

KDK

Kiln Drive Coupling

The high mechanical efficiency of modern rotary kilns allows relatively free reverse rotation (rollback) that can overspeed drive components. This presents a danger to equipment and personnel in that uncontrolled rollback can result in centrifugal explosion of these components. The PT Tech KDK Kiln Drive Coupling provides a simple, reliable, and economical method of controlling kiln roll back.

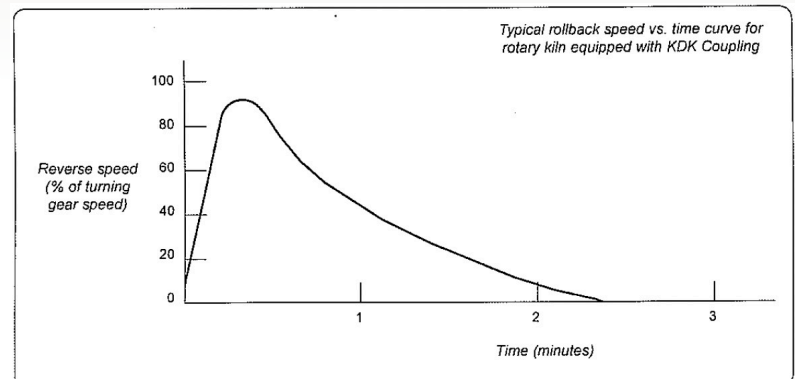
Integrated backstop clutch

Integrated fluid coupling to retard rollback

Taconite Re-greaseable Seals for long life in adverse conditions

Control Kiln Rollback

The KDK Coupling is designed to fit between the emergency drive prime mover and the emergency drive reducer. It utilizes a hydrodynamic fluid coupling device to retard the reverse rotation of the kiln thus controlling rollback. The high energy capacity and torque characteristics of the fluid device makes it ideal for this purpose. The torque of the KDK Coupling increases exponentially (square function) as the speed increase. Testing of the KDK Coupling indicates that it will generally allow a maximum rollback speed of approximately 70 to 90 percent of the normal emergency drive speed. A typical rollback speed versus time curve for a kiln equipped with a KDK Coupling is shown below. Maximum speed is quickly attained upon the start of rollback and slowly diminishes upon the start of rollback and slowly diminishes to zero rpm over a one to three minute period. There is no oscillation or forward rotation of the kiln at completion of rollback.



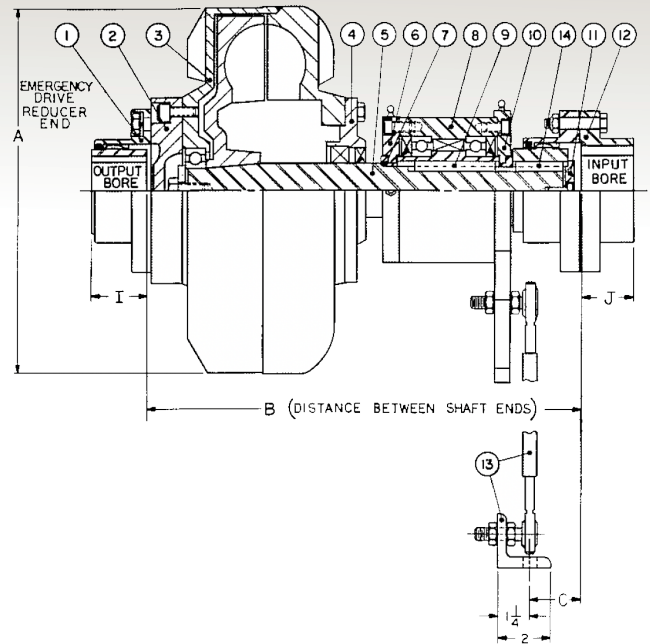
Control Kiln Rollback

In addition to controlling rollback, the KOK Coupling functions as a normal fluid coupling for the emergency drive prime mover. On electric motor it provides high-starting torque and absorbs shock loads. For internal combustion engines, it provides easy start up and smooth, vibration-free operation.

A sprag-type backstopping clutch is utilized in the KOK Coupling to enable the fluid coupling device to act as a retarder during rollback. In the forward direction, the backstopping clutch freewheels, allowing the fluid device to function as a normal fluid coupling. The backstopping clutch has Iaconite-type regreaseable seals for long life in adverse environments.

Because the PT Tech KDK Coupling is connected to the emergency drive, it remains stationary when the main drive is operating. The only wear on the KDK components occurs during rollback and operation of the emergency drive. This low usage combined with the high-quality components of the KOK Coupling assures long life.

All components of the KOK Coupling are sealed and are suitable for most adverse environments. The KOK Coupling is capable of operating up to a full year without maintenance. Periodic relubrication of the components is the only routine maintenance required.



PERFORMANCE DATA*

Model Number	H.P. Rating at RPM					Energy Capacity
	1150	1450	1750	2000	2200	
KDK 20	7.4	12	20	26	33	650,000
KDK 30	25	41	60	82	100	1,250,000
KDK 40	35	70	100	120	-	2,000,000
KDK 50	65	100	130	150	-	3,000,000

The rollback energy of the kiln should be checked against the energy capacity of the KDK coupling. A simple and conservative formula for rollback energy is given below. This formula neglects friction in the system which absorbs part of the rollback energy.

DIMENSIONAL DATA inches

	KDK 20	KDK 30	KDK 40	KDK 50
Max. Bore Output	2.38	2.38	3.63	3.63
Max. Bore Input	2.88	2.88	3.25	3.25
A	10.25	13.50	16.50	17.88
B	14.75	16.00	17.79	18.65
C	1.50	1.50	2.00	2.00
D	8.25	8.25	12.00	12.00
I	2.06	2.06	3.03	3.03
J	1.84	1.84	2.28	2.26
Weight	100	125	200	235