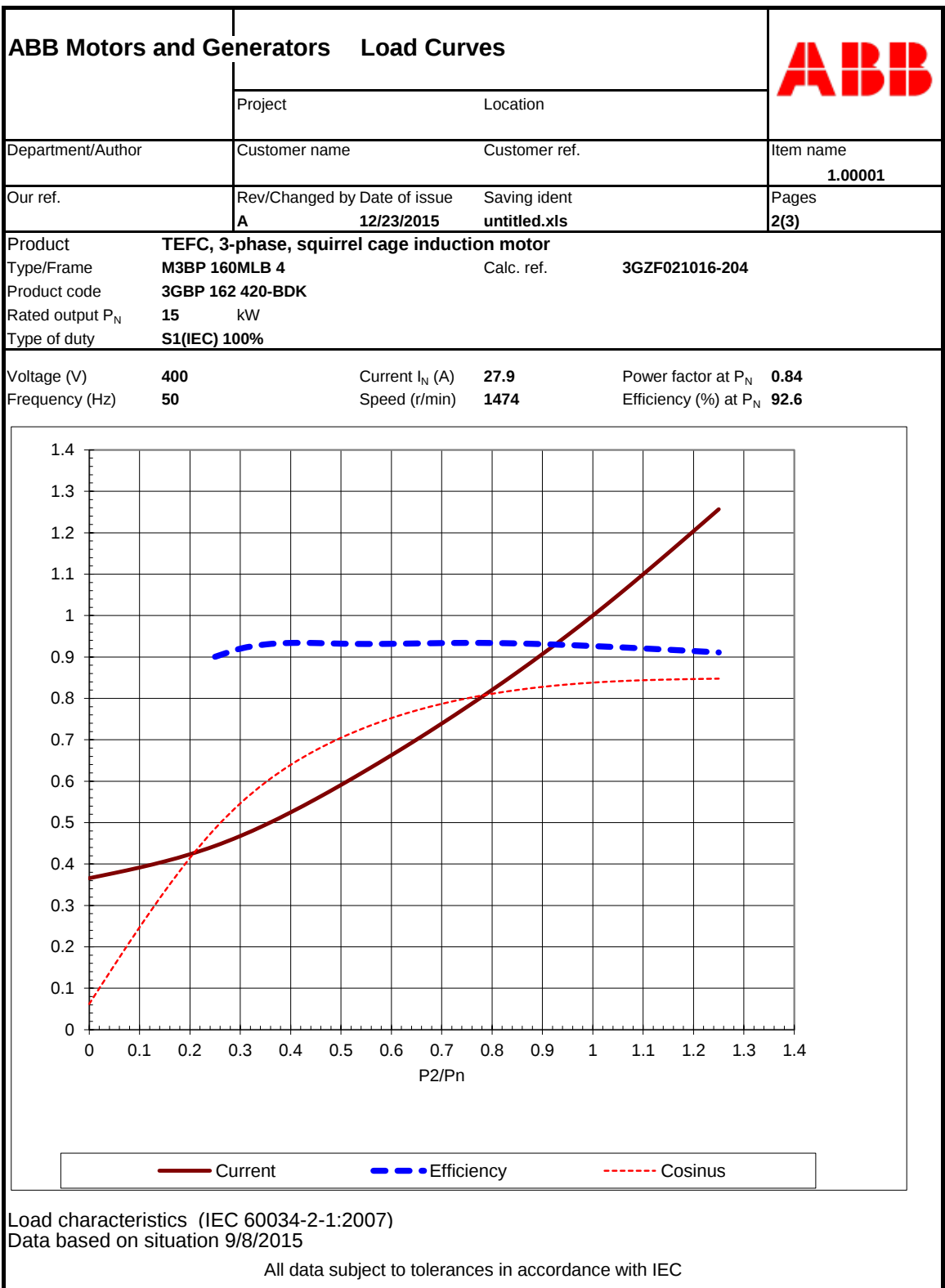


ABB Motors and Generators		Technical Data Sheet - DOL				
Project		Location				
Department/Author	Customer name	Customer ref.			Item name 1.00001	
Our ref.	Rev/Changed by A	Date of issue 12/23/2015	Saving ident untitled.xls		Pages 1(3)	
No.	Definition	Data	Unit	Remarks		
1	Product	TEFC, 3-phase, squirrel cage induction motor				
2	Product code	EMVM16154D-PPN (3GBP162420-BDK+011+332+509)			Calc. ref.	3GZF021016-204
3	Type/Frame	M3BP 160MLB 4				
4	Mounting	IM3001, B5(flange)				
5	Rated output P_N	15	kW			
6	Service factor	1				
7	Type of duty	S1(IEC) 100%				
8	Rated voltage U_N	400	VD	$\pm 5\%$ (IEC 60034-1)		
9	Rated frequency f_N	50	Hz	$\pm 2\%$ (IEC 60034-1)		
10	Rated speed n_N	1474	r/min			
11	Rated current I_N	27.9	A			
12	No-load current	10.2	A			
13	Starting current I_s/I_N	7.9		Fullfilled IEC 60034-12 design N,H		
14	Nominal torque T_N	97	Nm			
15	Locked rotor torque T_s/T_N	2.8				
16	Maximum torque T_{max}/T_N	3.3				
17	Minimum torque T_{min}/T_N	2.1				
18	Speed at minimum torque	300	r/min			
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	100	27.9	92.6 / IE3	0.84	
20		75	21.7	93.4	0.8	
21		50	16.5	93.2	0.7	
22		Start	220		0.47	
23	Maximum starting time from hot	15	s			
24	Maximum starting time from cold	27	s			
25	Insulation class / Temperature class	F / B				
26	Ambient temperature	40	°C			
27	Altitude	1000	m.a.s.l.			
28	Enclosure	IP55				
29	Cooling system	IC411 self ventilated				
30	Bearing DE/NDE	6309/C3 - 6209/C3				
31	Type of Grease					
32	Sound pressure level (LP dB(A) 1m)	62	dB(A)	at load		
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.125	kg-m2			
34	Balancing					
35	Vibration class					
36	Position of terminal box	Top				
37	Terminal box entries; no, dimens.					
38	Number of power terminals					
39	Direction of rotation	CW or CCW				
40	Weight of rotor	45	kg			
41	Total weight of motor	181	kg			
42	Dimension drawing no.					
43						
44						
45						
Ex-motors						
46						
47						
48						
Option Variant Codes / Definition						
49	011 = Fulfilling CSA and NRCAN					
50	332 = Baldor Catalog number stamped on rating plate					
51	509 = Fulfilling EISA Subtype I efficiency requirements, CC031A					
52						
Remarks:						
Data based on situation 9/8/2015						
All data subject to tolerances in accordance with IEC						
Guaranteed values on request						



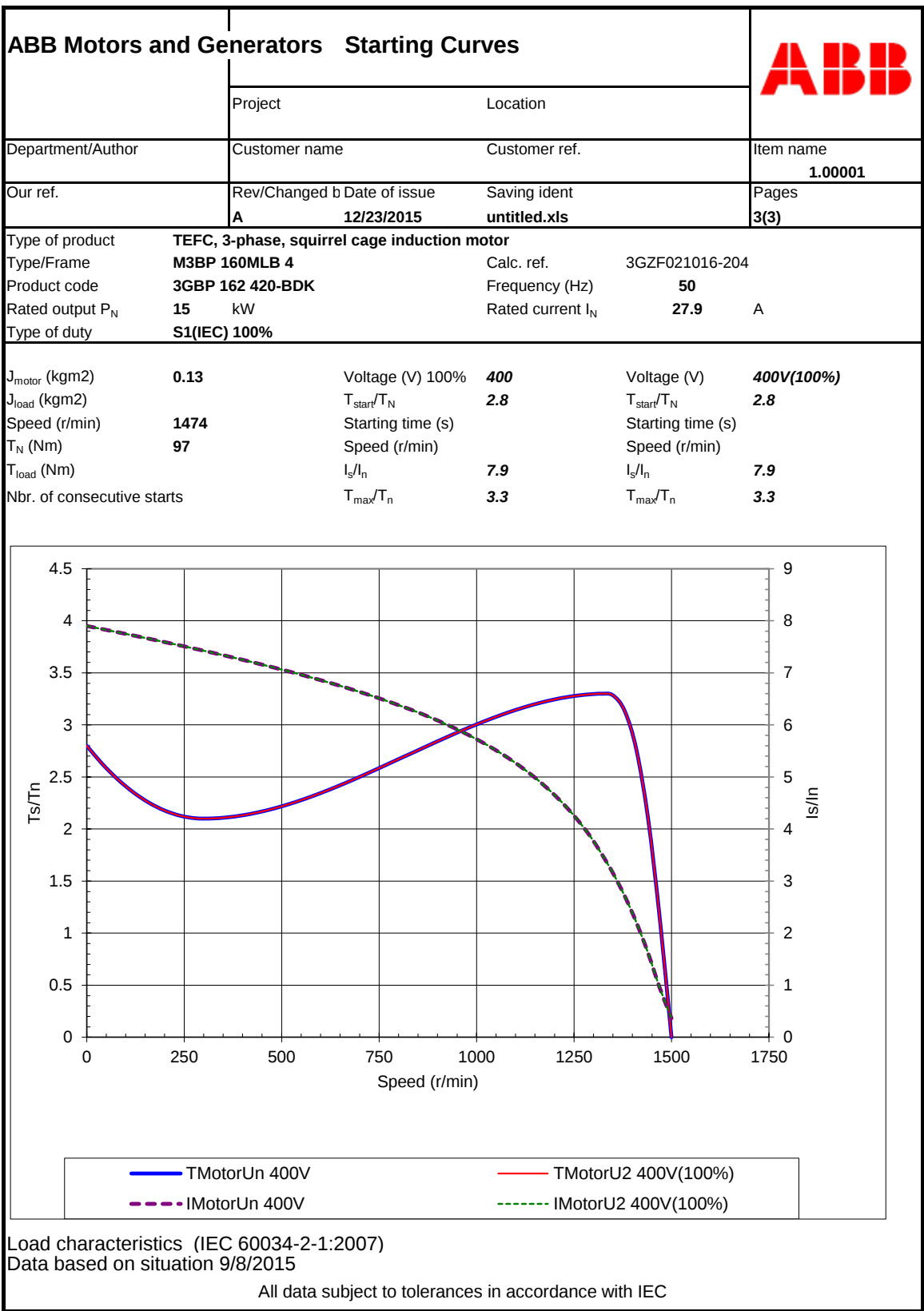
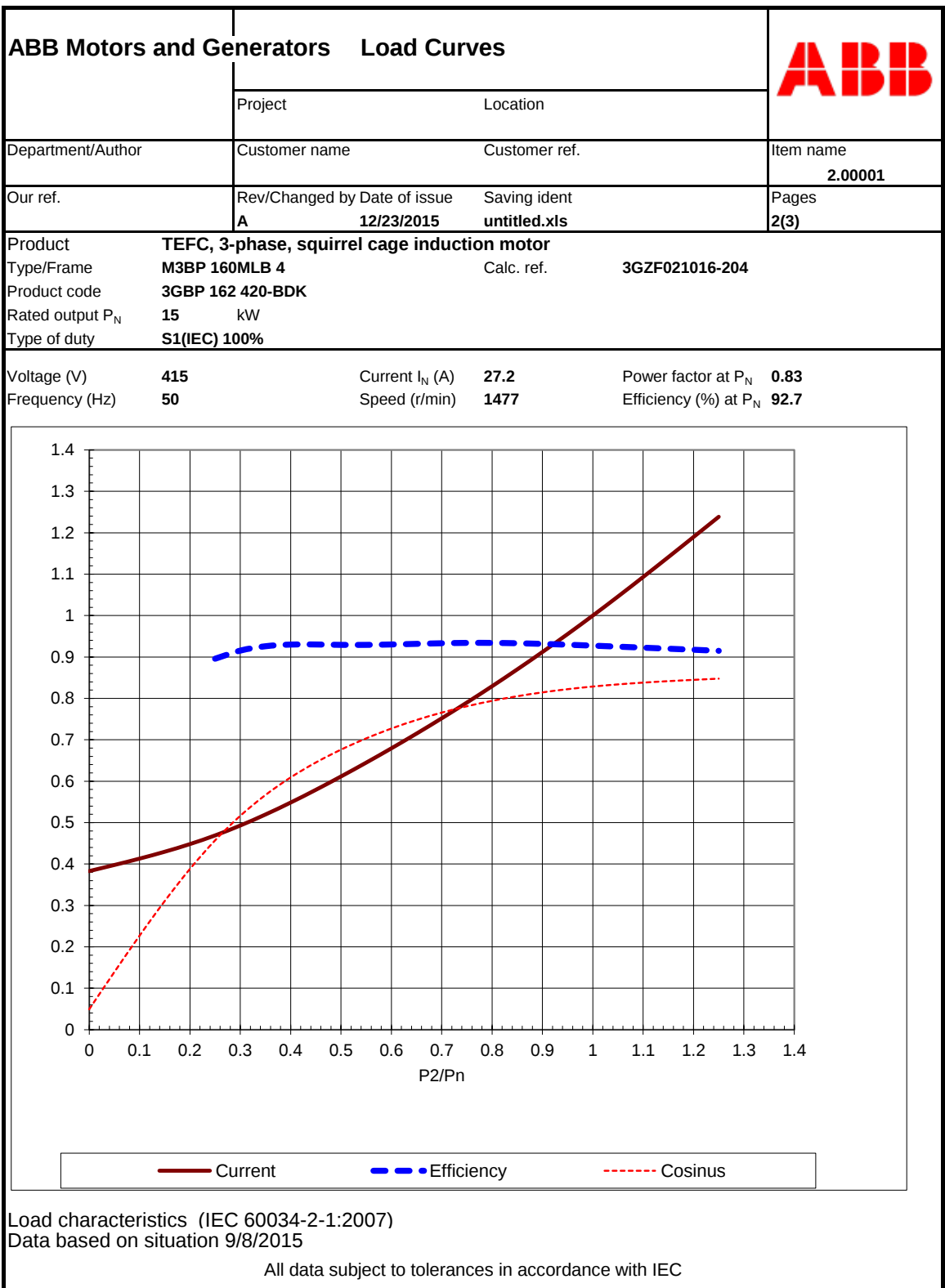


ABB Motors and Generators		Technical Data Sheet - DOL				
Project		Location				
Department/Author		Customer name			Customer ref.	
Our ref.		Rev/Changed by			Date of issue	
		A			12/23/2015	
					Saving ident	
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					2.00001	
					Pages	
					1(3)	
No.	Definition	Data	Unit	Remarks		
1	Product	TEFC, 3-phase, squirrel cage induction motor				
2	Product code	EMVM16154D-PPN (3GBP162420-BDK+011+332+509)			Calc. ref.	3GZF021016-204
3	Type/Frame	M3BP 160MLB 4				
4	Mounting	IM3001, B5(flange)				
5	Rated output P _N	15	kW			
6	Service factor	1				
7	Type of duty	S1(IEC) 100%				
8	Rated voltage U _N	415	VD	± 5 % (IEC 60034-1)		
9	Rated frequency f _N	50	Hz	± 2 % (IEC 60034-1)		
10	Rated speed n _N	1477	r/min			
11	Rated current I _N	27.2	A			
12	No-load current	10.4	A			
13	Starting current I _s /I _N	8.4		Fullfilled IEC 60034-12 design N,H		
14	Nominal torque T _N	97	Nm			
15	Locked rotor torque T _s /T _N	3				
16	Maximum torque T _{max} /T _N	3.5				
17	Minimum torque T _{min} /T _N	2.1				
18	Speed at minimum torque	300	r/min			
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	100	27.2	92.7 / IE3	0.83	
20		75	21.5	93.4	0.78	
21		50	16.6	92.9	0.68	
22		Start	228		0.48	
23	Maximum starting time from hot	15	s			
24	Maximum starting time from cold	27	s			
25	Insulation class / Temperature class	F / B				
26	Ambient temperature	40	°C			
27	Altitude	1000	m.a.s.l.			
28	Enclosure	IP55				
29	Cooling system	IC411 self ventilated				
30	Bearing DE/NDE	6309/C3 - 6209/C3				
31	Type of Grease					
32	Sound pressure level (LP dB(A) 1m)	62	dB(A)	at load		
33	Moment of inertia J = ¼ GD2	0.125	kg-m2			
34	Balancing					
35	Vibration class					
36	Position of terminal box	Top				
37	Terminal box entries; no, dimens.					
38	Number of power terminals					
39	Direction of rotation	CW or CCW				
40	Weight of rotor	45	kg			
41	Total weight of motor	181	kg			
42	Dimension drawing no.					
43						
44						
45						
Ex-motors						
46						
47						
48						
Option Variant Codes / Definition						
49	011 = Fulfilling CSA and NRCAN					
50	332 = Baldor Catalog number stamped on rating plate					
51	509 = Fulfilling EISA Subtype I efficiency requirements, CC031A					
52						
Remarks:						
Data based on situation 9/8/2015						
All data subject to tolerances in accordance with IEC						
Guaranteed values on request						



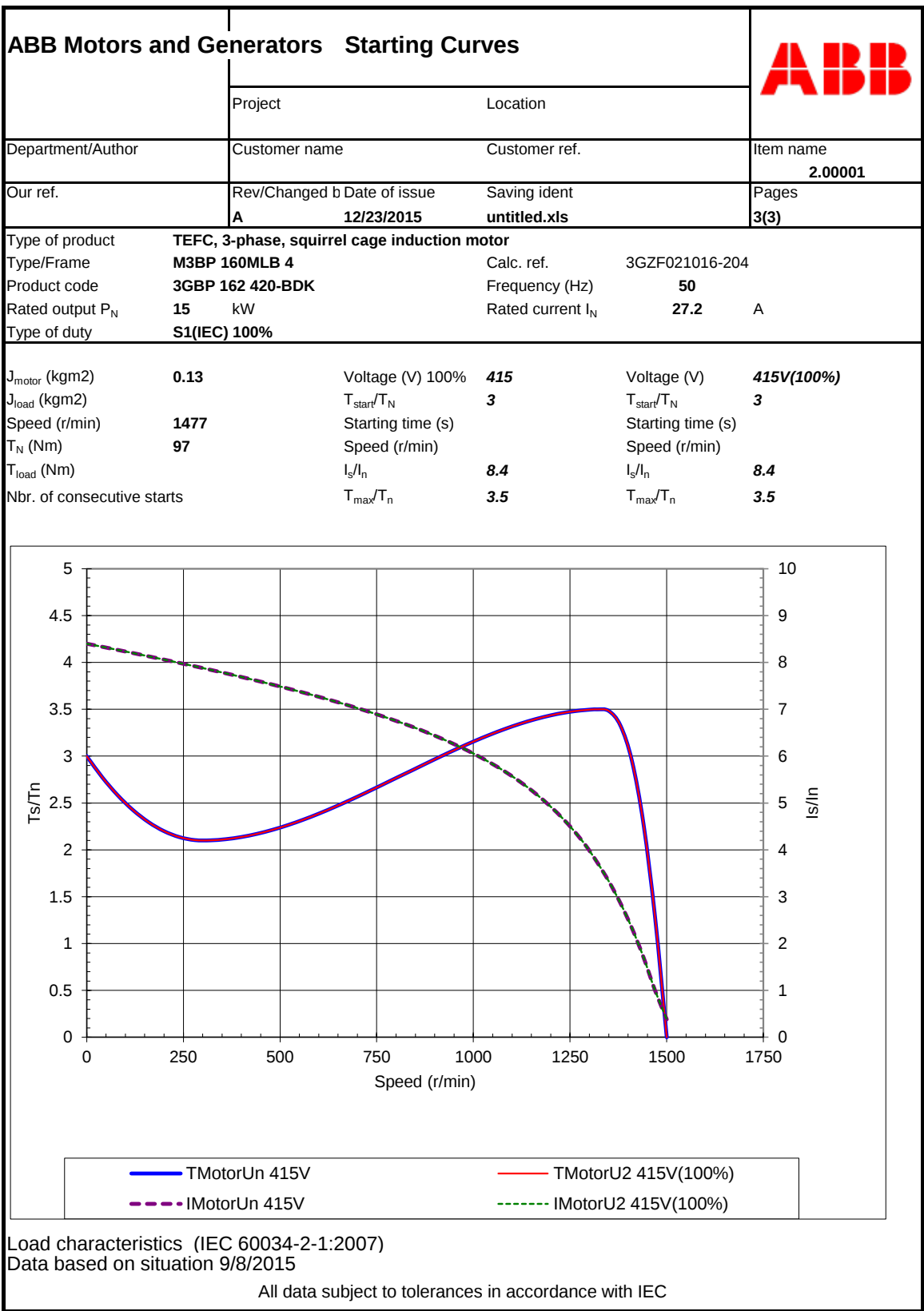
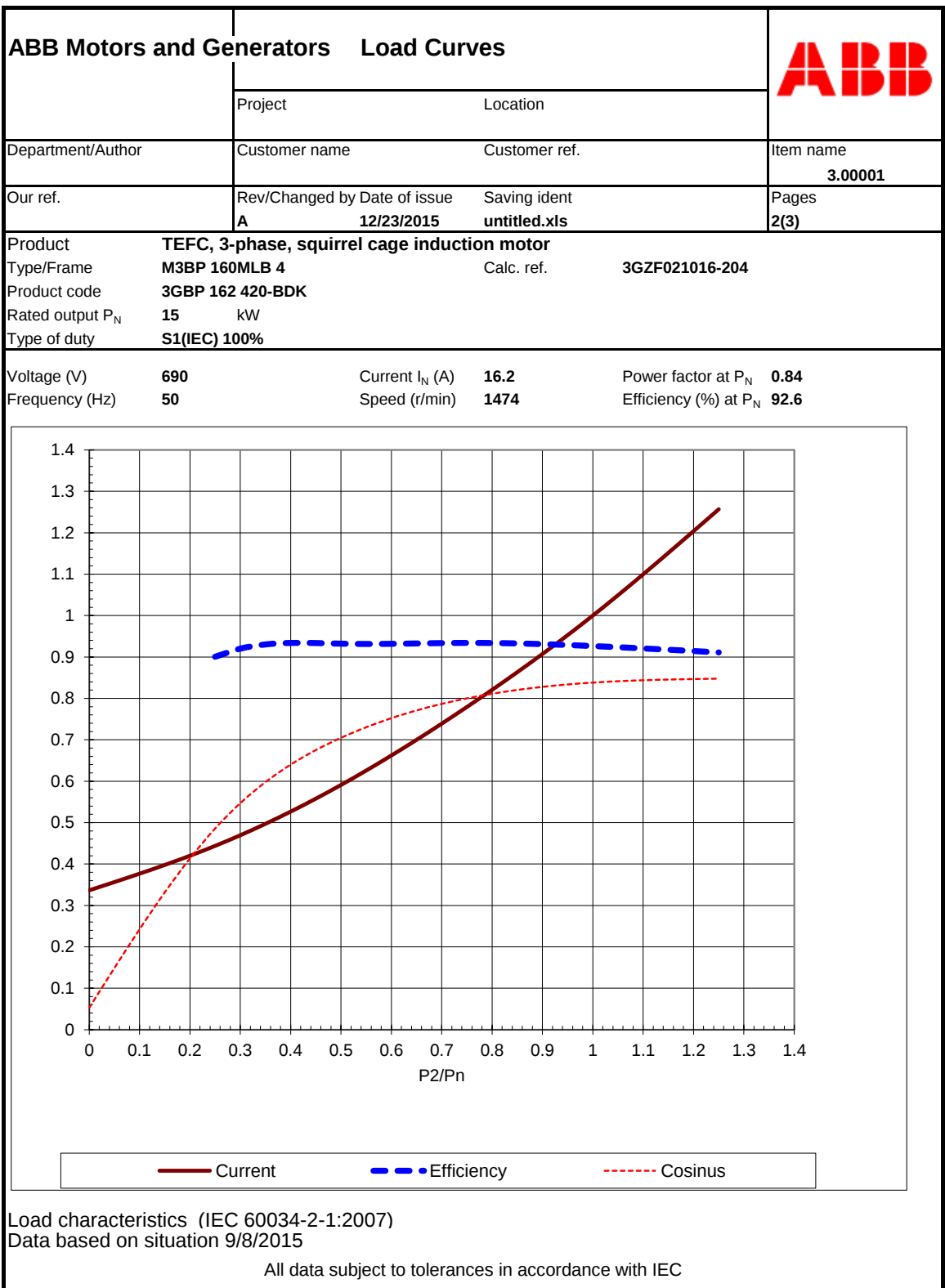


ABB Motors and Generators		Technical Data Sheet - DOL				
Project		Location				
Department/Author	Customer name	Customer ref.			Item name 3.00001	
Our ref.	Rev/Changed by A	Date of issue 12/23/2015	Saving ident untitled.xls		Pages 1(3)	
No.	Definition	Data	Unit	Remarks		
1	Product	TEFC, 3-phase, squirrel cage induction motor				
2	Product code	EMVM16154D-PPN (3GBP162420-BDK+011+332+509)			Calc. ref.	3GZF021016-204
3	Type/Frame	M3BP 160MLB 4				
4	Mounting	IM3001, B5(flange)				
5	Rated output P _N	15	kW			
6	Service factor	1				
7	Type of duty	S1(IEC) 100%				
8	Rated voltage U _N	690	VY	± 5 % (IEC 60034-1)		
9	Rated frequency f _N	50	Hz	± 2 % (IEC 60034-1)		
10	Rated speed n _N	1474	r/min			
11	Rated current I _N	16.2	A			
12	No-load current	5.4	A			
13	Starting current I _s /I _N	7.9		Fulfilled IEC 60034-12 design N,H		
14	Nominal torque T _N	97	Nm			
15	Locked rotor torque T _s /T _N	2.8				
16	Maximum torque T _{max} /T _N	3.3				
17	Minimum torque T _{min} /T _N	2.1				
18	Speed at minimum torque	300	r/min			
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor	
19	PLL determined from residual loss	100	16.2	92.6 / IE3	0.84	
20		75	12.6	93.4	0.8	
21		50	9.6	93.2	0.7	
22		Start	128		0.47	
23	Maximum starting time from hot	15	s			
24	Maximum starting time from cold	27	s			
25	Insulation class / Temperature class	F / B				
26	Ambient temperature	40	°C			
27	Altitude	1000	m.a.s.l.			
28	Enclosure	IP55				
29	Cooling system	IC411 self ventilated				
30	Bearing DE/NDE	6309/C3 - 6209/C3				
31	Type of Grease					
32	Sound pressure level (LP dB(A) 1m)	62	dB(A)	at load		
33	Moment of inertia J = ¼ GD2	0.125	kg-m2			
34	Balancing					
35	Vibration class					
36	Position of terminal box	Top				
37	Terminal box entries; no, dimens.					
38	Number of power terminals					
39	Direction of rotation	CW or CCW				
40	Weight of rotor	45	kg			
41	Total weight of motor	181	kg			
42	Dimension drawing no.					
43						
44						
45						
Ex-motors						
46						
47						
48						
Option Variant Codes / Definition						
49	011 = Fulfilling CSA and NRCAN					
50	332 = Baldor Catalog number stamped on rating plate					
51	509 = Fulfilling EISA Subtype I efficiency requirements, CC031A					
52						
Remarks:						
Data based on situation 9/8/2015						
All data subject to tolerances in accordance with IEC						
Guaranteed values on request						



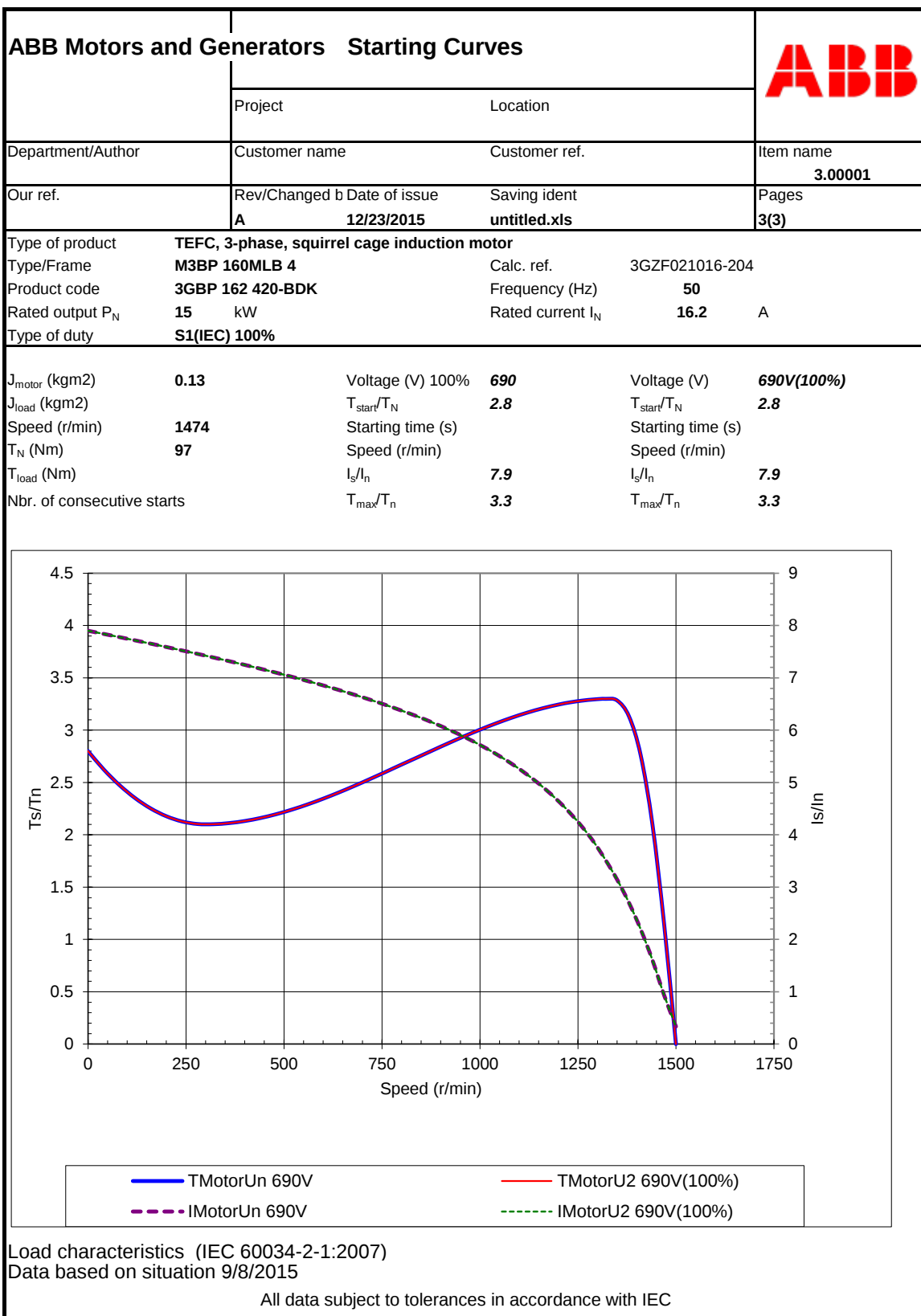


ABB Motors and Generators		Technical Data Sheet - DOL				
Project		Location				
Department/Author	Customer name	Customer ref.			Item name	
Our ref.	Rev/Changed by	Date of issue	Saving ident	Pages		
	A	12/23/2015	untitled.xls	1(3)		
No.	Definition	Data	Unit	Remarks		
1	Product	TEFC, 3-phase, squirrel cage induction motor				
2	Product code	EMVM16154D-PPN (3GBP162420-BDK+011+332+509)				
3	Type/Frame	M3BP 160MLB 4				
4	Mounting	IM3001, B5(flange)				
5	Rated output P _N	15	kW			
6	Service factor	1				
7	Type of duty	S1(IEC) 100%				
8	Rated voltage U _N	460	VD	± 5 % (IEC 60034-1)		
9	Rated frequency f _N	60	Hz	± 2 % (IEC 60034-1)		
10	Rated speed n _N	1778	r/min			
11	Rated current I _N	24.4	A			
12	No-load current	8.9	A			
13	Starting current I _s /I _N	8.9		Fulfilled IEC 60034-12 design N,H		
14	Nominal torque T _N	81	Nm			
15	Locked rotor torque T _s /T _N	3				
16	Maximum torque T _{max} /T _N	3.7				
17	Minimum torque T _{min} /T _N	2.3				
18	Speed at minimum torque	360	r/min			
19	Load characteristics (IEEE 112 B: 2004)	Load %	Current A	Efficiency %	Power factor	
20	NEMA nominal efficiency (*)	100	24.4	93.0 / IE3 / 91.0	0.83	
21		75	19.4	93.3	0.78	
22		50	14.7	92.5	0.69	
23		Start	217		0.44	
24	Maximum starting time from hot	15	s			
25	Maximum starting time from cold	27	s			
26	Insulation class / Temperature class	F / B				
27	Ambient temperature	40	°C			
28	Altitude	1000	m.a.s.l.			
29	Enclosure	IP55				
30	Cooling system	IC411 self ventilated				
31	Bearing DE/NDE	6309/C3 - 6209/C3				
32	Type of Grease					
33	Sound pressure level (LP dB(A) 1m)	70	dB(A)	at load		
34	Moment of inertia J = ¼ GD2	0.125	kg-m2			
35	Balancing					
36	Vibration class					
37	Position of terminal box	Top				
38	Terminal box entries; no, dimens.					
39	Number of power terminals					
40	Direction of rotation	CW or CCW				
41	Weight of rotor	45	kg			
42	Total weight of motor	181	kg			
43	Dimension drawing no.					
44						
45						
46	Ex-motors					
47						
48						
Option Variant Codes / Definition						
49	011 = Fulfilling CSA and NRCAN					
50	332 = Baldor Catalog number stamped on rating plate					
51	509 = Fulfilling EISA Subtype I efficiency requirements, CC031A					
52						
Remarks:						
Data based on situation 9/8/2015						
All data subject to tolerances in accordance with IEC						
Guaranteed values on request						

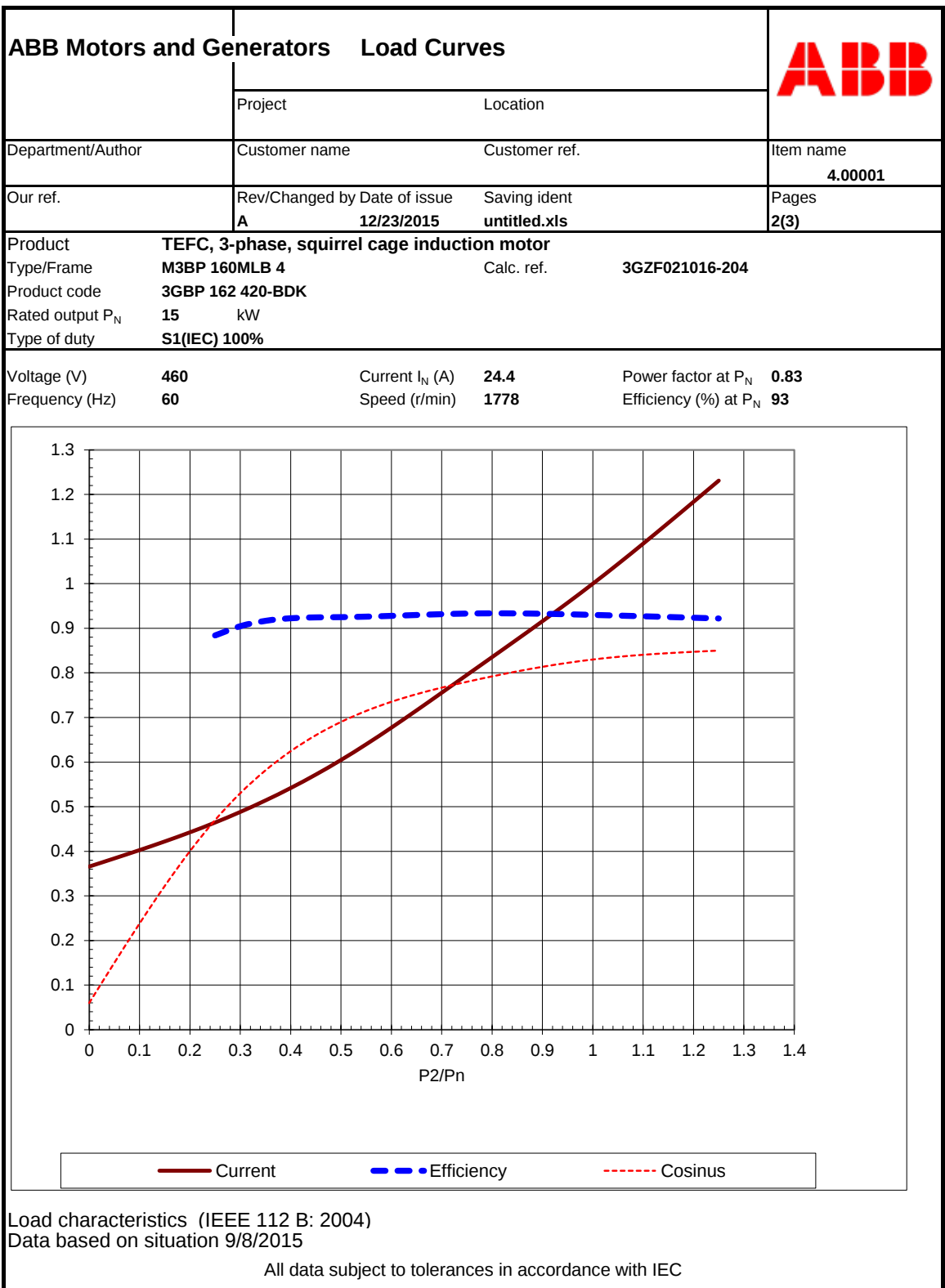
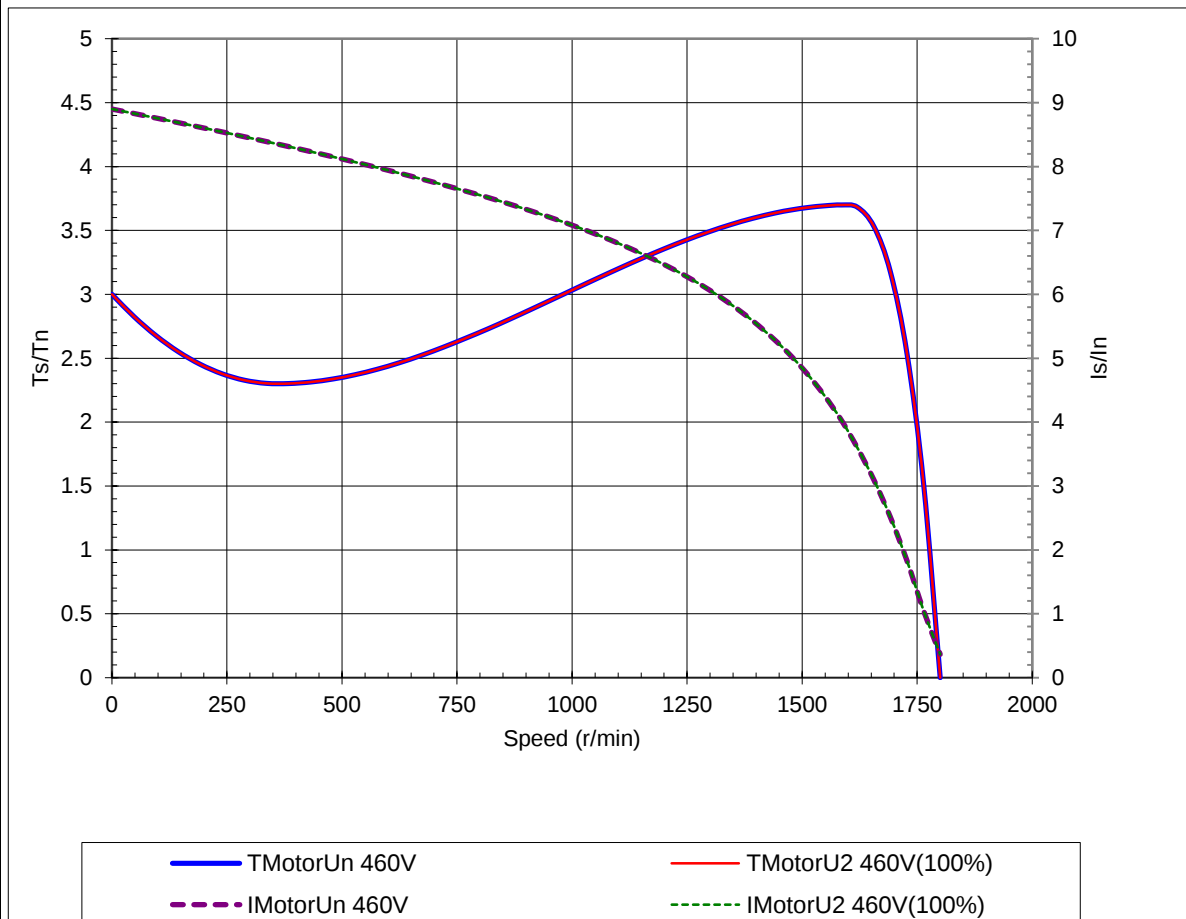


ABB Motors and Generators Starting Curves



	Project	Location	
Department/Author	Customer name	Customer ref.	Item name
			4.00001
Our ref.	Rev/Changed b Date of issue	Saving ident	Pages
	A 12/23/2015	untitled.xls	3(3)
Type of product	TEFC, 3-phase, squirrel cage induction motor		
Type/Frame	M3BP 160MLB 4	Calc. ref.	3GZF021016-204
Product code	3GBP 162 420-BDK	Frequency (Hz)	60
Rated output P_N	15 kW	Rated current I_N	24.4 A
Type of duty	S1(IEC) 100%		

J_{motor} (kgm ²)	0.13	Voltage (V) 100%	460	Voltage (V)	460V(100%)
J_{load} (kgm ²)		T_{start}/T_N	3	T_{start}/T_N	3
Speed (r/min)	1778	Starting time (s)		Starting time (s)	
T_N (Nm)	81	Speed (r/min)		Speed (r/min)	
T_{load} (Nm)		I_s/I_N	8.9	I_s/I_N	8.9
Nbr. of consecutive starts		T_{max}/T_N	3.7	T_{max}/T_N	3.7



Load characteristics (IEEE 112 B: 2004)
Data based on situation 9/8/2015

All data subject to tolerances in accordance with IEC