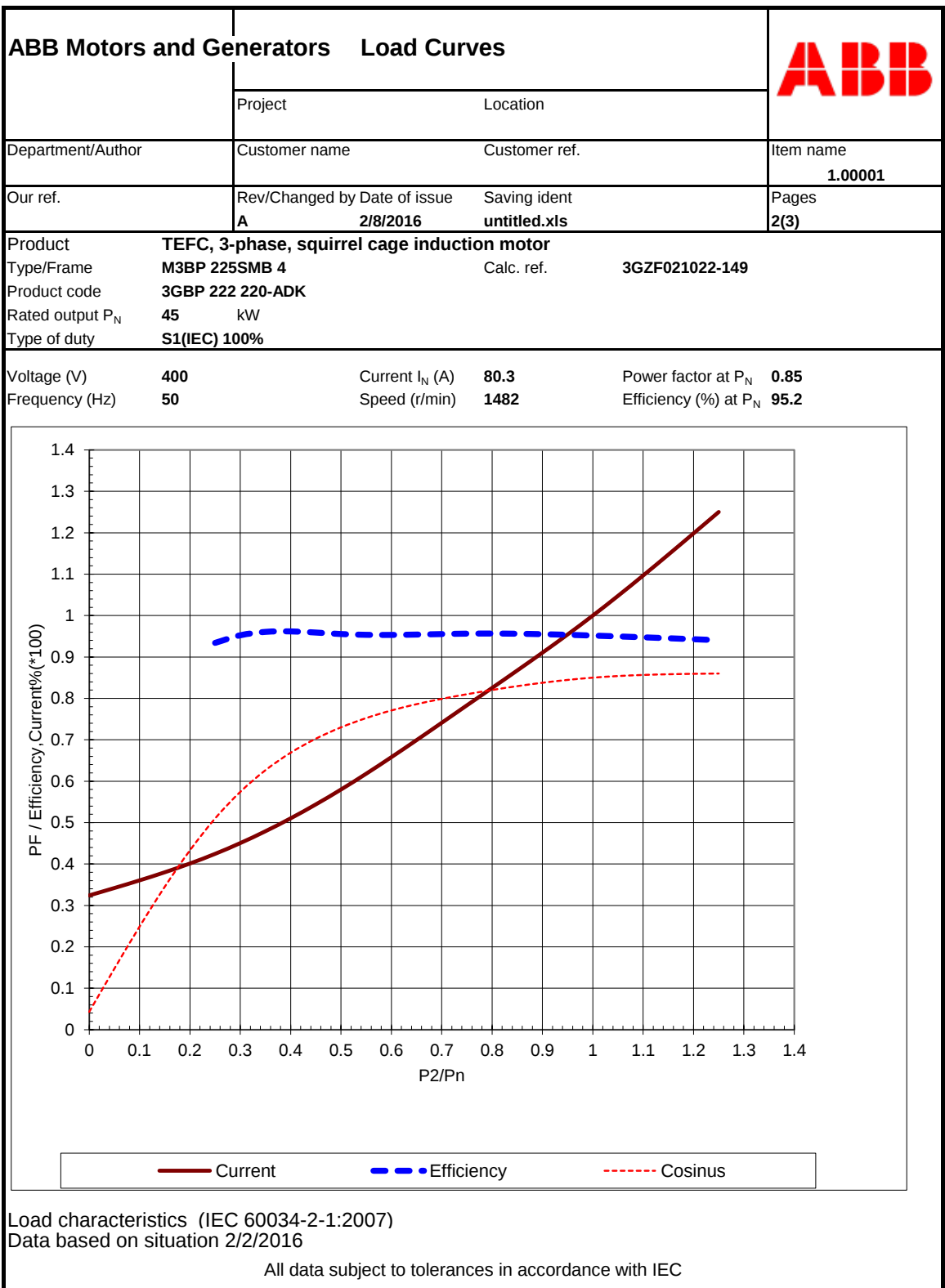


ABB Motors and Generators		Technical Data Sheet - DOL			
Project		Location			
Department/Author		Customer name		Customer ref.	Item name 1.00001
Our ref.		Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks	
1	Product	TEFC, 3-phase, squirrel cage induction motor			Calc. ref. 3GZF021022-149
2	Product code	EMM22454-PPN (3GBP222220-ADK+011+332+509)			
3	Type/Frame	M3BP 225SMB 4			
4	Mounting	IM1001, B3(foot)			
5	Rated output P _N	45	kW		
6	Service factor	1			
7	Type of duty	S1(IEC) 100%			
8	Rated voltage U _N	400	VD		± 5 % (IEC 60034-1)
9	Rated frequency f _N	50	Hz		± 2 % (IEC 60034-1)
10	Rated speed n _N	1482	r/min		
11	Rated current I _N	80.3	A		
12	No-load current	26	A		
13	Starting current I _s /I _N	7.9			Fullfilled IEC 60034-12 design N,H
14	Nominal torque T _N	290	Nm		
15	Locked rotor torque T _s /T _N	2.8			
16	Maximum torque T _{max} /T _N	3.2			
17	Minimum torque T _{min} /T _N	2.4			
18	Speed at minimum torque	975	r/min		
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	100	80.3	95.2 / IE3	0.85
20		75	62.9	95.6	0.81
21		50	46.6	95.5	0.73
22		Start	634		0.41
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	6313/C3 - 6212/C3			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	66	dB(A)		at load
33	Moment of inertia J = ¼ GD2	0.536	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	100	kg		
41	Total weight of motor	377	kg		
42	Dimension drawing no.				
43					
44					
45					
Ex-motors					
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Option Variant Codes / Definition					
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Remarks:					
Data based on situation 2/2/2016					
All data subject to tolerances in accordance with IEC					
Guaranteed values on request					



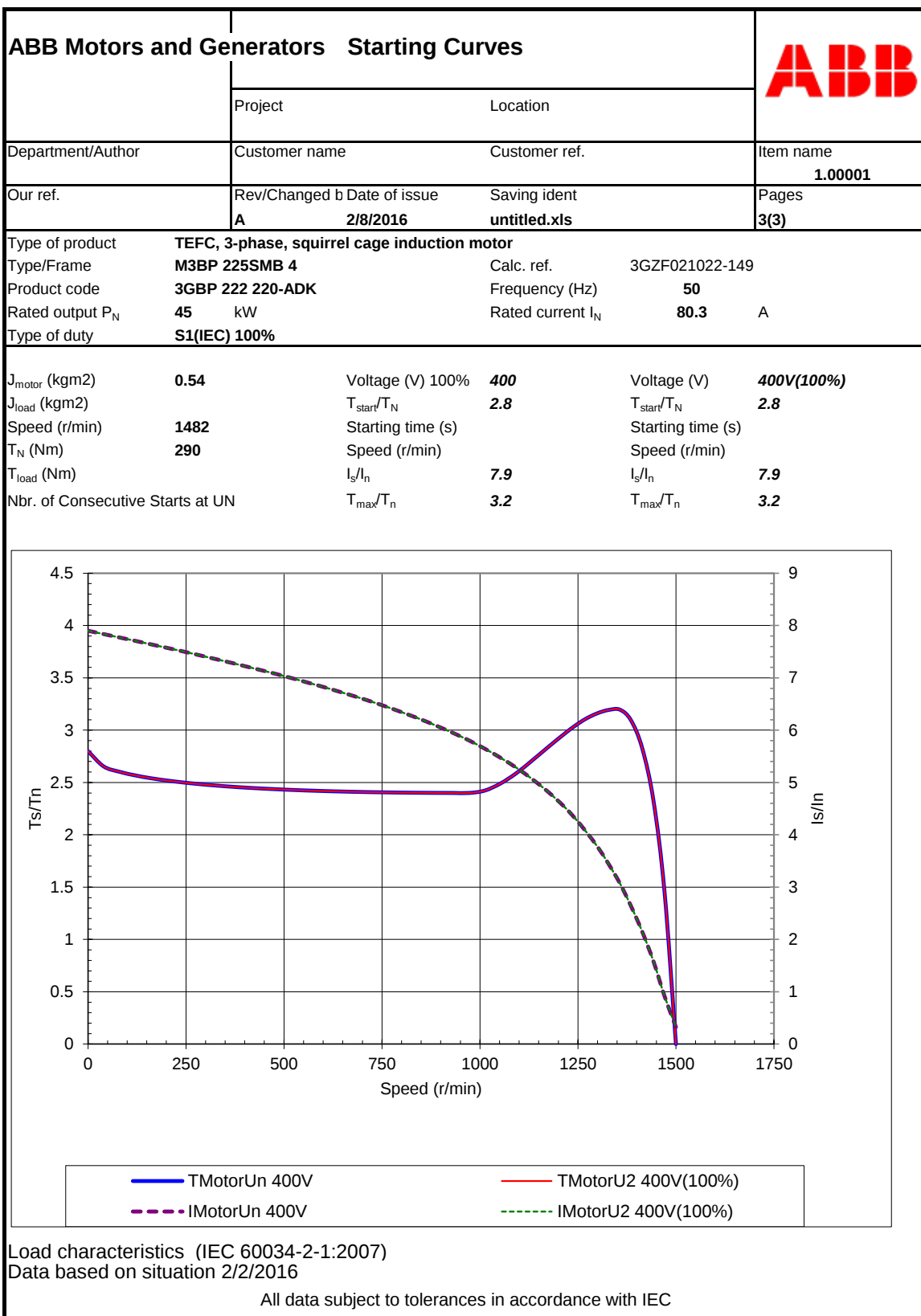
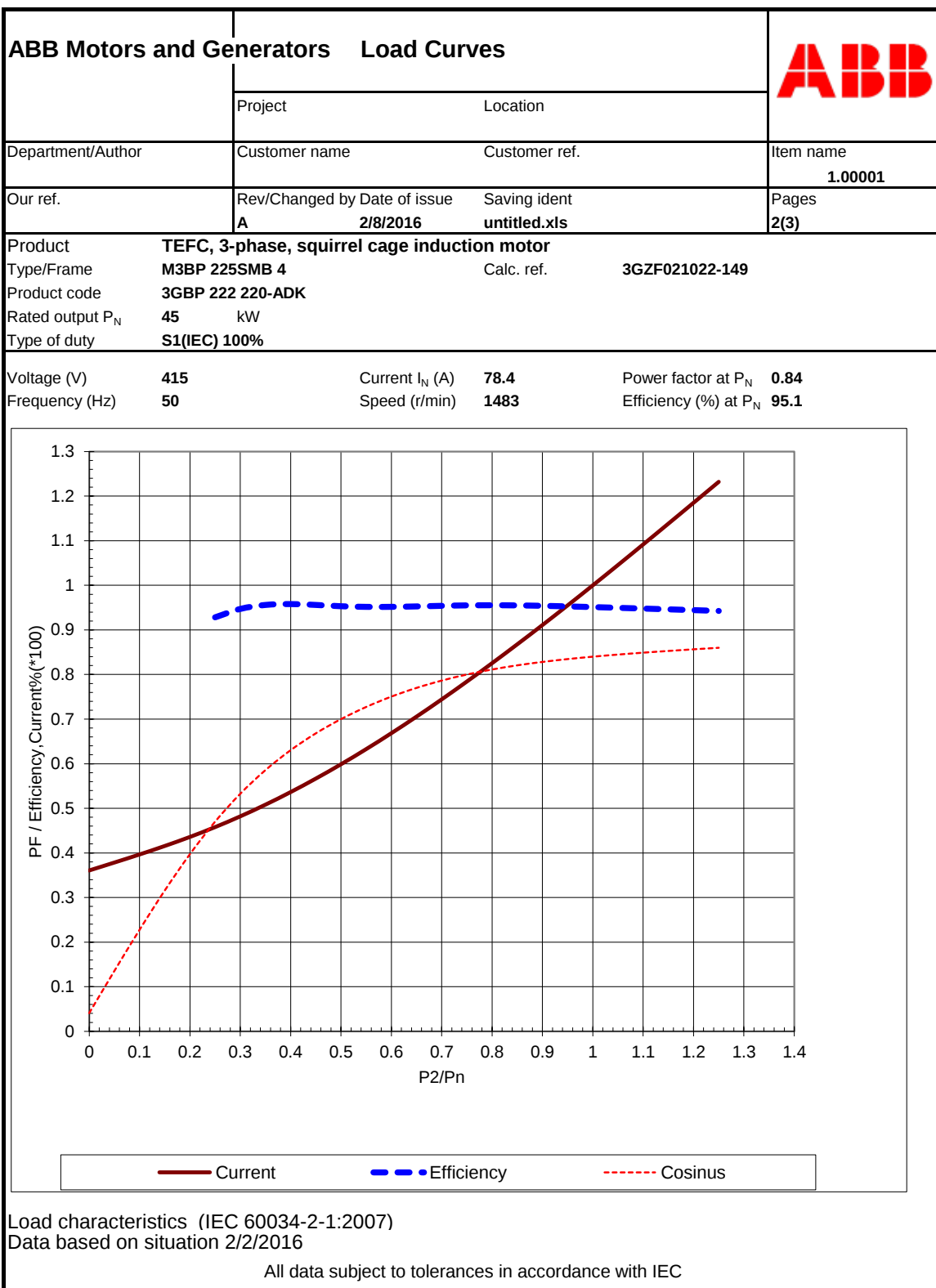


ABB Motors and Generators		Technical Data Sheet - DOL			
Project		Location			
Department/Author	Customer name	Customer ref.			Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls		Pages 1(3)
No.	Definition	Data	Unit	Remarks	
1	Product	TEFC, 3-phase, squirrel cage induction motor			
2	Product code	EMM22454-PPN (3GBP222220-ADK+011+332+509)			
3	Type/Frame	M3BP 225SMB 4			
4	Mounting	IM1001, B3(foot)			
5	Rated output P _N	45	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	1483	r/min		
11	Rated current I _N	78.4	A		
12	No-load current	28	A		
13	Starting current I _s /I _N	8.5		Fullfilled IEC 60034-12 design N,H	
14	Nominal torque T _N	290	Nm		
15	Locked rotor torque T _s /T _N	3.1			
16	Maximum torque T _{max} /T _N	3.4			
17	Minimum torque T _{min} /T _N	2.4			
18	Speed at minimum torque	975	r/min		
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	100	78.4	95.1 / IE3	0.84
20		75	61.5	95.5	0.8
21		50	46.9	95.3	0.7
22		Start	666		0.42
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	6313/C3 - 6212/C3			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	66	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	0.536	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	100	kg		
41	Total weight of motor	377	kg		
42	Dimension drawing no.				
43					
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45					
Ex-motors					
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Option Variant Codes / Definition					
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Remarks:					
Data based on situation 2/2/2016					
All data subject to tolerances in accordance with IEC					
Guaranteed values on request					



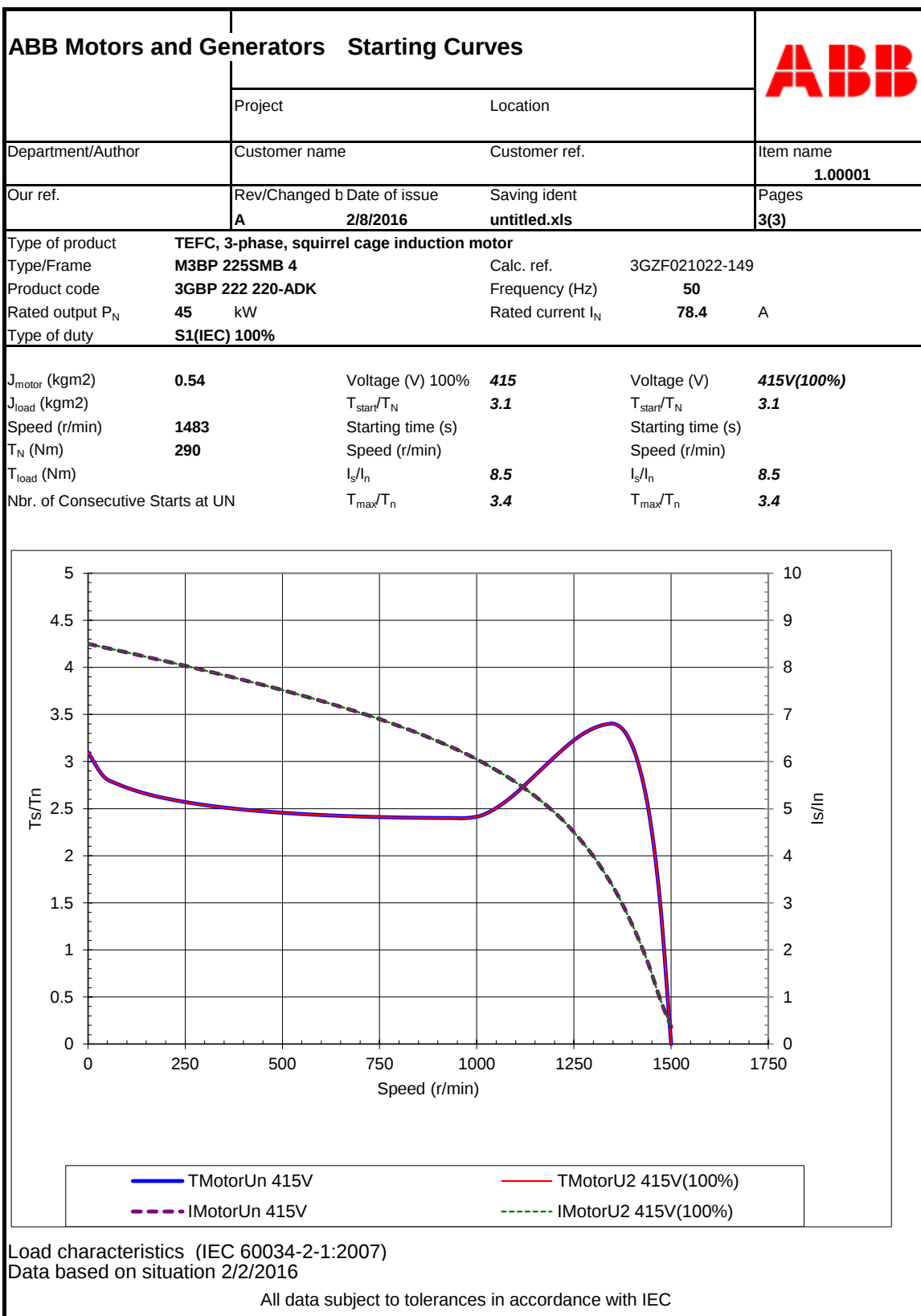
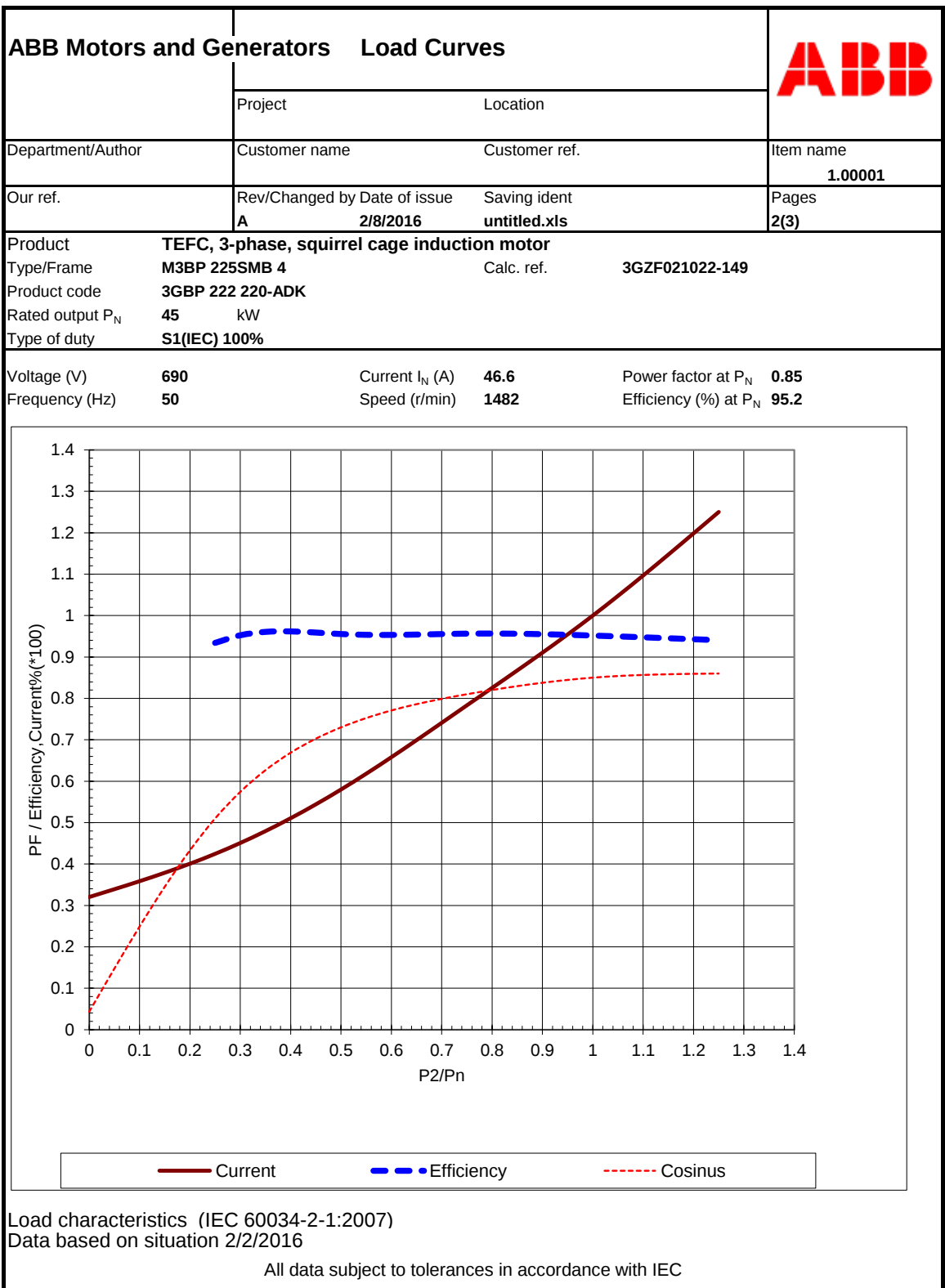


ABB Motors and Generators		Technical Data Sheet - DOL			
Project		Location			
Department/Author	Customer name	Customer ref.			Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls		Pages 1(3)
No.	Definition	Data	Unit	Remarks	
1	Product	TEFC, 3-phase, squirrel cage induction motor			
2	Product code	EMM22454-PPN (3GBP222220-ADK+011+332+509)			Calc. ref. 3GZF021022-149
3	Type/Frame	M3BP 225SMB 4			
4	Mounting	IM1001, B3(foot)			
5	Rated output P _N	45	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	1482	r/min		
11	Rated current I _N	46.6	A		
12	No-load current	14.9	A		
13	Starting current I _s /I _N	7.9			Fullfilled IEC 60034-12 design N,H
14	Nominal torque T _N	290	Nm		
15	Locked rotor torque T _s /T _N	2.8			
16	Maximum torque T _{max} /T _N	3.2			
17	Minimum torque T _{min} /T _N	2.4			
18	Speed at minimum torque	975	r/min		
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	100	46.6	95.2 / IE3	0.85
20		75	36.5	95.6	0.81
21		50	27	95.5	0.73
22		Start	368		0.41
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	6313/C3 - 6212/C3			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	66	dB(A)		at load
33	Moment of inertia J = ¼ GD2	0.536	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	100	kg		
41	Total weight of motor	377	kg		
42	Dimension drawing no.				
43					
44					
45					
Ex-motors					
46					
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Option Variant Codes / Definition					
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Remarks:					
Data based on situation 2/2/2016					
All data subject to tolerances in accordance with IEC					
Guaranteed values on request					



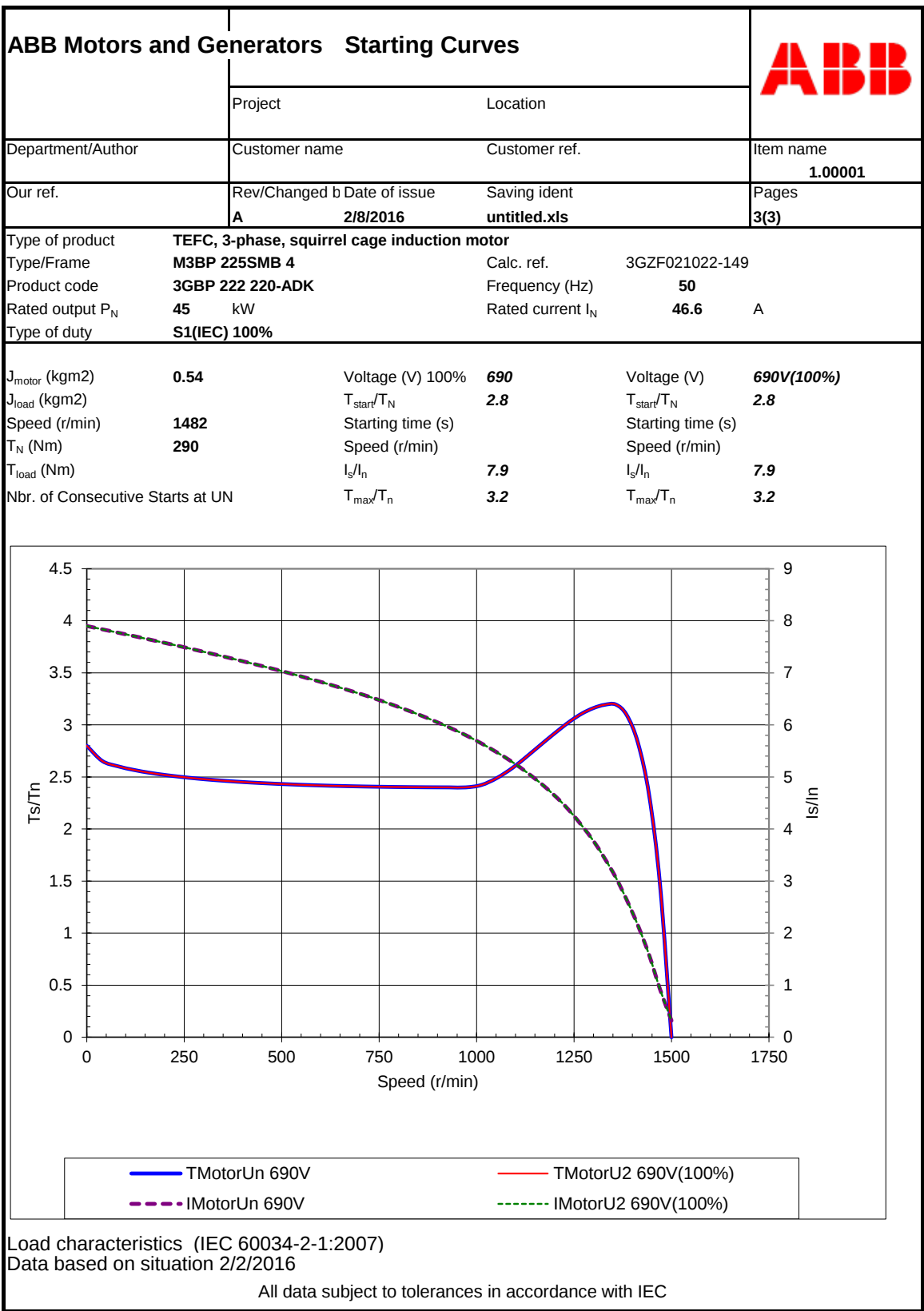


ABB Motors and Generators		Technical Data Sheet - DOL			
Project		Location			
Department/Author	Customer name	Customer ref.			Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls		Pages 1(3)
No.	Definition	Data	Unit	Remarks	
1	Product	TEFC, 3-phase, squirrel cage induction motor			
2	Product code	EMM22454-PPN (3GBP222220-ADK+011+332+509)			
3	Type/Frame	M3BP 225SMB 4			
4	Mounting	IM1001, B3(foot)			
5	Rated output P _N	45	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	1785	r/min		
11	Rated current I _N	70.6	A		
12	No-load current	24	A		
13	Starting current I _s /I _N	8.9		Not within IEC 60034-12 design N,H	
14	Nominal torque T _N	241	Nm		
15	Locked rotor torque T _s /T _N	3			
16	Maximum torque T _{max} /T _N	3.6			
17	Minimum torque T _{min} /T _N	2.5			
18	Speed at minimum torque	1170	r/min		
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %	Power factor
19	PLL determined from residual loss	100	70.6	95.3 / IE3	0.84
20		75	55.5	95.4	0.8
21		50	42	94.8	0.71
22		Start	628		0.38
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	6313/C3 - 6212/C3			
31	Type of Grease				
32	Sound pressure level (LP dB(A) 1m)	74	dB(A)	at load	
33	Moment of inertia J = ¼ GD2	0.536	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	100	kg		
41	Total weight of motor	377	kg		
42	Dimension drawing no.				
43					
44					
45					
Ex-motors					
46					
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48					
Option Variant Codes / Definition					
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Remarks:					
Data based on situation 2/2/2016					
All data subject to tolerances in accordance with IEC					
Guaranteed values on request					

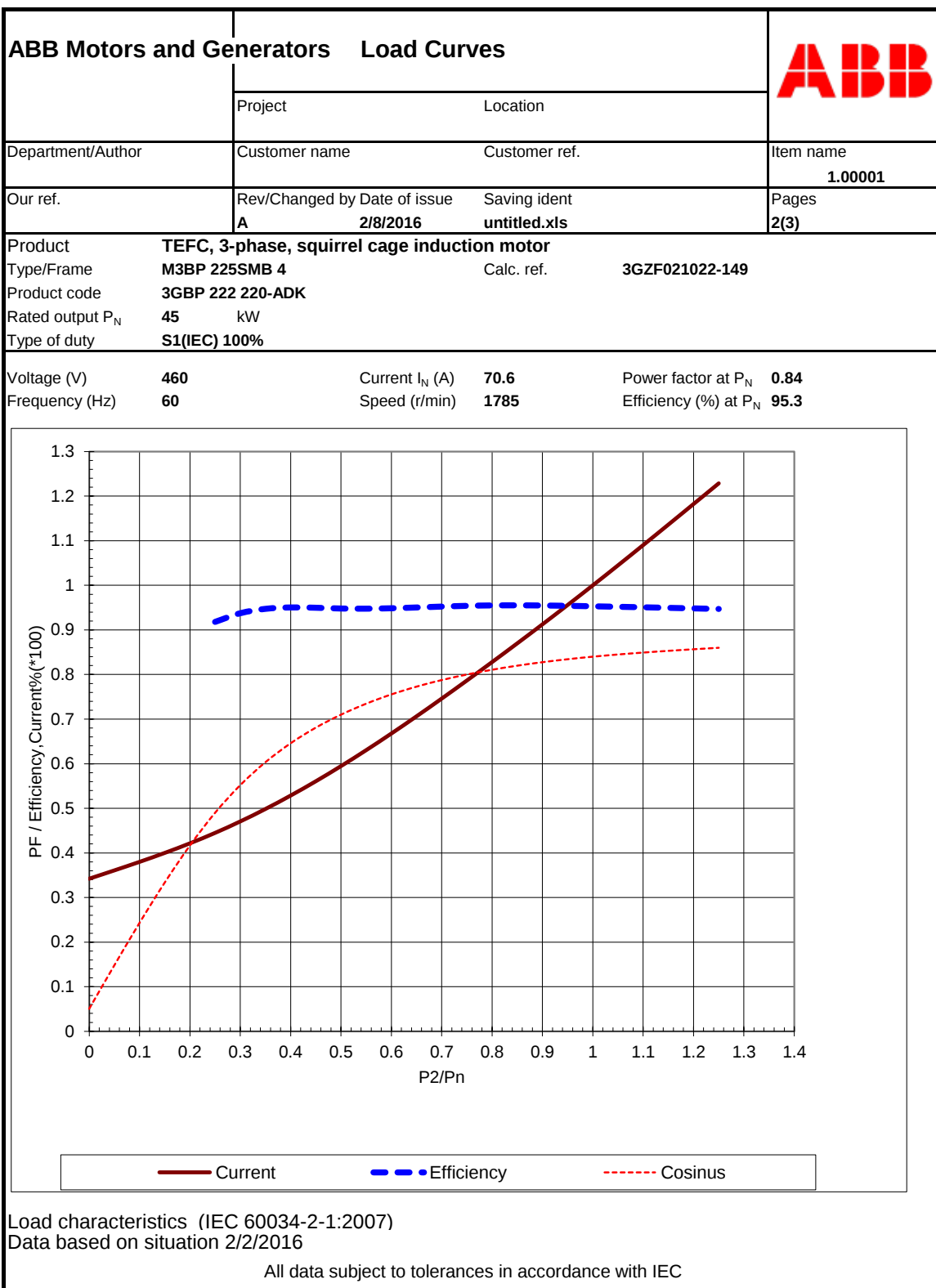


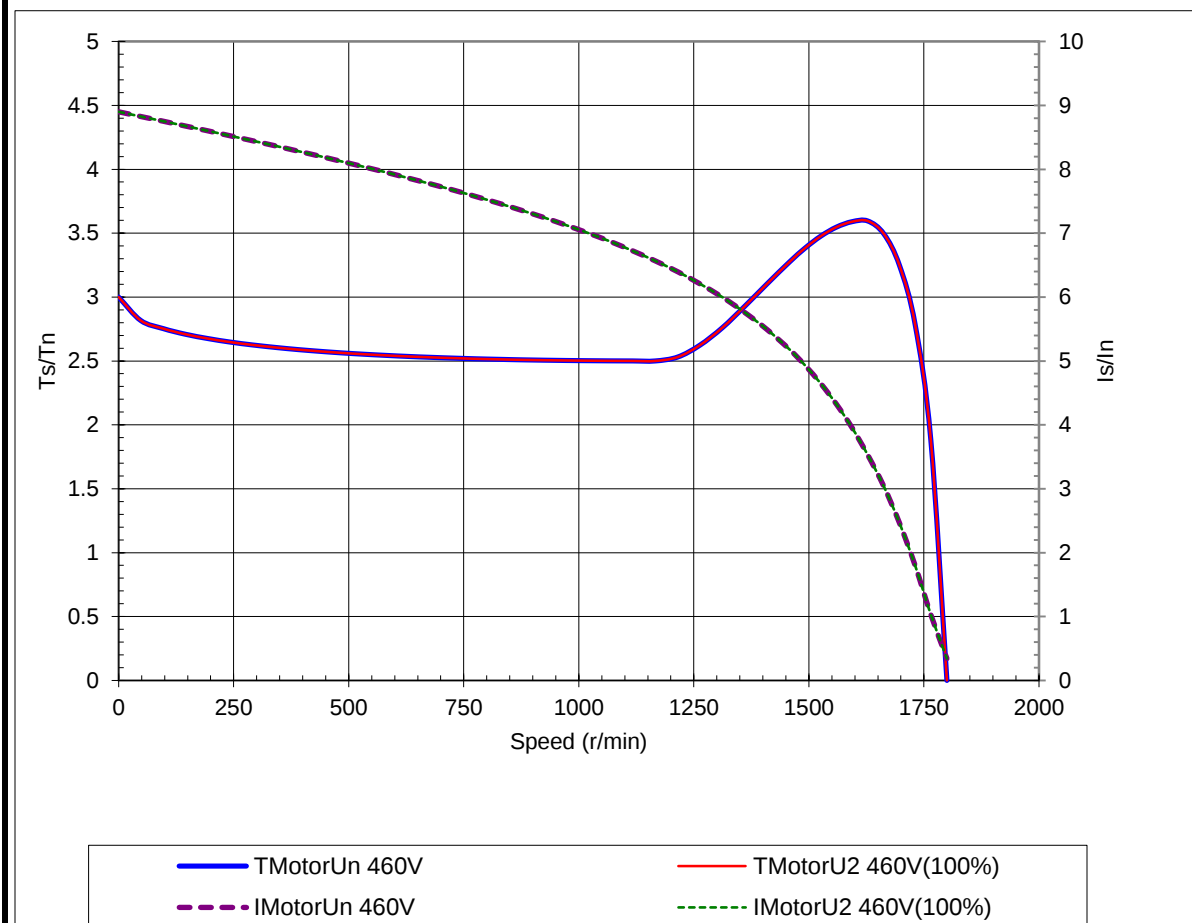
ABB Motors and Generators Starting Curves



	Project	Location	
Department/Author	Customer name	Customer ref.	Item name
			1.00001
Our ref.	Rev/Changed b Date of issue	Saving ident	Pages
	A 2/8/2016	untitled.xls	3(3)

Type of product	TEFC, 3-phase, squirrel cage induction motor		
Type/Frame	M3BP 225SMB 4	Calc. ref.	3GZF021022-149
Product code	3GBP 222 220-ADK	Frequency (Hz)	60
Rated output P_N	45 kW	Rated current I_N	70.6 A
Type of duty	S1(IEC) 100%		

J_{motor} (kgm ²)	0.54	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)	1785	Starting time (s)		Starting time (s)	
T_N (Nm)	241	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 at UN		T_{max}/T_n	3.6	T_{max}/T_n	3.6



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 2/2/2016

All data subject to tolerances in accordance with IEC