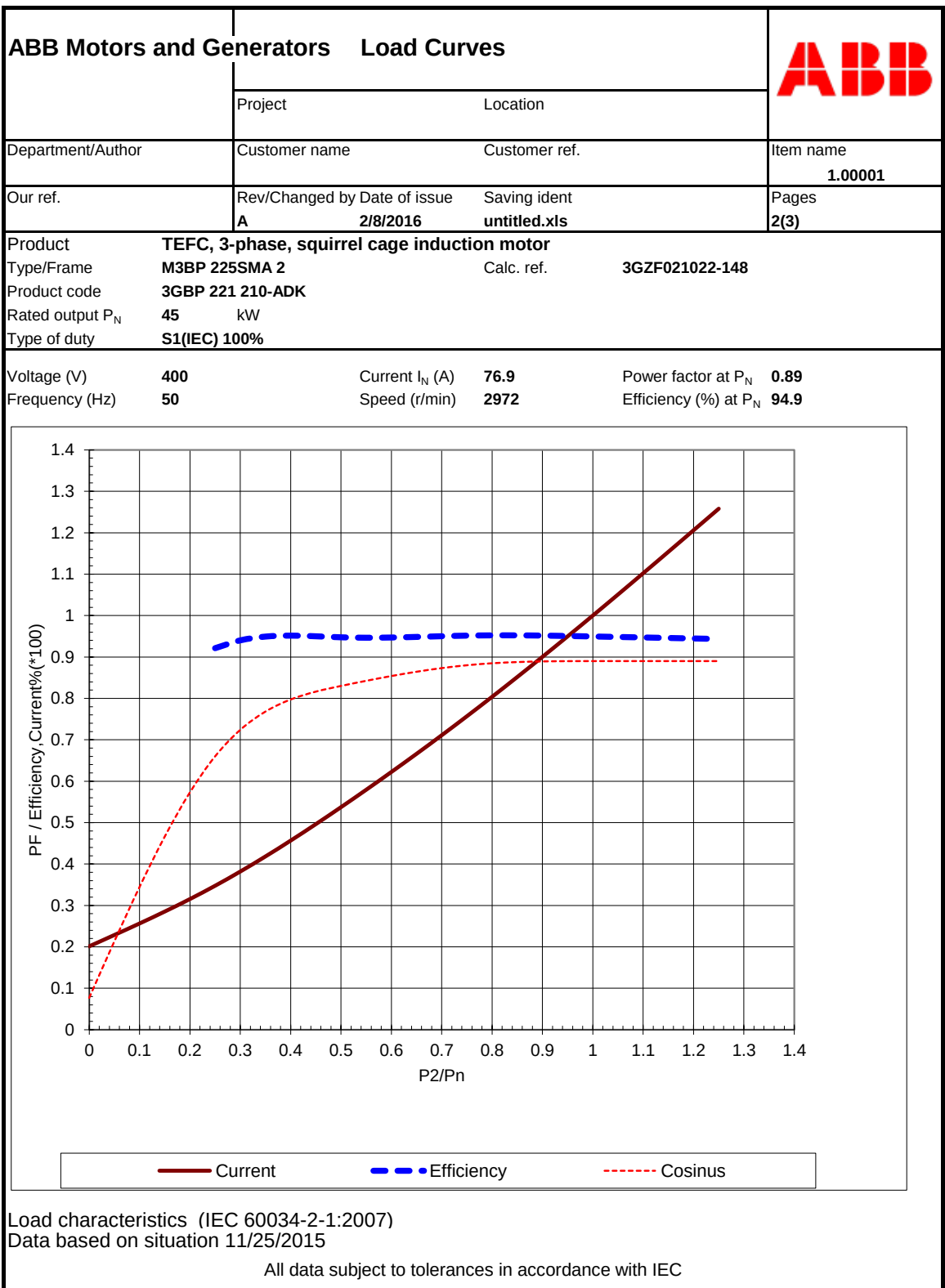


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author		Customer name		Customer ref.
Our ref.		Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls
				Item name 1.00001
				Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM22452-PPN (3G8BP221210-A)		
3	Type/Frame	M3BP 225SMA 2		Calc. ref. 3GZF021022-148
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	2972	r/min	
11	Rated current I _N	76.9	A	
12	No-load current	15.5	A	
13	Starting current I _s /I _N	7.8		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T _N	145	Nm	
15	Locked rotor torque T _s /T _N	3.1		
16	Maximum torque T _{max} /T _N	3		
17	Minimum torque T _{min} /T _N	2.3		
18	Speed at minimum torque	2400	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	76.9	94.9 / IE3
20		75	58.2	95.1
21		50	41.3	94.7
22		Start	600	0.39
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	0.323	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	84	kg	
41	Total weight of motor	387	kg	
42	Dimension drawing no.			
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Ex-motors				
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Option Variant Codes / Definition				
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Remarks:				
Data based on situation 11/25/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



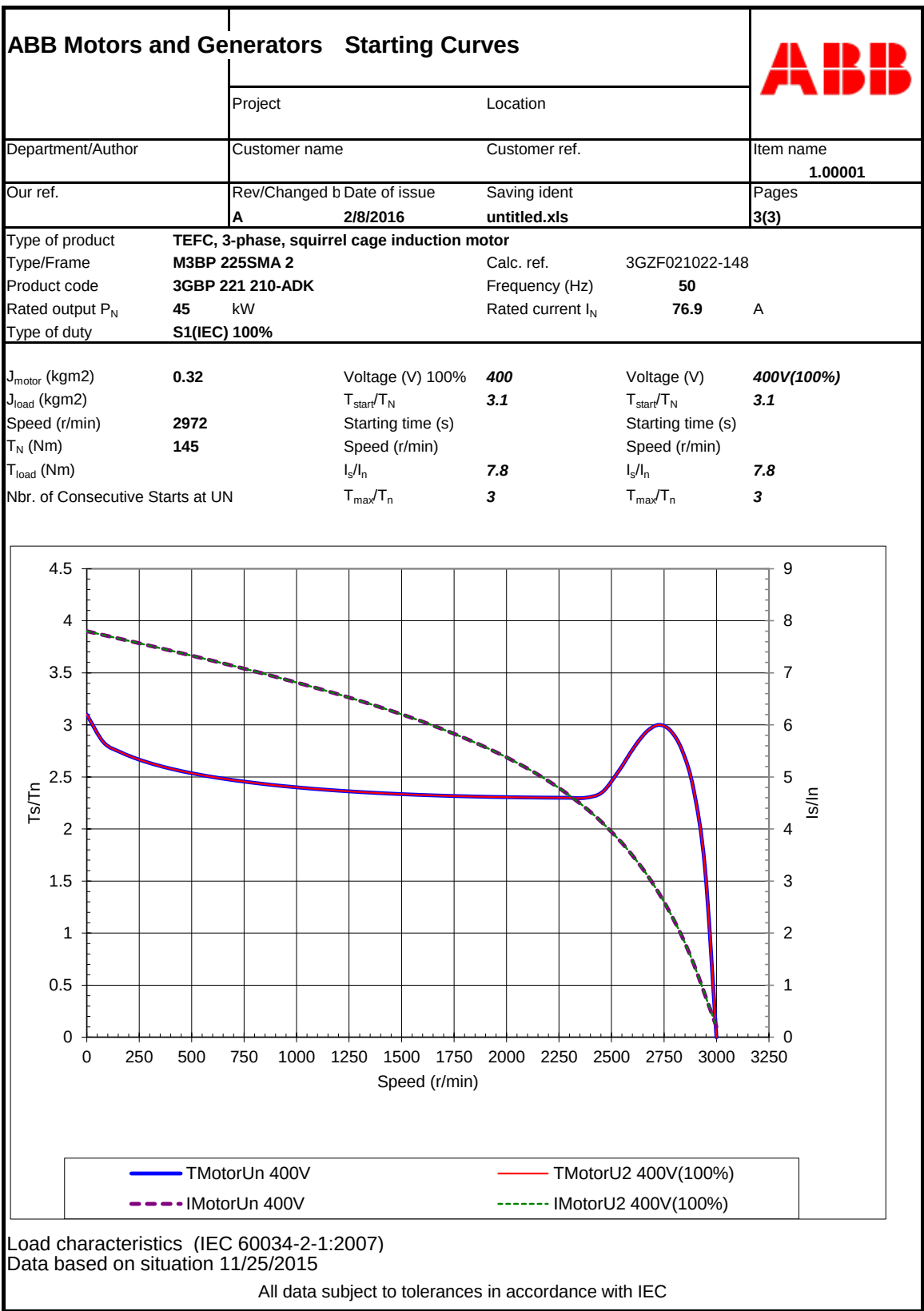
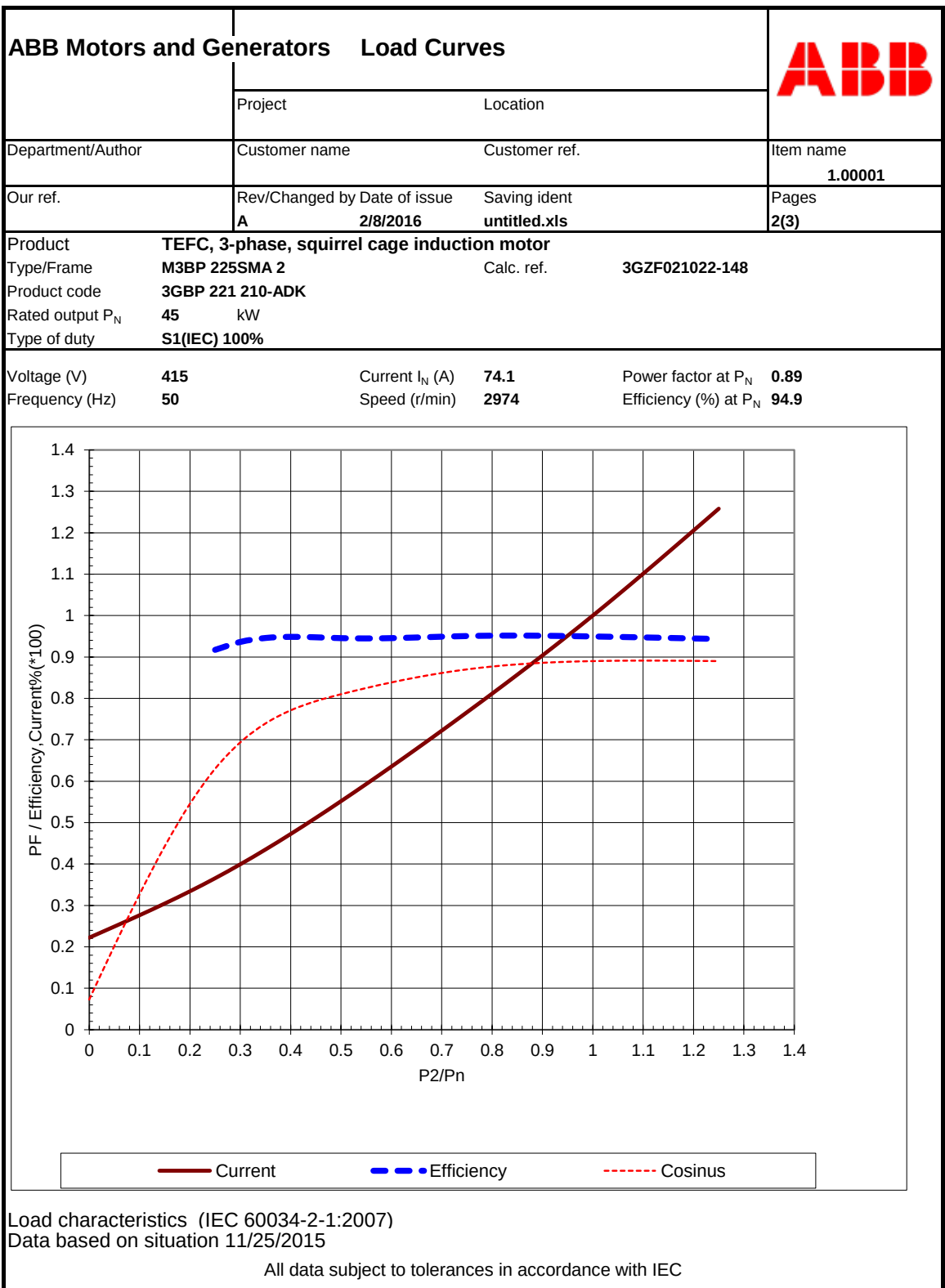


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author		Customer name		Customer ref.
Our ref.		Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls
				Item name 1.00001
				Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM22452-PPN (3G8BP221210-A)		
3	Type/Frame	M3BP 225SMA 2		Calc. ref. 3GZF021022-148
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	2974	r/min	
11	Rated current I _N	74.1	A	
12	No-load current	16.5	A	
13	Starting current I _s /I _N	8.4		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T _N	144	Nm	
15	Locked rotor torque T _s /T _N	3.3		
16	Maximum torque T _{max} /T _N	3.2		
17	Minimum torque T _{min} /T _N	2.3		
18	Speed at minimum torque	2400	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	74.1	94.9 / IE3
20		75	56.8	95
21		50	40.9	94.5
22		Start	622	0.39
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	0.323	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	84	kg	
41	Total weight of motor	387	kg	
42	Dimension drawing no.			
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Ex-motors				
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Option Variant Codes / Definition				
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Remarks:				
Data based on situation 11/25/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



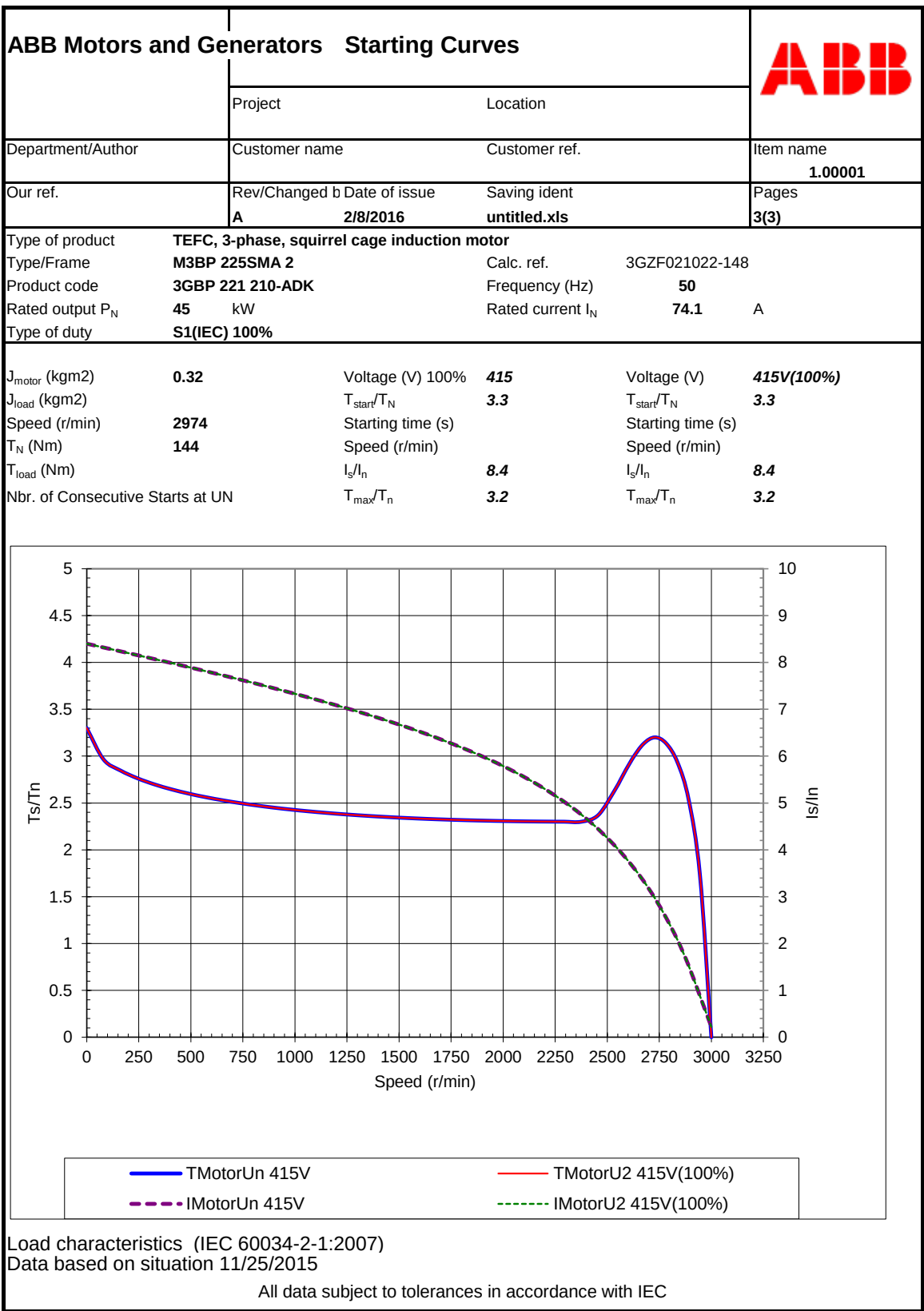
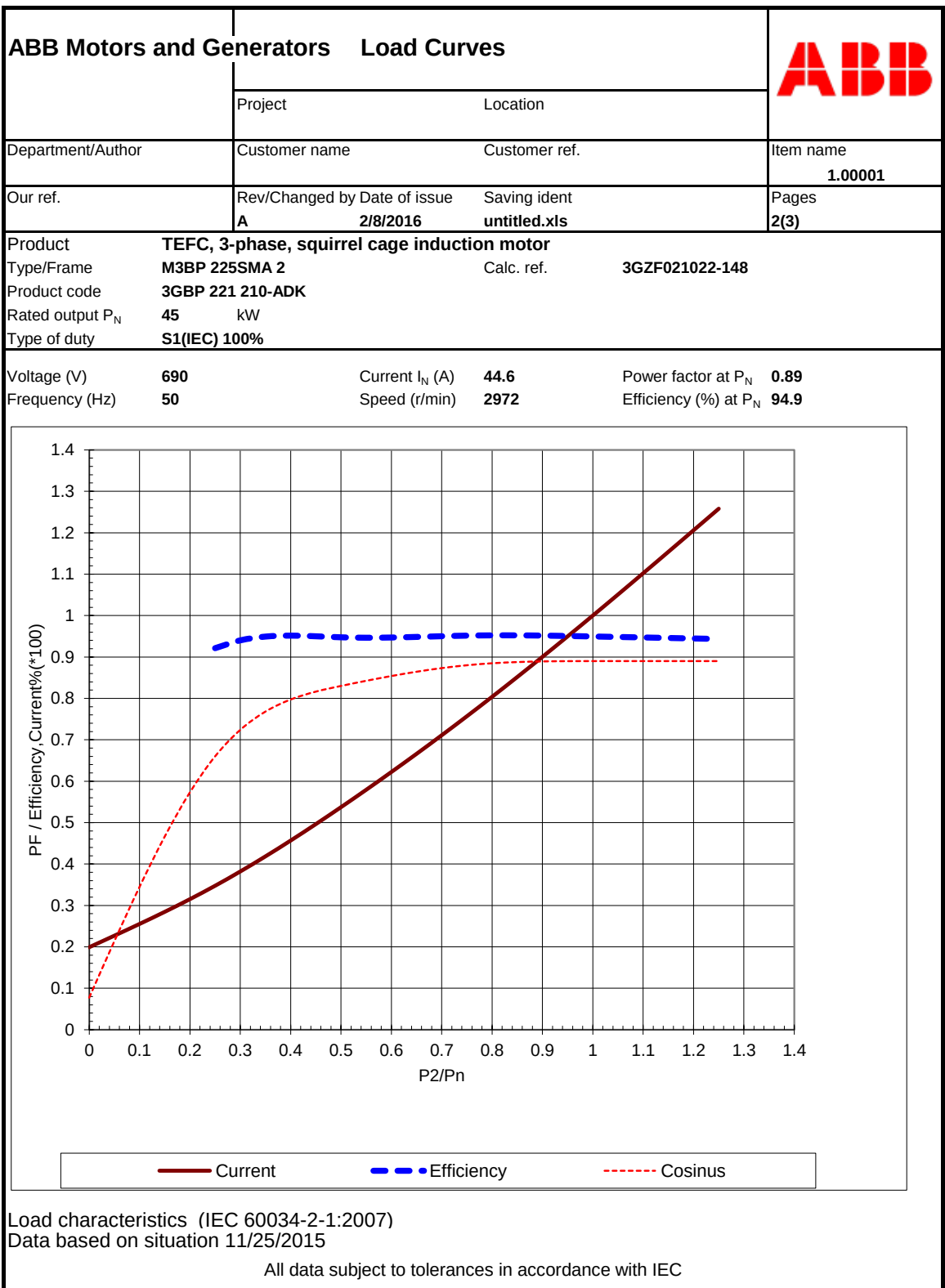


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM22452-PPN (3G8P221210-A) Calc. ref. 3GZF021022-148		
3	Type/Frame	M3BP 225SMA 2		
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	2972	r/min	
11	Rated current I_N	44.6	A	
12	No-load current	8.9	A	
13	Starting current I_s/I_N	7.8		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	145	Nm	
15	Locked rotor torque T_s/T_N	3.1		
16	Maximum torque T_{max}/T_N	3		
17	Minimum torque T_{min}/T_N	2.3		
18	Speed at minimum torque	2400	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	44.6	94.9 / IE3
20		75	33.7	95.1
21		50	23.9	94.7
22		Start	348	0.39
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 $J = \frac{1}{4} GD^2$	0.323	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	84	kg	
41	Total weight of motor	387	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 11/25/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



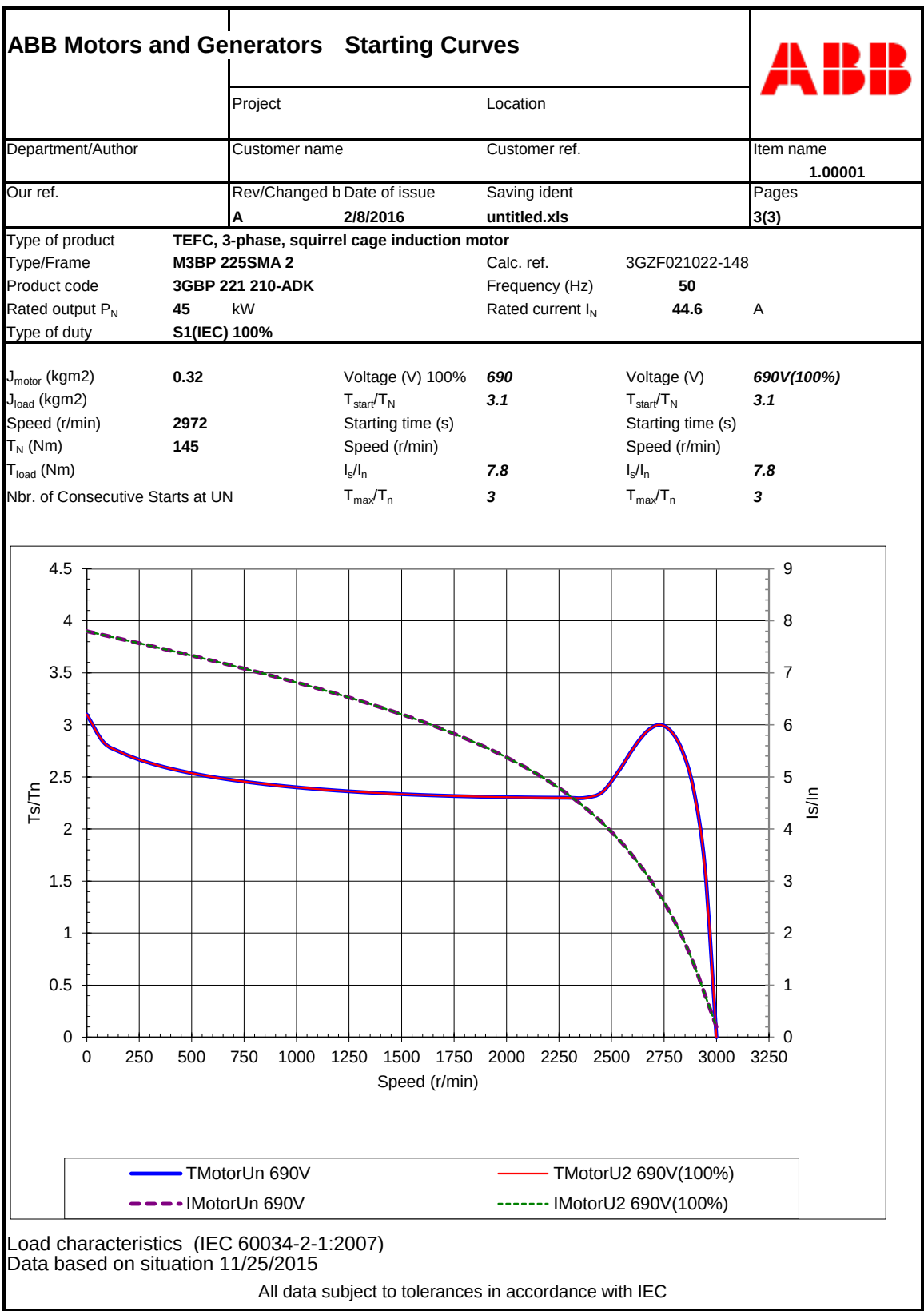


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author		Customer name		Customer ref.
Our ref.		Rev/Changed by A	Date of issue 2/8/2016	Saving ident untitled.xls
				Item name 1.00001
				Pages 1(3)

No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM22452-PPN (3G8P221210-A)		
3	Type/Frame	M3BP 225SMA 2		Calc. ref. 3GZF021022-148
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	3575	r/min	
11	Rated current I_N	67.2	A	
12	No-load current	14.4	A	
13	Starting current I_s/I_N	8.9		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	120	Nm	
15	Locked rotor torque T_s/T_N	3.2		
16	Maximum torque T_{max}/T_N	3.3		
17	Minimum torque T_{min}/T_N	2.4		
18	Speed at minimum torque	2880	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	67.2	94.4 / IE3
20		75	51.7	94.2
21		50	37	93.1
22		Start	598	0.36
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)	82	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.323	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	84	kg	
41	Total weight of motor	387	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 11/25/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				

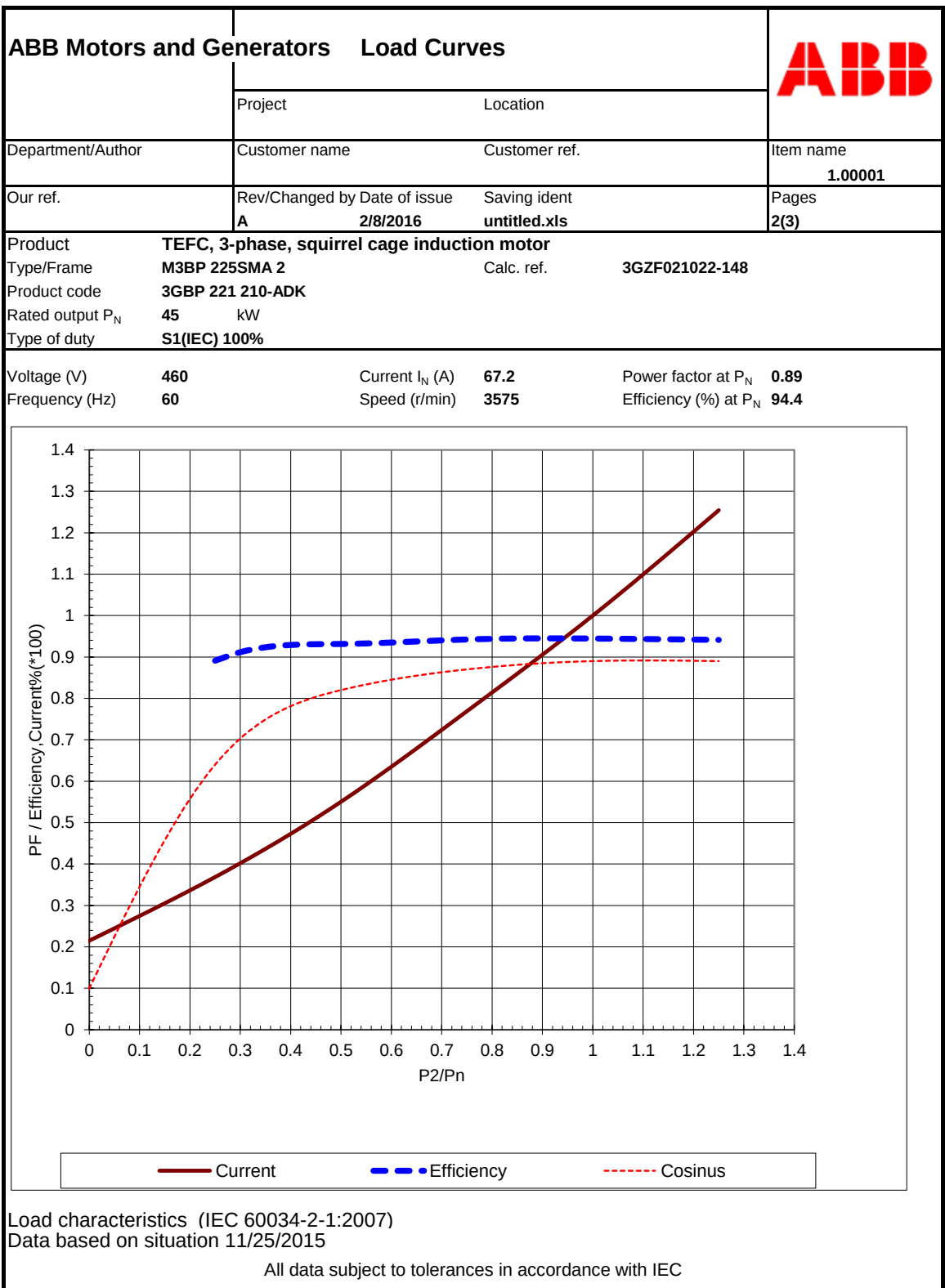


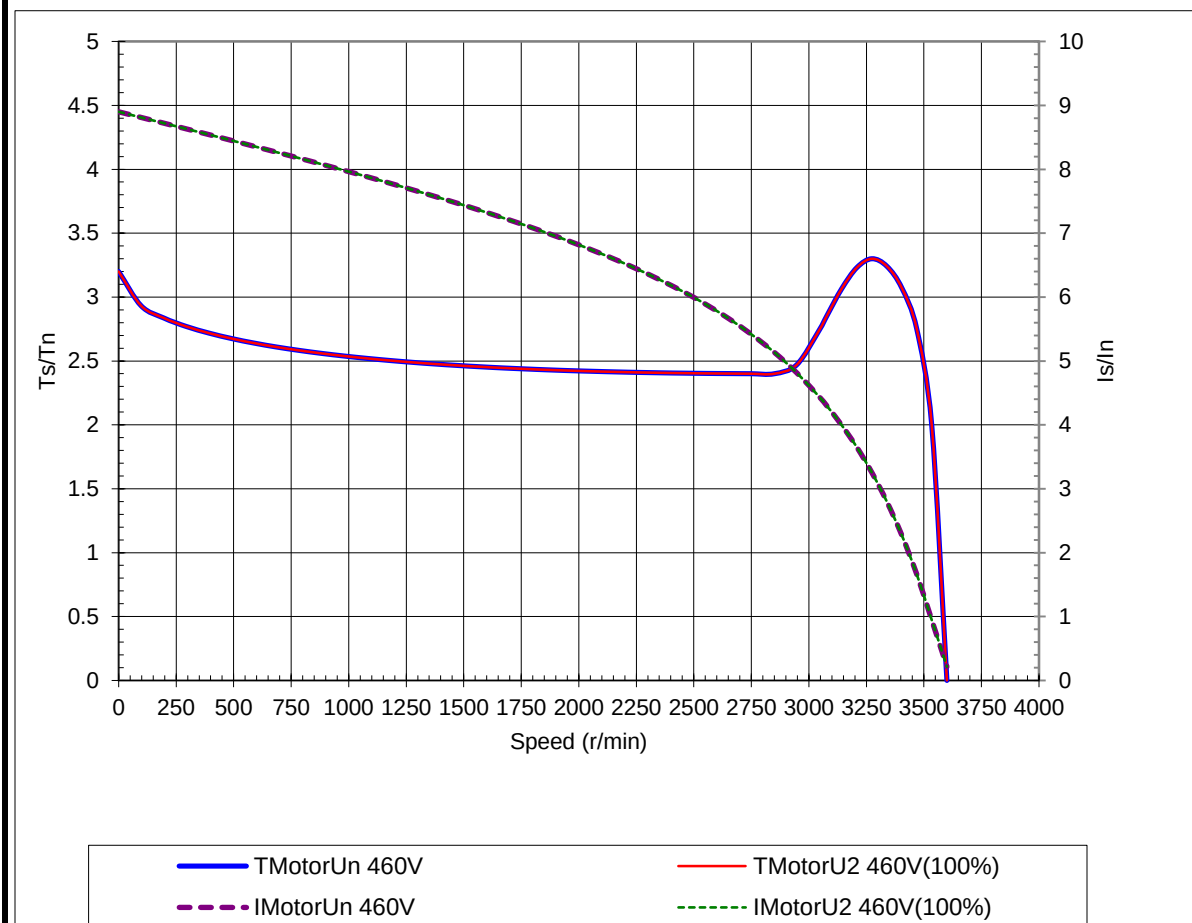
ABB Motors and Generators Starting Curves



	Project	Location	
Department/Author	Customer name	Customer ref.	Item name
			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 225SMA 2	Calc. ref.	3GZF021022-148
Product code	3GBP 221 210-ADK	Frequency (Hz)	60
Rated output P_N	45 kW	Rated current I_N	67.2 A
Type of duty	S1(IEC) 100%		

J_{motor} (kgm ²)	0.32	Voltage (V) 100%	460	Voltage (V)	460V(100%)
J_{load} (kgm ²)		T_{start}/T_N	3.2	T_{start}/T_N	3.2
Speed (r/min)	3575	Starting time (s)		Starting time (s)	
T_N (Nm)	120	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	3.3	T_{max}/T_n	3.3



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 11/25/2015

All data subject to tolerances in accordance with IEC