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Magnetic powder clutch and brake – applications

Main functions:
- **Torque control**
- **Torque limitation**
- **Coupling - braking**
- **Positioning**

Application range:

Winding machinery, unwinding brakes, draw-clamp station, roller plant, shaping machinery, tool machinery, run- up control, conveyors, etc.
The magnetic powder clutch and -brake are made for the use in horizontal position.
The maximum number of revolution is 2000/3000 min^{-1}. The maximum number of revolutions for clutches with a torque of more than 12 Nm is 2000 min^{-1}.
The winding temperature may not exceed 140℃; the operating temperature lies at 80℃. The clutches and brakes are lubricated at all times.

When placing an order please indicate the purpose of usage. We will be glad to give you information on the laying and assembling.

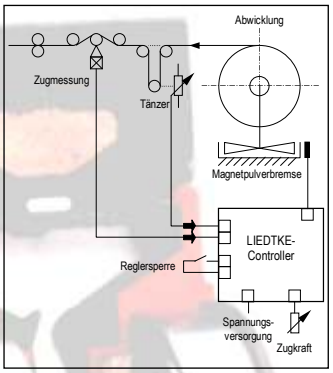
Laying:

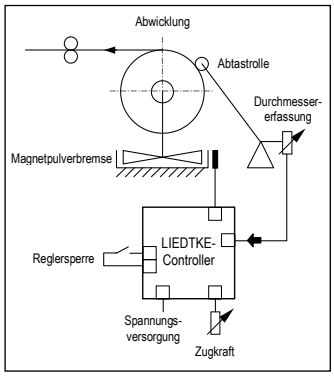
v = velocity (m/min)
d = the outer diameter of the hull (mm)
D = diameter of the bale (mm)
F = tactive force (N)
M = moment of torque (Nm)
n_1 = number of revolutions of the drive (min^{-1})
n_2 = number of revolutions of the drive (min^{-1})
n_{max} = maximum number of revolution
P_V = dissipation loss/ power loss (kW)
q = ratio of the diameters D:d

Break	$P_V = \frac{M_{max} \times n}{9549} (kW)$
Unwinding	$P_V = \frac{M_{max} \times n_{max}}{9549 \times q} (kW)$
Coupling/ Winding	$P_V = \frac{M_{max} \times (n_1 - n_2)}{9549} (kW)$
Maximum torque	$n_{max} = \frac{v_{max}}{d \times \pi} (\min^{-1})$
entire transmission	$i_g = \frac{n_1}{n_{max}}$
Maximum moment	$M_{max} = \frac{F \times D}{2} (Nm)$

Examples for application:

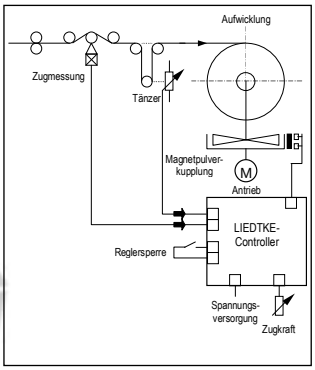
1. Unwinding pocess
At the inlet of the poduction machinery the tractive force in the material track should be held on a constant level.. Though bale scans the tractive force is held constant during the decrease of the diameter

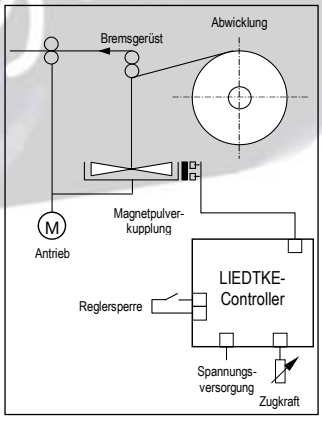




2.Unwinding process/
Dancer position control
At the unwinding process the tractive force of the material track is not be held on a constant level. A regulator for the position of the dancer accomplishes this. The weight of the dancer defines the tractive force. Alternatively a tractive force regulation by a LIEDTKE-tension dynamometer can be used.

3. Winding process
Behind a wire drawing machine the material is supposed to be wind up with a constant draw. The winding process is carried out by the regulation of the position of the dancer. The weight of the dancer defines the tractive force alternatively a tractive force regulation by a LIEDTKE- tension dynamometer can be used.





4. Unwinding process with a brake rack
At the inlet of a printing machine the tension of the material is to be held on a constant level. A slight lagging activates the brake rack through a magnetic powder clutch from the main drive. The tractive force, which is caused by this difference, can be easily adjusted by the exciting voltage

5. Ultrasonic scan
The process of unwinding and winding with magnetic powder clutches and brakes can be steered by a ultrasonic scan. An advantage is the low mechanical effort
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