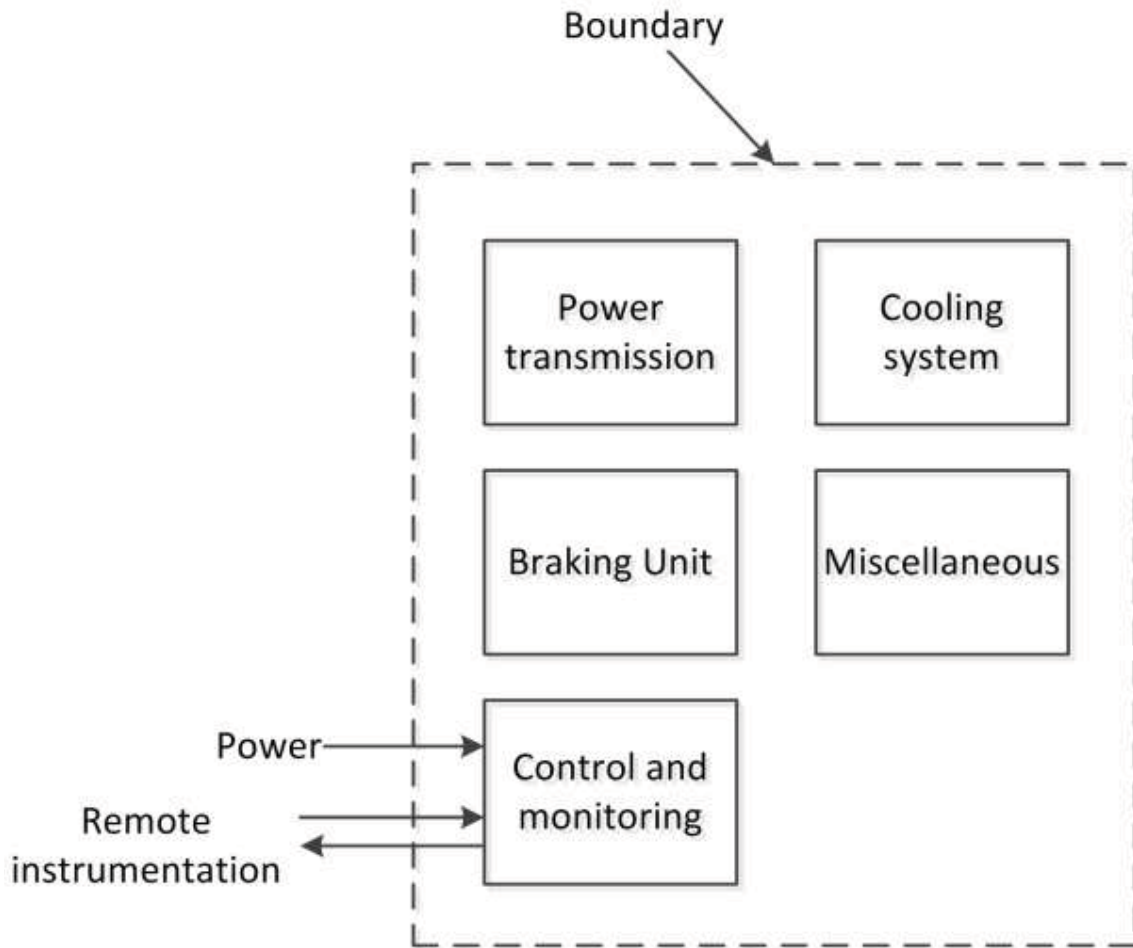


## Equipment Class: Dynamic brake systems

Taxonomy ID: PE\_RO\_DB

<u>Class Types</u>	<u>Taxonomy ID</u>
Dynamic brakes, eddy current	PE_RO_DB_EC
Dynamic brakes, friction plate	PE_RO_DB_FP
Dynamic brakes, hydrodynamic	PE_RO_DB_HD



**Boundary definition – Dynamic brake systems**

## Subgroups and Maintainable Items

### DB000100 Power transmission

<u>Code</u>	<u>Description</u>
0001	No detail
0100	Coupling
0200	Clutch
0300	Gear box

### DB000200 Braking unit

<u>Code</u>	<u>Description</u>
0001	No detail
0100	Housing
0200	Stator <i>Includes magnetic poles, field coils, and brake caliper.</i>
0300	Rotor <i>Includes hydromechanical impellers.</i>
0400	Radial bearing
0500	Thrust bearing
0900	Lubrication
1100	Seals

### DB000300 Control and monitoring

<u>Code</u>	<u>Description</u>
0001	No detail
0100	Actuating device
0200	Control unit
0300	Internal power supply
0400	Monitoring
0500	Sensors <i>Specify type of sensor, e.g. pressure, temperature, level, etc.</i>
0600	Valves
0700	Wiring
0800	Piping
0900	Seals
1000	Backup power <i>Eddy current brake only</i>

### DB000400 Cooling system

<u>Code</u>	<u>Description</u>
0001	No detail
0100	Heat exchanger
0200	Filter

0300	Valves
0400	Piping
0500	Pump
0600	Motor
0700	Cooling fluid tank

**DB009900**    **Miscellaneous**

<u>Code</u>	<u>Description</u>
0001	No detail
0100	Others

## Failure Modes

### DB000100 Dynamic brakes

<u>Code</u>	<u>Description</u>	<u>Details</u>
AIR	Abnormal instrument reading	False alarm, faulty instrument indication
BRD	Breakdown	Breakdown, serious damage (seizure, breakage), and/or major process fluid leak
ELU	External leakage utility medium	Hydraulic oil, lubrication oil, barrier oil, coolant, water, etc.
FTR	Failure to regulate	Fails to control the load, poor response to feedback
LOO	Low output	Delivery/output/torque/performance below acceptance
NOI	Noise	Abnormal or excessive noise
OHE	Overheating	Machine parts, exhaust, cooling water, etc.
PDE	Parameter deviation	Monitored parameter exceeding limits, e.g. High/Low alarm
SER	Minor in-service problems	Loose items, discoloration, dirt
SPO	Spurious operation	False alarm. premature closure/stop, unexpected operation/fails to operate as demanded
STD	Structural deficiency	Material damages (cracks, wear, fracture, corrosion, decay)
UNK	Unknown	Too little information to define a failure mode
VIB	Vibration	Abnormal/excessive vibration

## Characteristics

Equipment Category Characteristics				
PE_RO		Rotating equipment		
Characteristic ID/Char. Values	Descriptions	UOM	APP	PR
COUPLING_TYPE	Coupling type		FL	
01	Disconnect			
02	Fixed			
03	Flexible			
04	Hydraulic			
05	Magnetic			
SHAFT_ORIENTATION	Shaft orientation		CO	
01	Horizontal			
02	Vertical			
SPEED_ROTATIONAL_NORMAL	Rated/Normal speed	rpm	CO	
TRANSMISSION_TYPE	Power transmission type		FL	
01	Direct			
02	Gear			
03	Integral			

Equipment Class Characteristics				
PE_RO_DB		Dynamic brake systems		
Characteristic ID/Char. Values	Descriptions	UOM	APP	PR
COUPLING_TYPE	Coupling type		CO	
01	Disconnect			
02	Fixed			
03	Flexible			
04	Hydraulic			
05	Magnetic			
SPEED_ROTATIONAL_NORMAL	Rated/Normal speed	rpm	FL	
TRANSMISSION_TYPE	Power transmission type		CO	
01	Direct			
02	Gear			
03	Integral			

BEARING_RADIAL_TYPE	Radial bearing type	EQ
01	Anti-frictional	
02	Journal	
03	Magnetic	
BEARING_THRUST_TYPE	Thrust bearing type	EQ
01	Anti-frictional	
02	Journal	
03	Magnetic	
INGRESS_PROTECTION_RATING	IP rating: IEC 60529	CO
01	IP-00	
02	IP-10	
03	IP-11	
04	IP-12	
05	IP-20	
06	IP-21	
07	IP-22	
08	IP-23	
09	IP-24	
10	IP-30	
11	IP-31	
12	IP-32	
13	IP-33	
14	IP-34	
15	IP-35	
16	IP-40	
17	IP-41	
18	IP-42	
19	IP-43	
20	IP-44	
21	IP-45	
22	IP-54	
23	IP-55	
24	IP-56	
25	IP-65	
26	IP-66	
27	IP-67	
28	IP-68	
HAZARDOUS_AREA_RATING	EEX Haz. area rating IEC 60079	CO

01	Declassified
02	Explosion rating
02.01	EEX_D: Flameproof protection
02.02	EEX_E: Increased safety
02.03	EEX_IA: Intrinsic safety, zone
02.04	EEX_IB: Intrinsic safety, zone
02.05	EEX_M: Encapsulation
02.06	EEX_N: N-type protection
02.07	EEX_NA: Non-sparking
02.08	EEX_NL: Energy limited
02.09	EEX_O: Oil filling
02.10	EEX_P: Pressurisation
02.11	EEX_Q: Sand/powder filling
02.12	EEX_S: Special protection
03	Gas group rating
03.01	Gas group A
03.02	Gas group AB
03.03	Gas group ABC
03.04	Gas group ABCD
03.05	Gas group AC
03.06	Gas group ACD
03.07	Gas group AD
03.08	Gas group B
03.09	Gas group BC
03.10	Gas group BCD
03.11	Gas group BD
03.12	Gas group C
03.13	Gas group CD
03.14	Gas group D
03.15	Gas group IIA
03.16	Gas group IIB
03.17	Gas group IIC
03.18	Gas group IID
04	Temperature rating
04.01	T1: T<450C
04.02	T2: T<300C
04.03	T3: T<200C
04.04	T4: T<135C
04.05	T5: T<100C
04.06	T6: T<85C
05	Zone rating
05.01	Division 1

05.02	Division 2		
05.03	Safe area		
05.04	Zone 0		
05.05	Zone 1		
05.06	Zone 2		
06	United Laboratories rating		
06.01	UL Class 1 rating		
06.02	UL Class 2 rating		
TORQUE_MAX	Maximum torque	N·m	CO
TORQUE_MAX_SPEED	Torque at max oper speed	N·m	CO
INLET_WATER_FLOW	Inlet water flow	GAL	CO
BEARING_LUBRICATION_MECHANISM	Type of bearing lubrication		CO
01	Grease		
02	Oil bath		
03	Oil ring		
04	Pressurized oil		

**Equipment Class Type Characteristics**

<b>PE_RO_DB_EC    Dynamic brakes, eddy current</b>				
<u>Characteristic ID/Char. Values</u>	<u>Descriptions</u>	<u>UOM</u>	<u>APP</u>	<u>PR</u>
CURRENT_RATED	Rated current	a	CO	
NUMBER_OF_COILS	Number of coils	EA	EQ	
NUMBER_OF_MAGNETS	Number of magnets	EA	EQ	
VOLTAGE_RATED	Rated voltage	v	CO	
<b>PE_RO_DB_HD    Dynamic brakes, hydrodynamic</b>				
<u>Characteristic ID/Char. Values</u>	<u>Descriptions</u>	<u>UOM</u>	<u>APP</u>	<u>PR</u>
WORKING_FLUID_HD_BRAKE	Working fluid		CO	M
01	Water			
02	Hydraulic fluid			