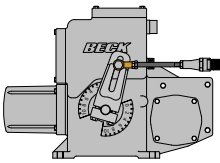
BECK®

Electric Actuators for Industrial Process Control



Recovery Boiler Fluid Coupling Retrofit

Weyerhaeuser North America

Recovery Boiler FD and ID Fluid Couplings

Precise control of fan fluid couplings is critical to boiler performance, and structural integrity. This pulp mill performed an evaluation of their Recovery Boiler FD & ID fan application to determine the cause of cyclical speed fluctuations. They found that deadband induced limit cycling in the conventional electric actuator used to control the fluid coupling was causing unwanted fan speed changes. The air flow variations were causing damage to the fan/damper plenum. The fluid coupling manufacturer recommended replacing the original actuators with Beck.

Initial Results

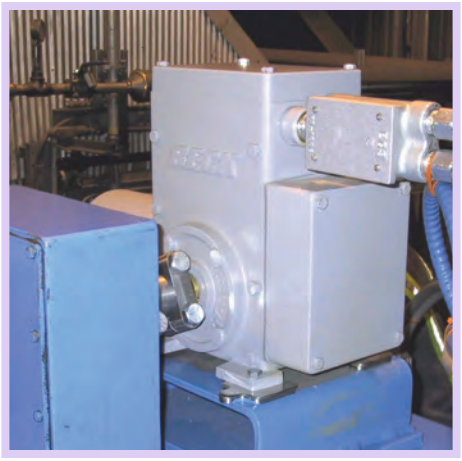
Beck model 11-159 actuators were installed in a direct-couple arrangement to replace the old actuators with minimal modifications.

Dramatic improvements in fan speed control were immediately apparent. Plant personnel compared before and after trend data, and found a 90% reduction in speed variability. A comparison of their 8-day "Before" trend and 14-day "After" trend confirms a strong correlation between the actuator replacement and improved control.

Long Term Satisfaction

The actuators have been in service since 2003 with no maintenance required. This fluid coupling project was closely monitored by the plant and corporate engineers. Not only were Beck actuators specified for a new recover boiler at the mill – Beck became the standard actuator for fluid couplings and dampers corporate-wide.

Electric utilities and independent power producers have come to depend on Beck for accurate, reliable positioning of their most important applications.



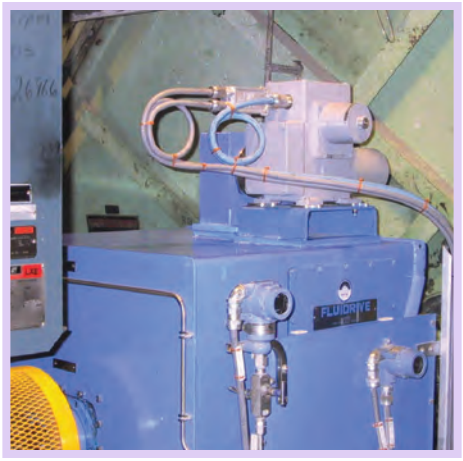


Figure 1 & 2

As a result of the plant's success, Beck actuators became the standard on fluid couplings.

BECK VIDEO Scan W/ Smartphone

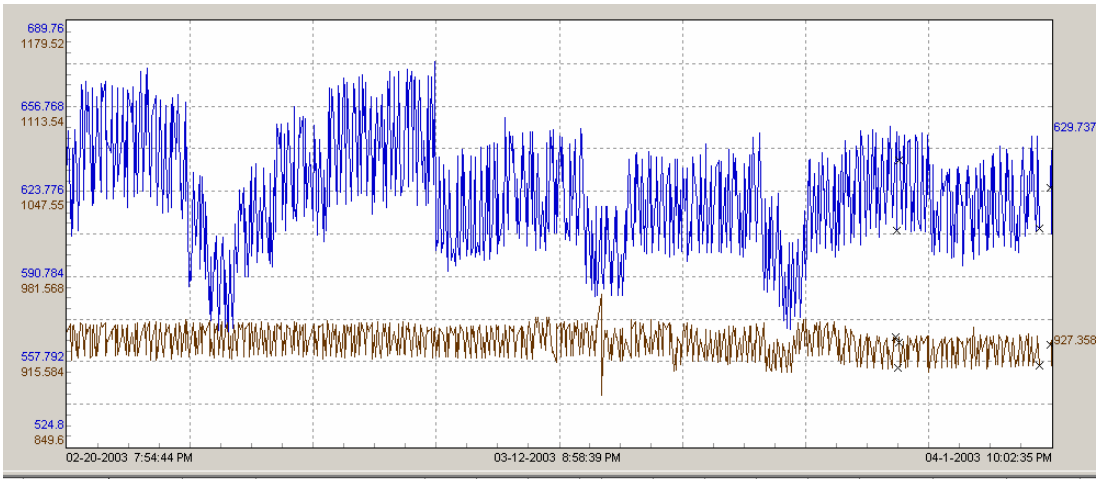
Harold Beck & Sons Inc.
11 Terry Drive
Newtown, PA 18940
(215) 968-4600

Actuator Solutions since 1936

www.haroldbeck.com

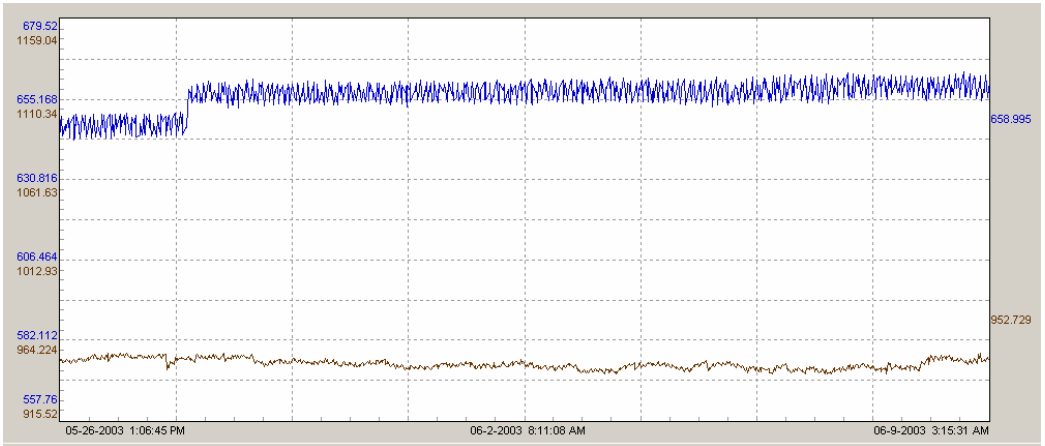
The ID fan and FD fan speed control data

Before change of actuator:



Name	Data Source	Map	Description	Value	Level	Status	Au	Plot Min	Plot Max	Units	Shift	TZ	Type	Period	Method	St
15SC060.OP	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	***				62.1228	62.1294	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC060.PV	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	629.737	Good	Good		524.8	689.76	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC060.SP	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	608.499	Good	Good		657.636	718.012	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.OP	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	***				113.830	114.357	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.PV	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	927.358	Good	Good		849.6	1179.52	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.SP	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	***				1115.27	1236.02	RHPM	0	0:00:0	Mountair	Best Fit	1 Hour	

After change of actuator:



Name	Data Source	Map	Description	Value	Level	Status	Au	Plot Min	Plot Max	Units	Shift	TZ	Type	Period	Method	Ste
15SC060.OP	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	***				62.1242	62.1290	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC060.PV	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	658.995	Good	Good		557.76	679.52	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC060.SP	GRPULPIP2	IP_AnalogM	ID FAN SPEED CONTROL	660.000	Good	Good		669.700	714.264	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.OP	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	***				113.935	114.324	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.PV	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	952.729	Good	Good		915.52	1159.04	RPM	0	0:00:0	Mountair	Best Fit	1 Hour	
15SC037.SP	GRPULPIP2	IP_AnalogM	FD FAN SPEED CONTROL	955.000	Good	Good		1139.4	1228.52	RHPM	0	0:00:0	Mountair	Best Fit	1 Hour	