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Purchase Order Title:	CENTRIFUGAL PUMPS
Suppliers Name:	

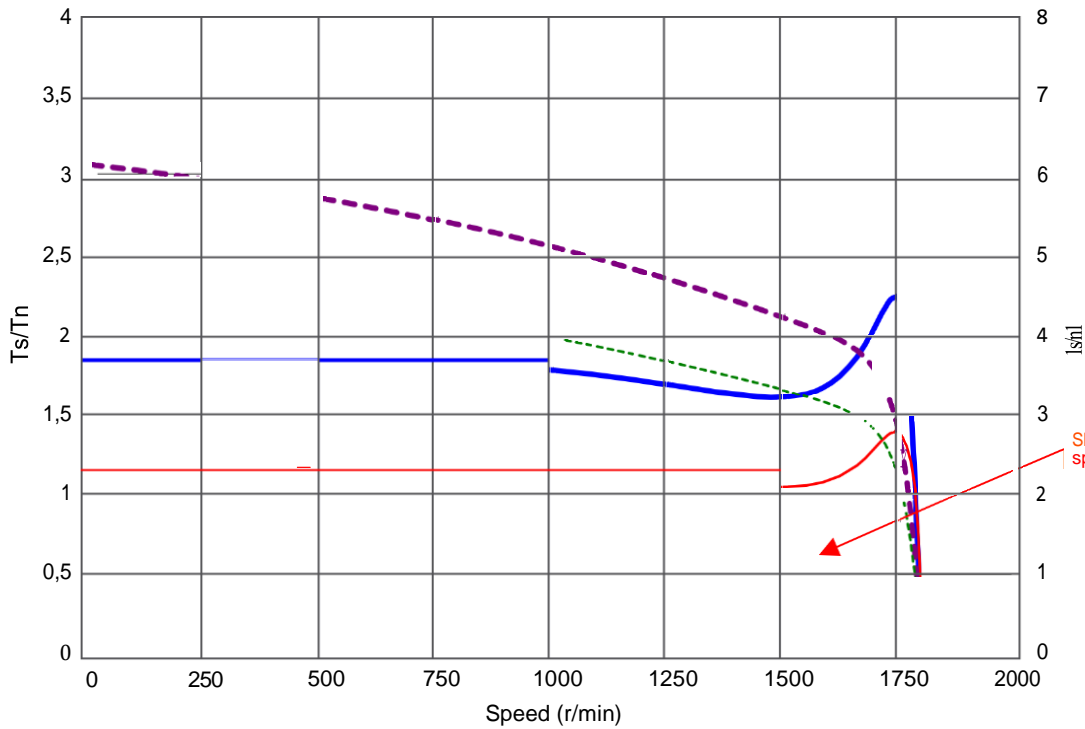
Document Description:	MOTOR PERFORMANCE CURVES
Equipment :	HEATING MEDIUM CIRCULATION PUMP

ABB Motors and Accessories	Starting Curves		ABB
	Project	Location	
Department/Author	Customer name	Customer ref.	Item name PM-4101 A/B
Our ref.	Rev/Changed by	Date of issue	Saving ident
Type of process			Pages 2 of 2
Type/Frame	M3GP 315SMC 4		
Product code	3GGP 312 230-BDG	Frequency (Hz)	60
Rated output PN	132 kW	Rated current i	230 A
Type of duty	S1(IEC) 100%		

Jm _{rot} (kgm ²)	2,9	Voltage (V) 100%	400	Voltage (V)	320V(80%)
Ji _a (kgm ²)		T _{star} /T _N	1,9	T _{star} /T _N	1,11
Speed (r/min)	1775	Starting times (s)		Starting times (s)	
T _N (Nm)	706	Speed (r/min)		Speed (r/min)	
I _{load} (Nm)		Q * I _n	6	I _s /I _n	4,7
		Tmg# T _n	2#5	Tmg# T _n	1,5

Indicate on next revision.

Provide starting time at 100% and 80% Un

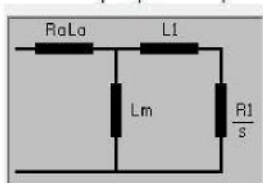


- Provide the following curves:
1. Performance curve (Efficiency, P.F., Current vs. kW)
 2. Stall time, Acceleration, lock rotor, vs. Current curve

— TMotorUn 400V	— TMotorU2 320V(80%)
- - - IMotorUn 400V	- - - IMotorU2 320V(80%)

Load characteristics (IEC 60034-2-1:2014)
All data subject to tolerances in accordance with IEC

Provide the following motor and pump parameters:



1	Rs Amature resistance		
2	T Transient time constant		T's T"
3	T' Sub-transient time constant		
4	H Inertia constant		
5	D Load damping factor		load help
6	X Steady-state amature reactance		X > X"
7	X' Transient motor reactance		X' > X"
8	X" Sub-transient motor reactance		X" > X"
9	X Leakage reactance		
10	E1 First sample voltage		E1 = E2
11	Se(E1) Saturation factor at E1		Se(E1) / Se(E2)
12	E2 Second sample voltage		
13	Se(E2) Saturation factor at E2		
14	Tnominal pu on motor Torque Base		

Name: Pump 1

$T = T_0 + A_1 \omega + A_2 \omega^2 + A_3 \omega^3$ ($\omega > 0$)

$T = A_0 + A_1 \omega + A_2 \omega^2 + A_3 \omega^3$ ($\omega < 0$)

Synchronous RPM:

Rated Torque: Nm

Moment of inertia: J (kg·m²)

Unit of Torque in: Nm

T0: rpm = 0, Break Away

A0: rpm > 0

A1: P1:

A2: P2:

A3: P3:

T - Torque %

Update