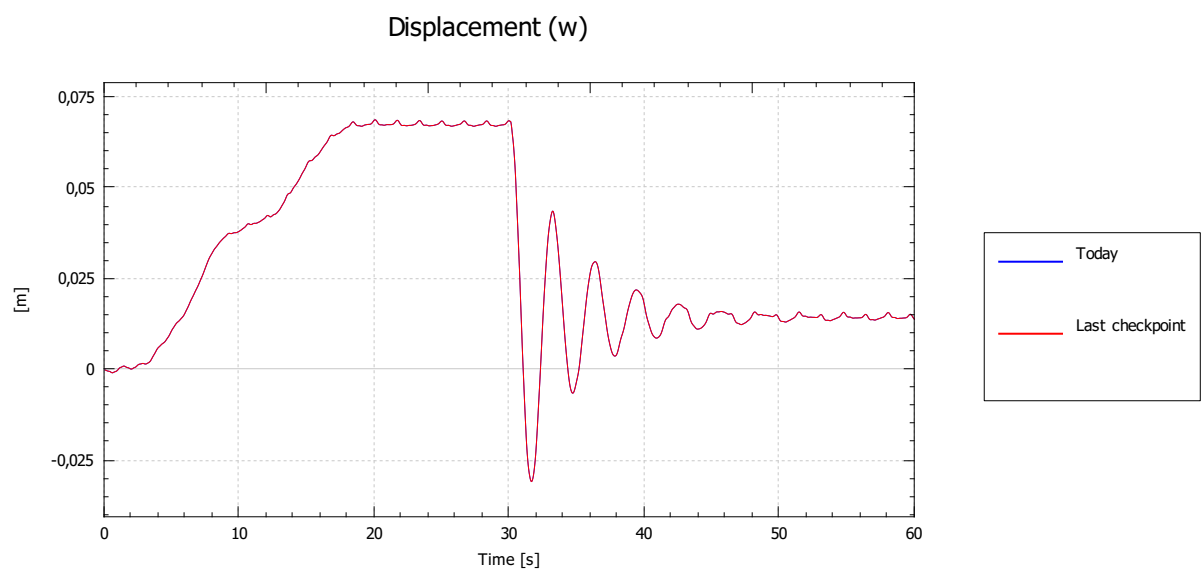
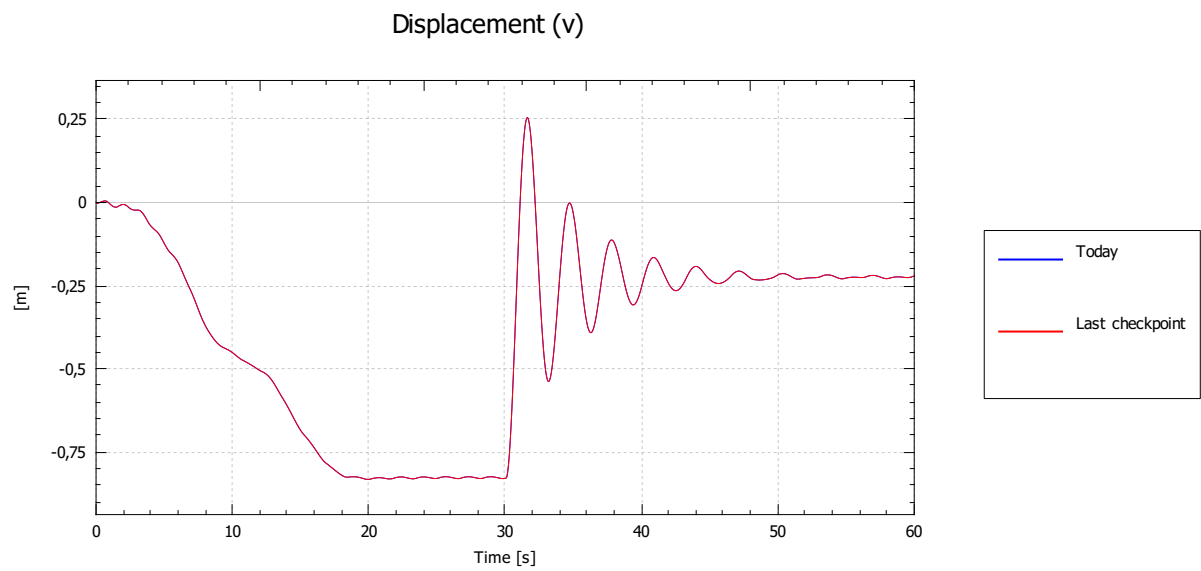
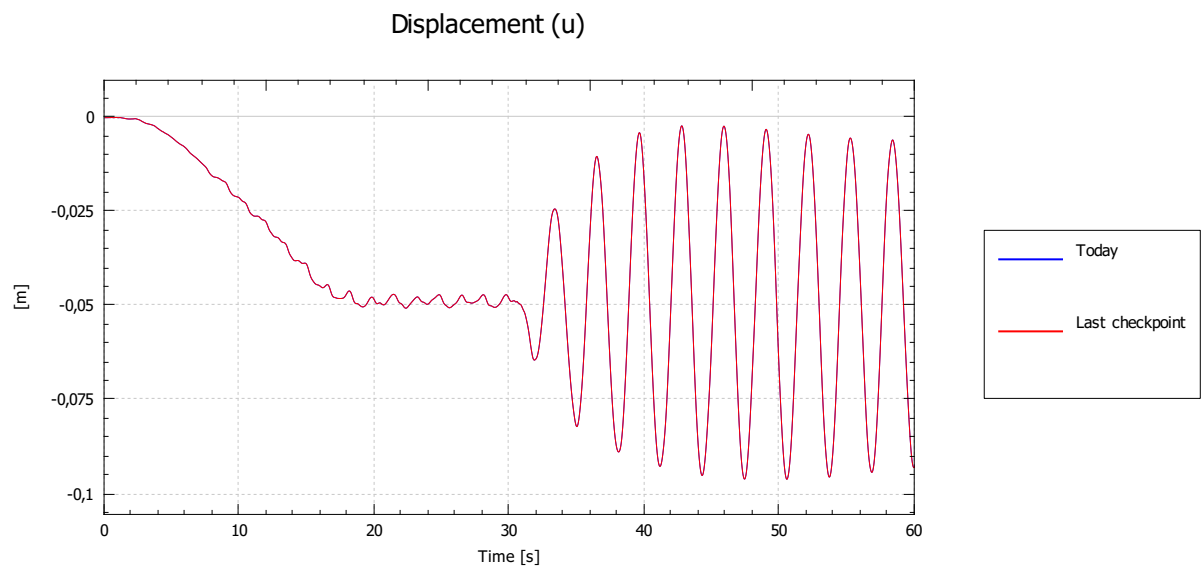
Tip deflection (in-plane)



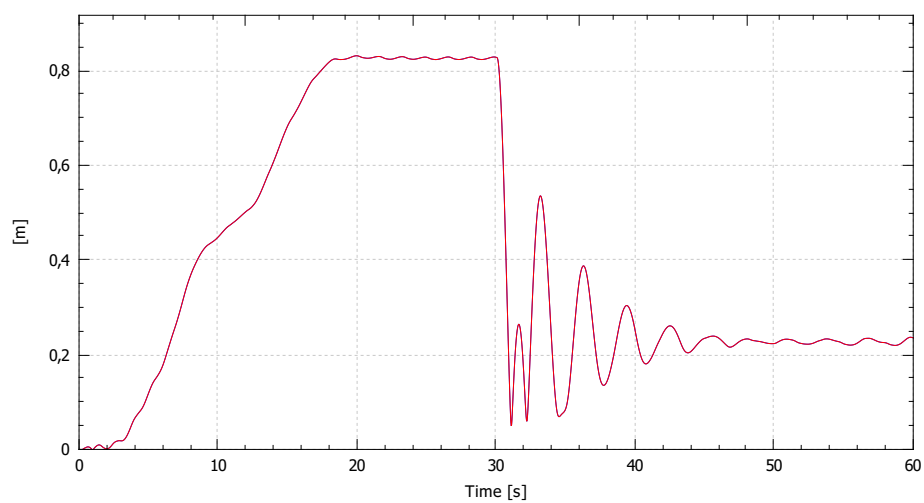
Root torque



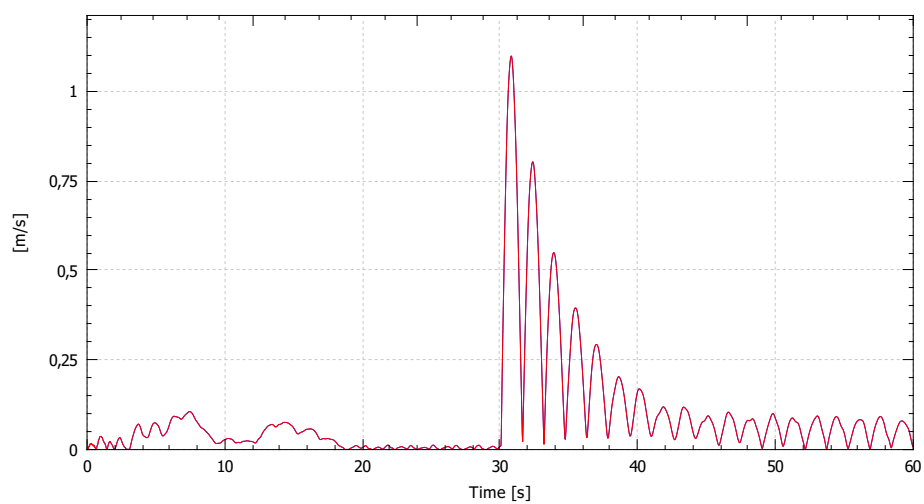




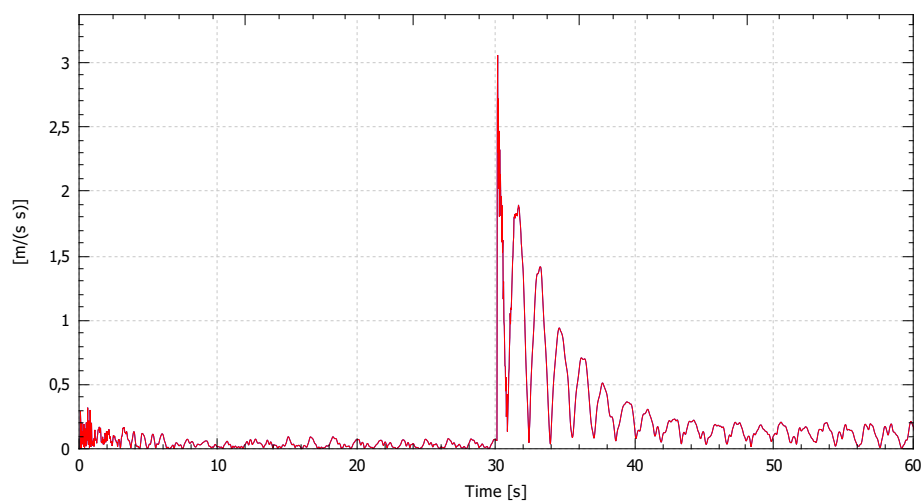
Displacement magnitude



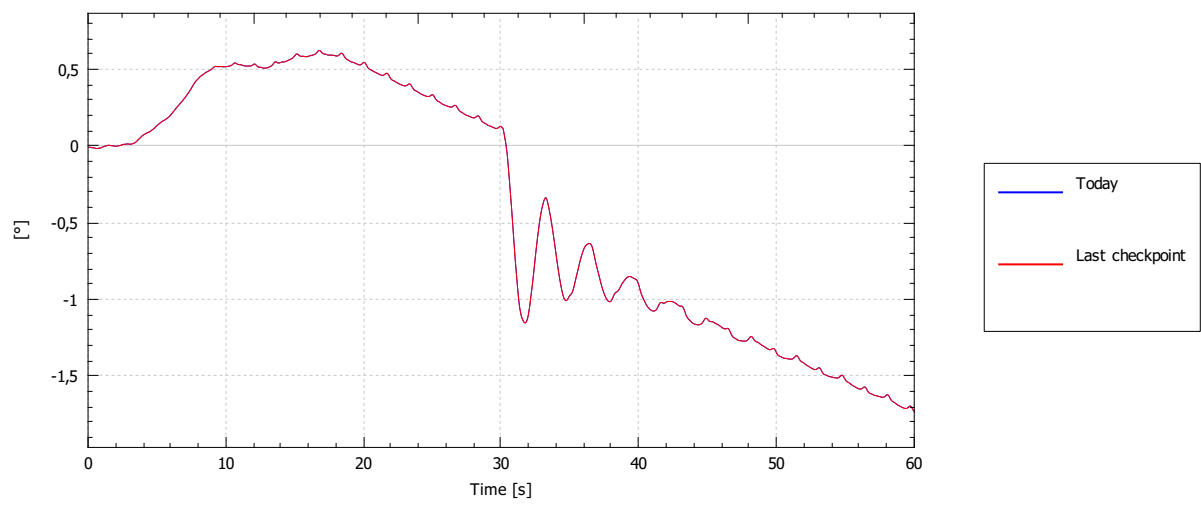
Speed



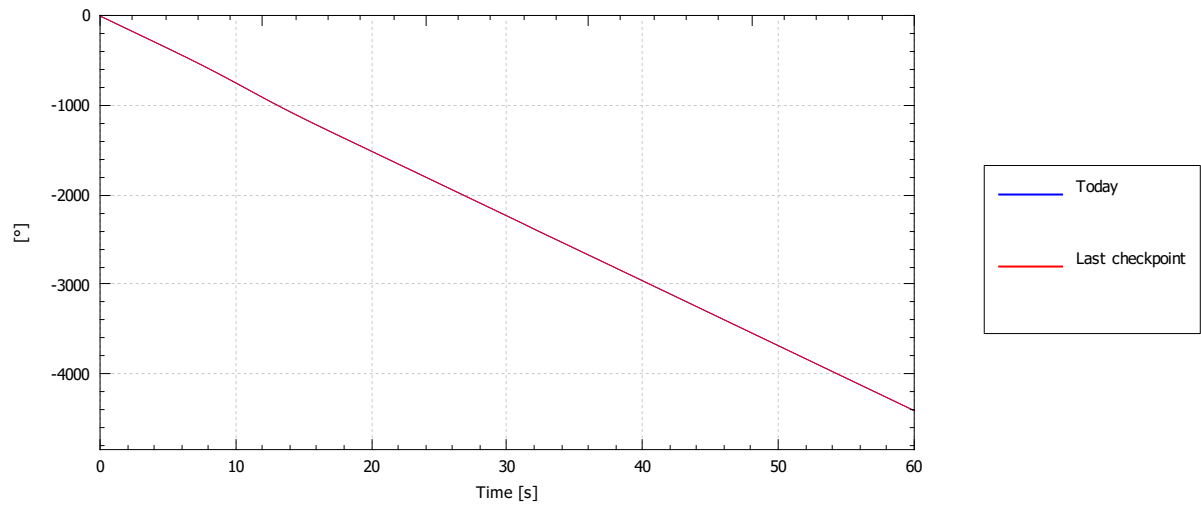
Acceleration, magnitude



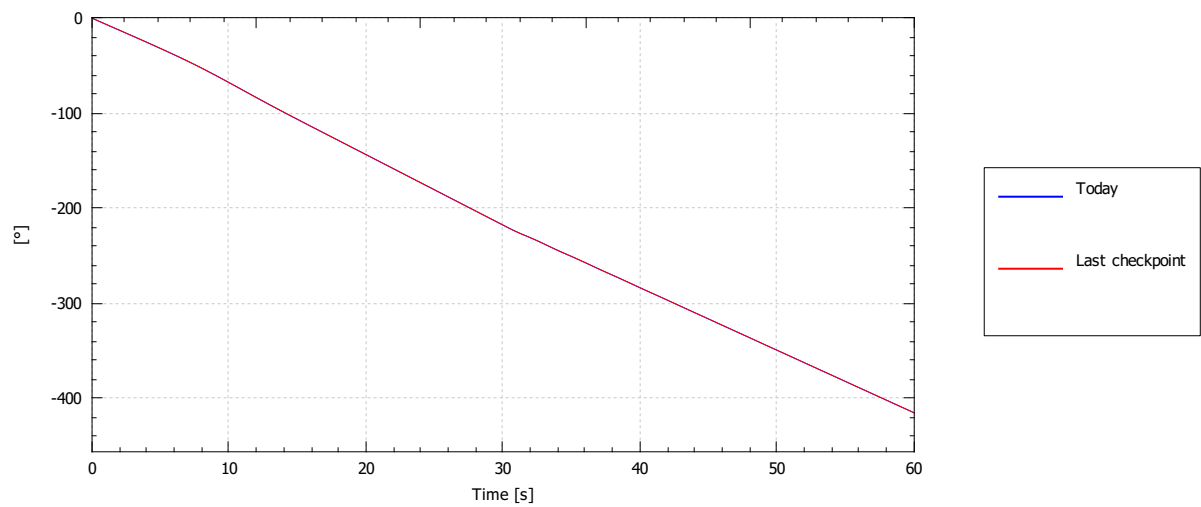
Rotational displacement (ru)



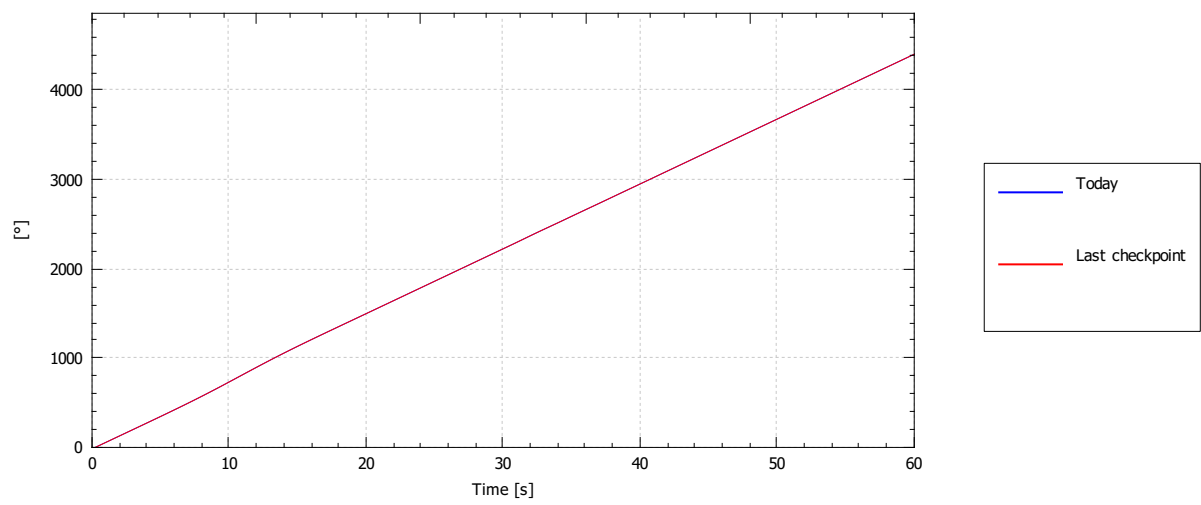
Rotational displacement (rv)



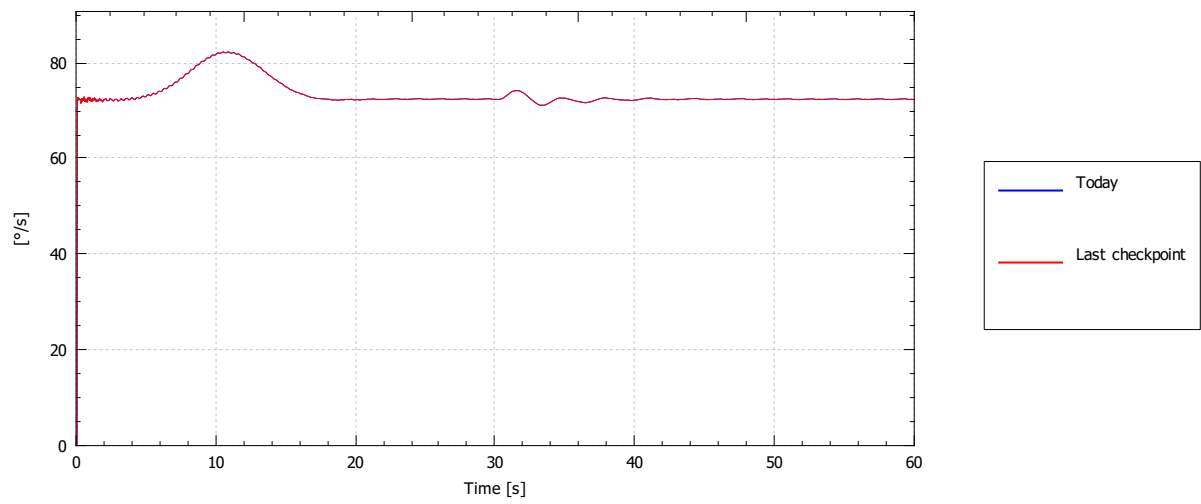
Rotational displacement (rw)



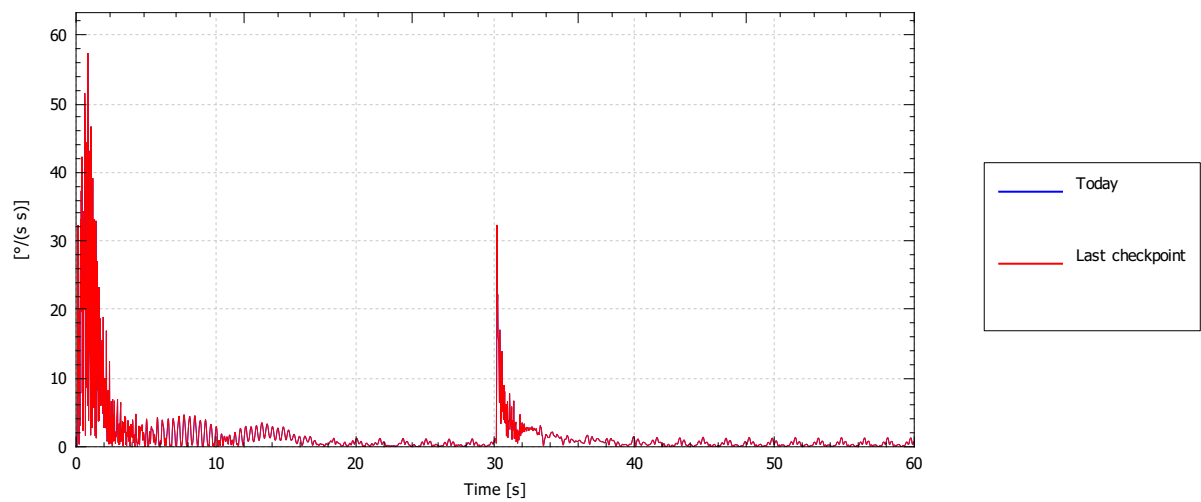
Rotational displacement magnitude



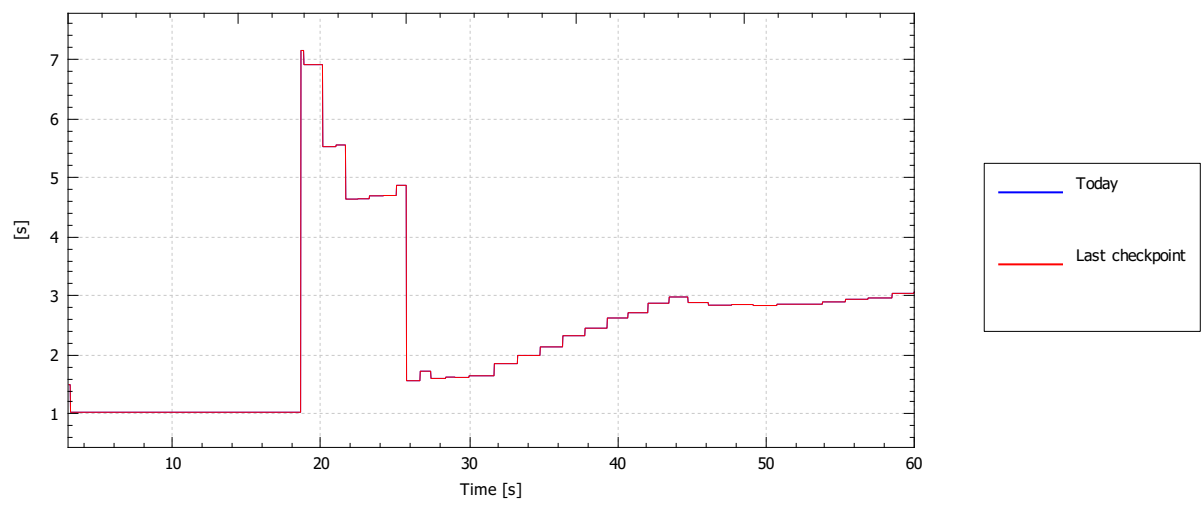
Rotational speed



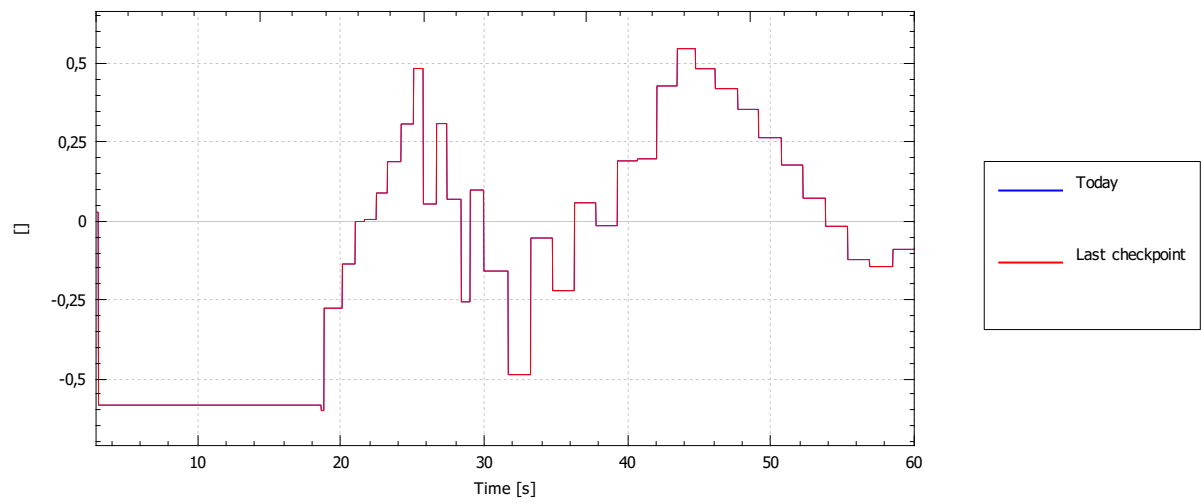
Rotational acceleration mag



Displacement period



Displacement logarithmic decrement



Displacement damping ratio

