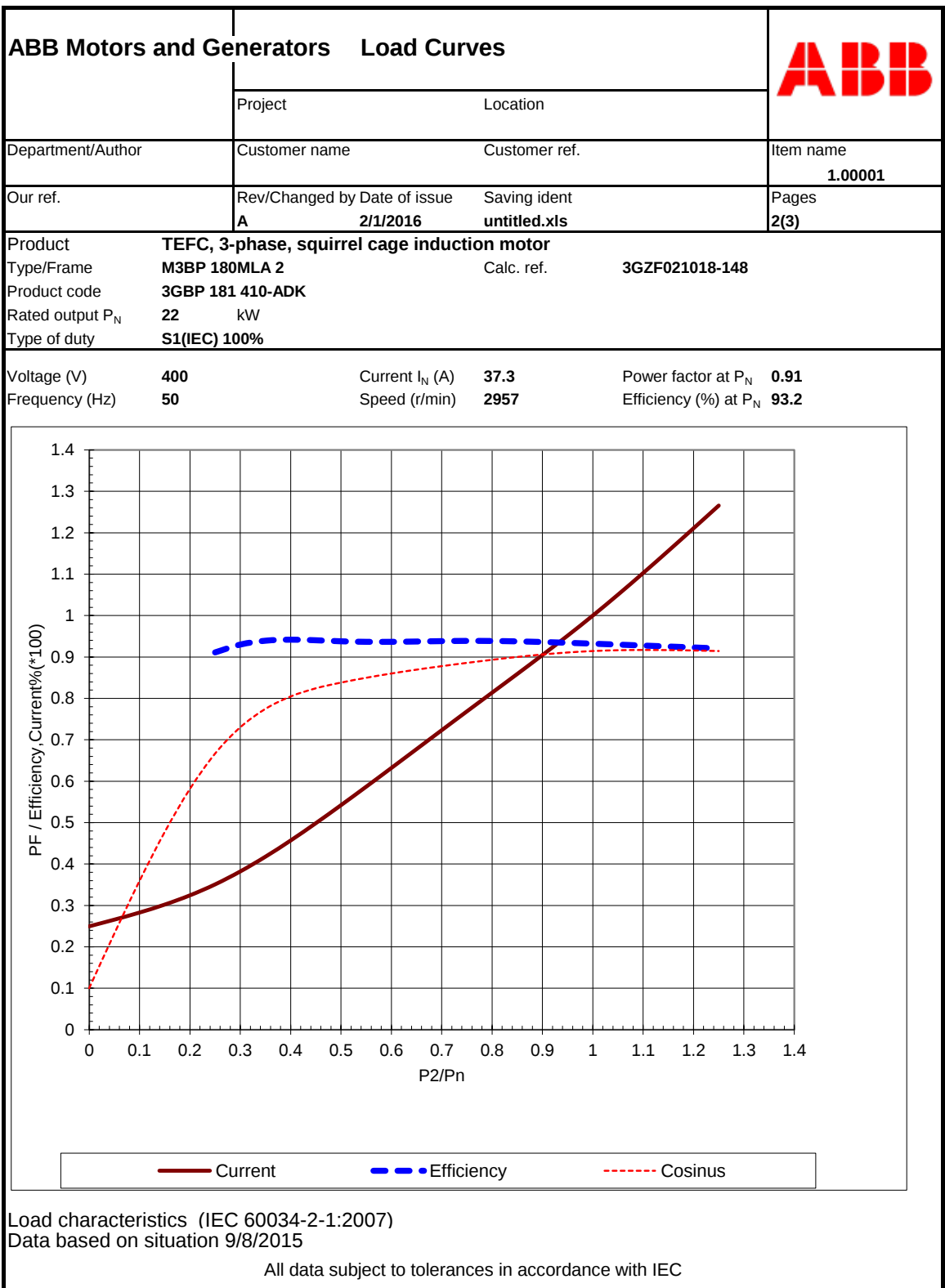


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18222-PPN (3GBP181410-A) Calc. ref. 3GZF021018-148		
3	Type/Frame	M3BP 180MLA 2		
4	Mounting	IM1001, B3(foot)		
5	Rated output P_N	22	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	2957	r/min	
11	Rated current I_N	37.3	A	
12	No-load current	9.3	A	
13	Starting current I_s/I_N	8.1		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	71	Nm	
15	Locked rotor torque T_s/T_N	2.6		
16	Maximum torque T_{max}/T_N	3.2		
17	Minimum torque T_{min}/T_N	2		
18	Speed at minimum torque	1350	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	37.3	93.2 / IE3
20		75	28.6	93.9
21		50	20.2	93.8
22		Start	302	0.45
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	6310/C3 - 6209/C3		
31	Type of Grease			
32	Sound pressure level (LP dB(A) 1m)	69	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.116	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	46	kg	
41	Total weight of motor	230	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 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



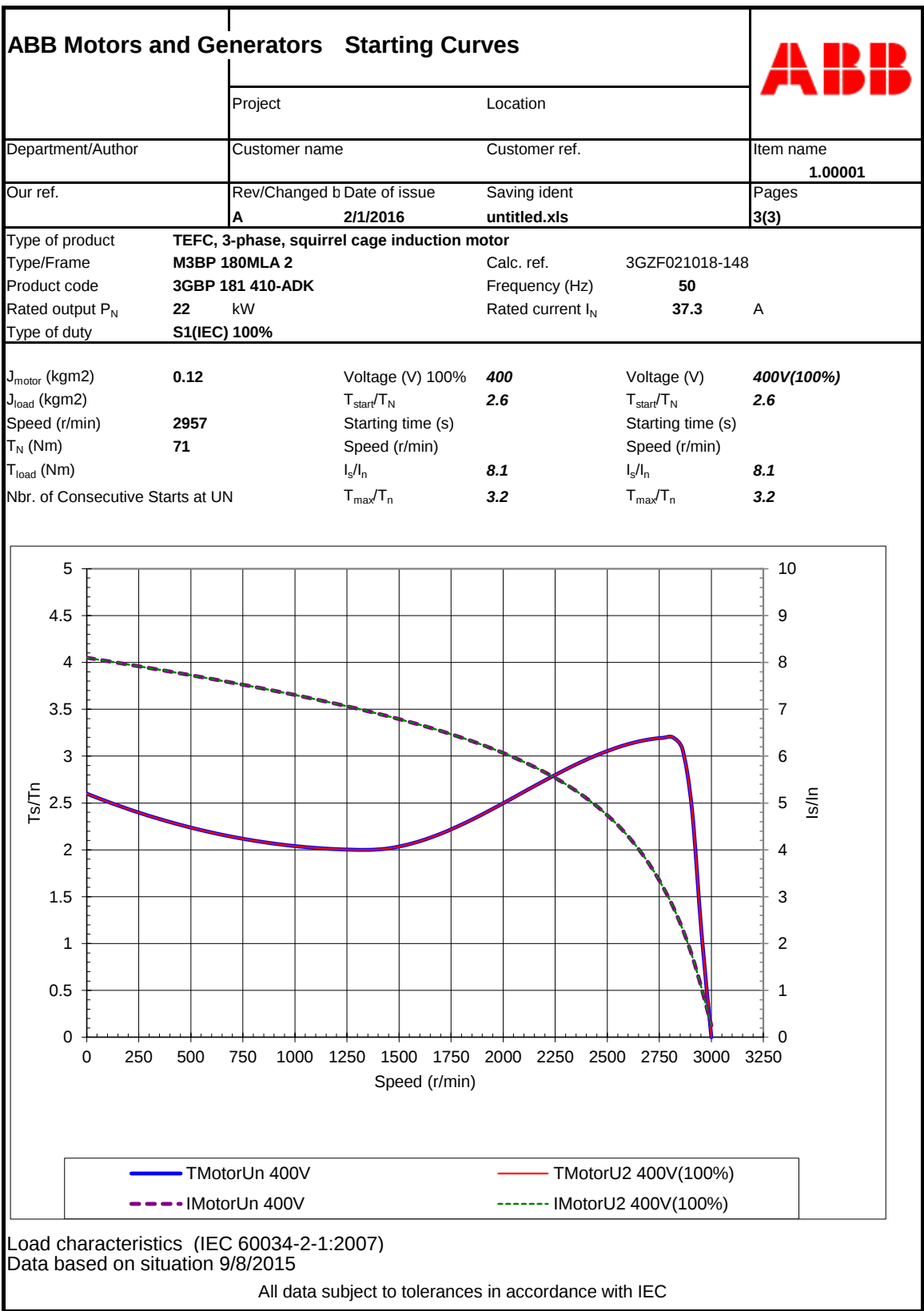
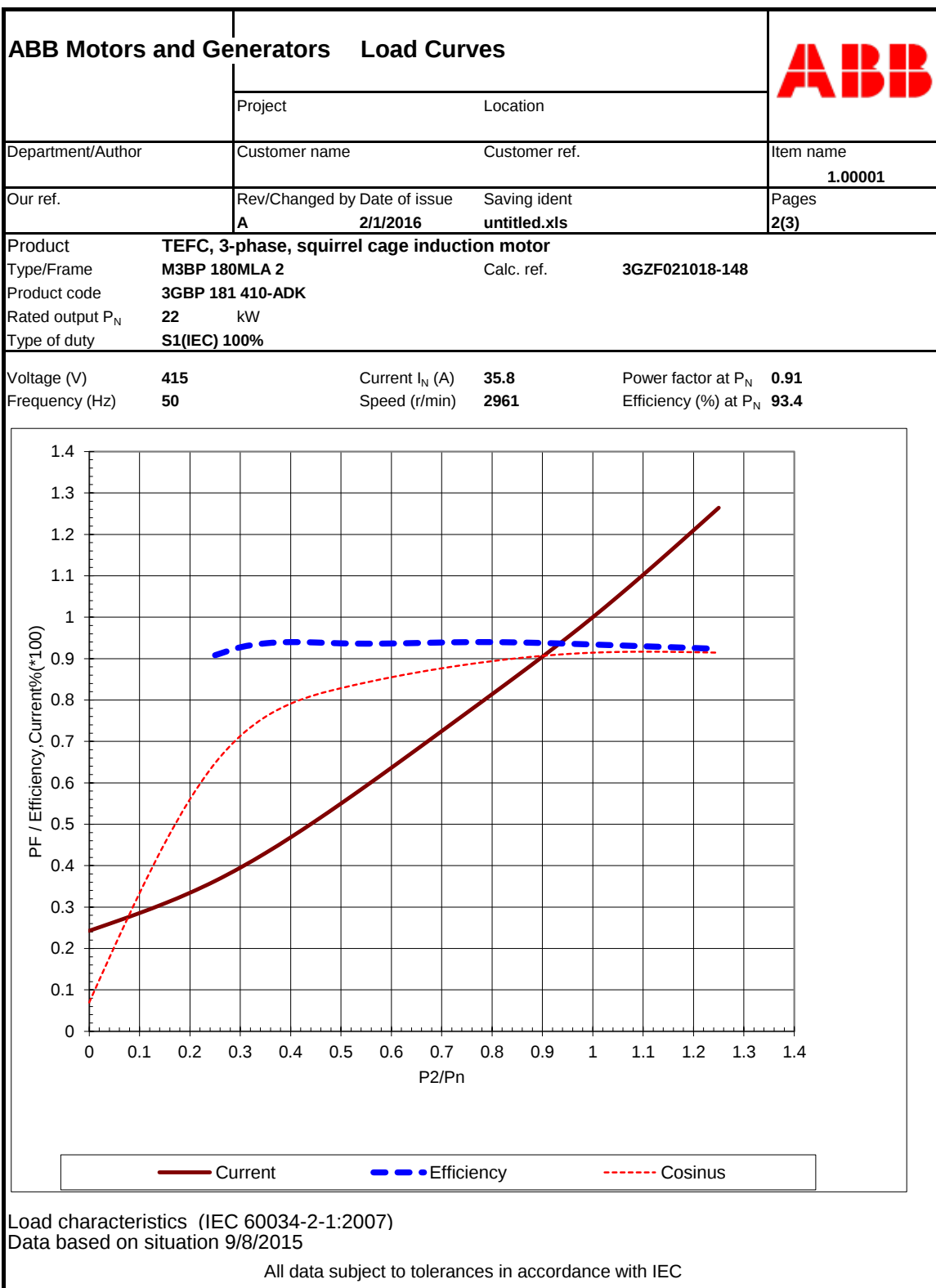


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)

No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18222-PPN (3GBP181410-A)		
3	Type/Frame	M3BP 180MLA 2		Calc. ref. 3GZF021018-148
4	Mounting	IM1001, B3(foot)		
5	Rated output P _N	22	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	2961	r/min	
11	Rated current I _N	35.8	A	
12	No-load current	8.7	A	
13	Starting current I _s /I _N	8.7		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T _N	71	Nm	
15	Locked rotor torque T _s /T _N	2.8		
16	Maximum torque T _{max} /T _N	3.5		
17	Minimum torque T _{min} /T _N	2		
18	Speed at minimum torque	1350	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	35.8	93.4 / IE3
20		75	27.6	94
21		50	19.7	93.7
22		Start	312	0.45
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	6310/C3 - 6209/C3		
31	Type of Grease			
32	Sound pressure level (LP dB(A) 1m)	69	dB(A)	at load
33	Moment of inertia J = ¼ GD2	0.116	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	46	kg	
41	Total weight of motor	230	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 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



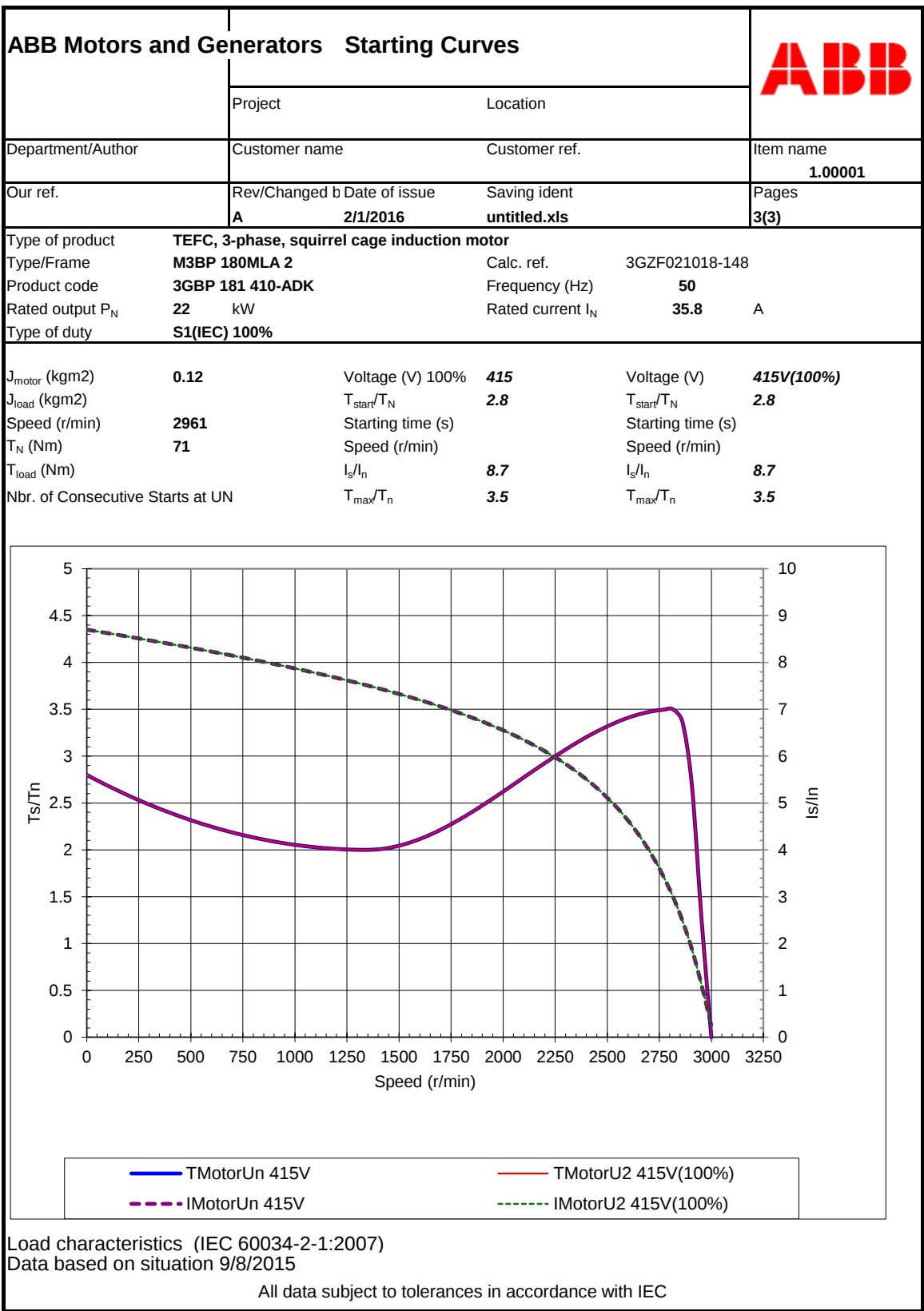
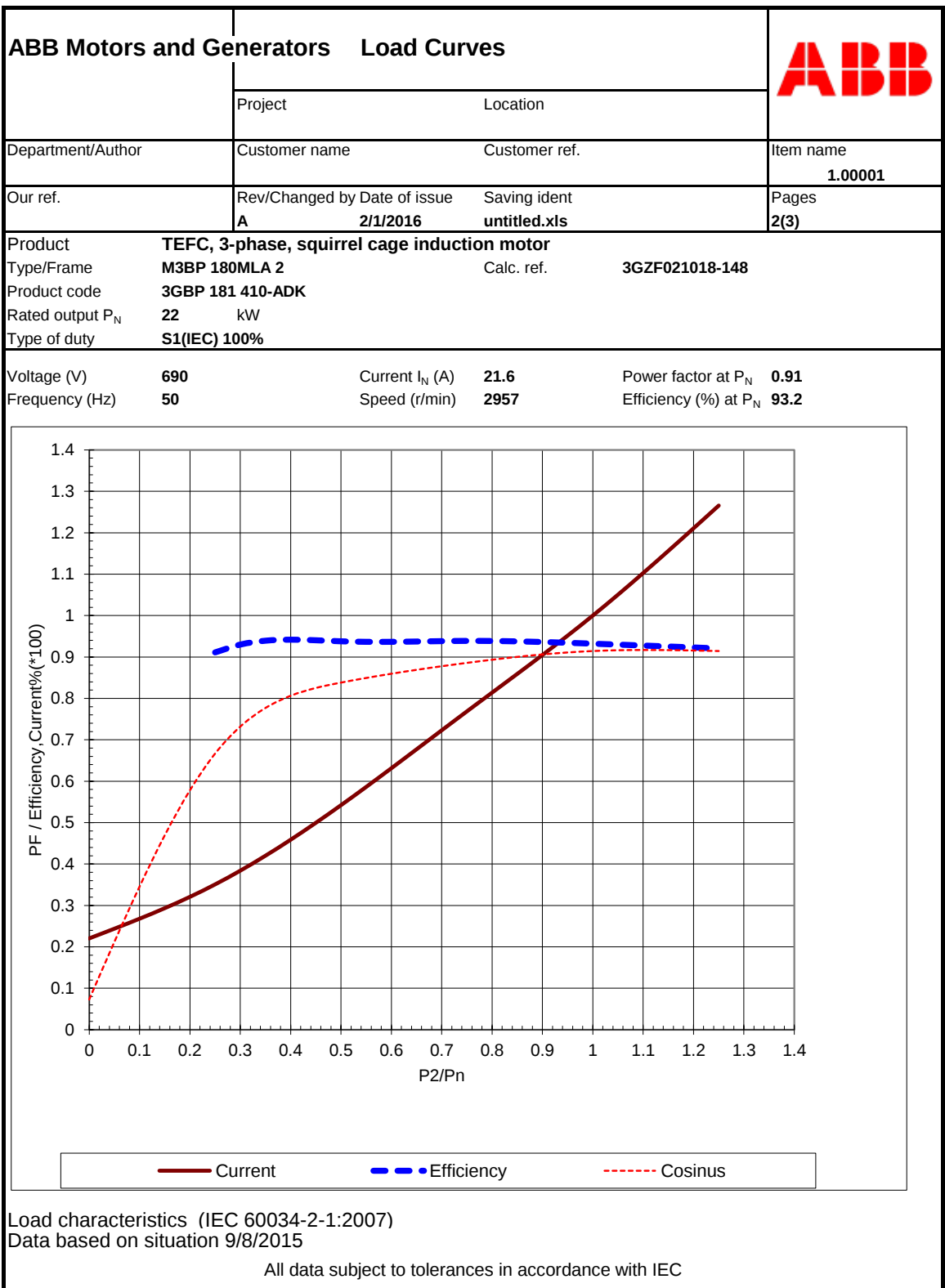


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)

No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18222-PPN (3GBP181410-A) Calc. ref. 3GZF021018-148		
3	Type/Frame	M3BP 180MLA 2		
4	Mounting	IM1001, B3(foot)		
5	Rated output P_N	22	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	2957	r/min	
11	Rated current I_N	21.6	A	
12	No-load current	4.8	A	
13	Starting current I_s/I_N	8.1		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	71	Nm	
15	Locked rotor torque T_s/T_N	2.6		
16	Maximum torque T_{max}/T_N	3.2		
17	Minimum torque T_{min}/T_N	2		
18	Speed at minimum torque	1350	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	21.6	93.2 / IE3
20		75	16.6	93.9
21		50	11.7	93.8
22		Start	175	0.45
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	6310/C3 - 6209/C3		
31	Type of Grease			
32	Sound pressure level (LP dB(A) 1m)	69	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.116	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	46	kg	
41	Total weight of motor	230	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 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



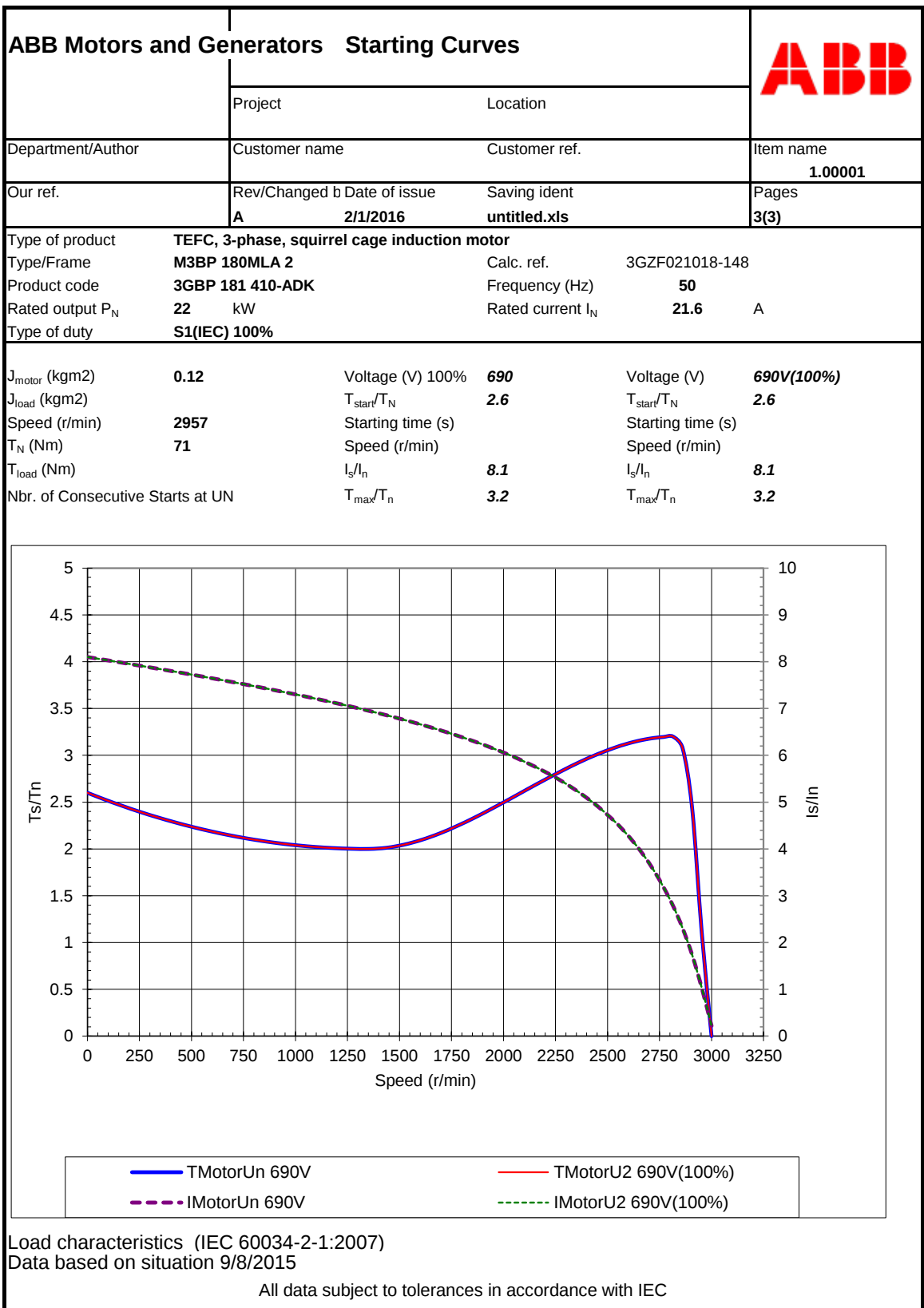


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author		Customer name		Customer ref.
Our ref.		Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls
				Item name 1.00001
				Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18222-PPN (3GBP181410-A)		
3	Type/Frame	Calc. ref. 3GZF021018-148		
4	Mounting	M3BP 180MLA 2		
5	Rated output P _N	IM1001, B3(foot)		
6	Service factor	22 kW		
7	Type of duty	1		
8	Rated voltage U _N	S1(IEC) 100%		
9	Rated frequency f _N	460 VD ± 5 % (IEC 60034-1)		
10	Rated speed n _N	60 Hz ± 2 % (IEC 60034-1)		
11	Rated current I _N	3563 r/min		
12	No-load current	32.6 A		
13	Starting current I _s /I _N	7.8 A		
14	Nominal torque T _N	9.2 Fullfilled IEC 60034-12 design N,H		
15	Locked rotor torque T _s /T _N	59 Nm		
16	Maximum torque T _{max} /T _N	2.8		
17	Minimum torque T _{min} /T _N	3.6		
18	Speed at minimum torque	2.2		
19	Load characteristics (IEC 60034-2-1:2007)	Load %	Current A	Efficiency %
20	PLL determined from residual loss	100	32.6	92.9 / IE3
21		75	25	93
22		50	18	92.2
23		Start	300	0.43
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	6310/C3 - 6209/C3		
32	Type of Grease			
33	Sound pressure level (LP dB(A) 1m)	77 dB(A) at load		
34	Moment of inertia J = ¼ GD2	0.116 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	46 kg		
42	Total weight of motor	230 kg		
43	Dimension drawing no.			
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45				
Ex-motors				
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Option Variant Codes / Definition				
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Remarks:				
Data based on situation 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				

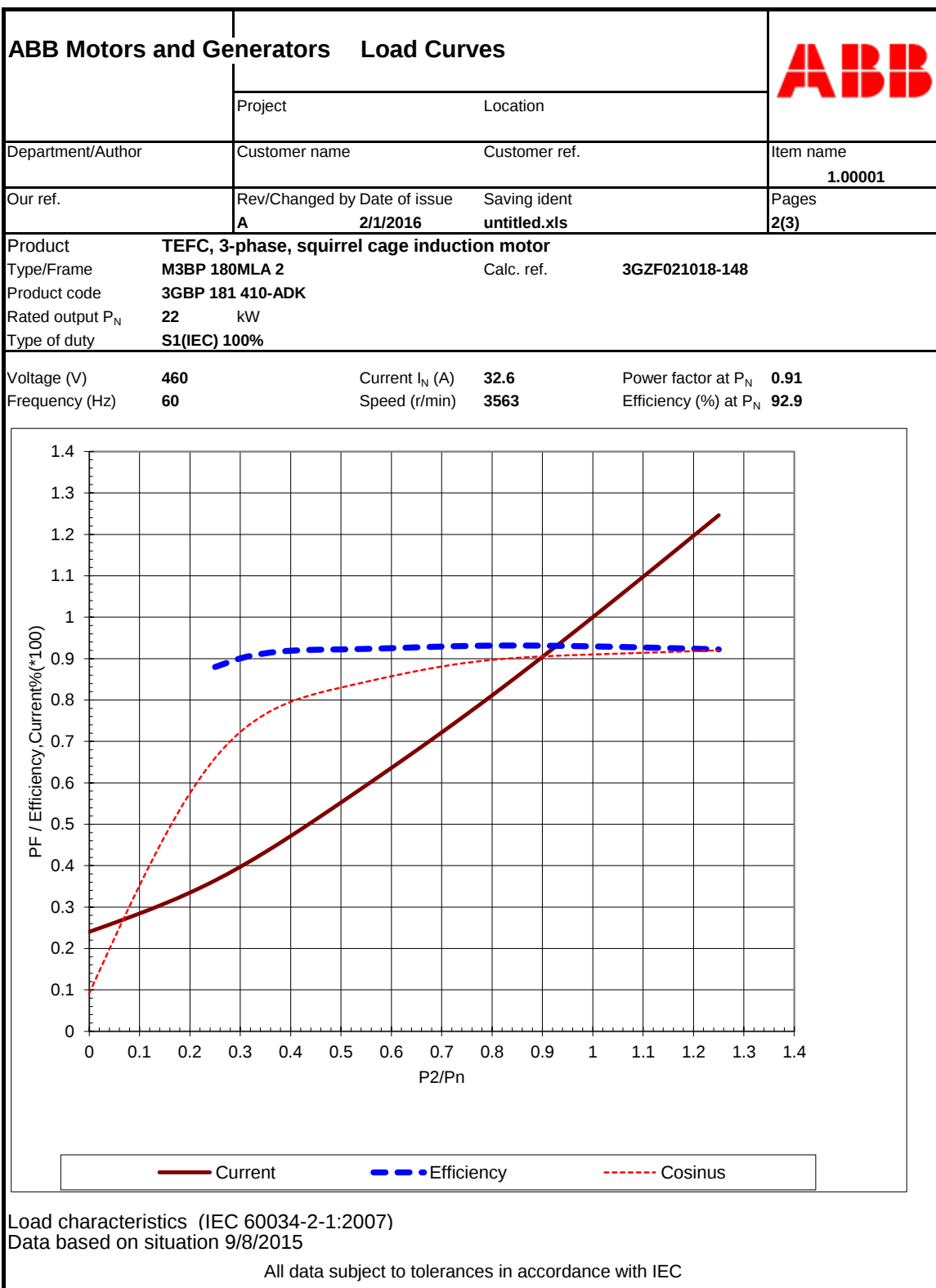


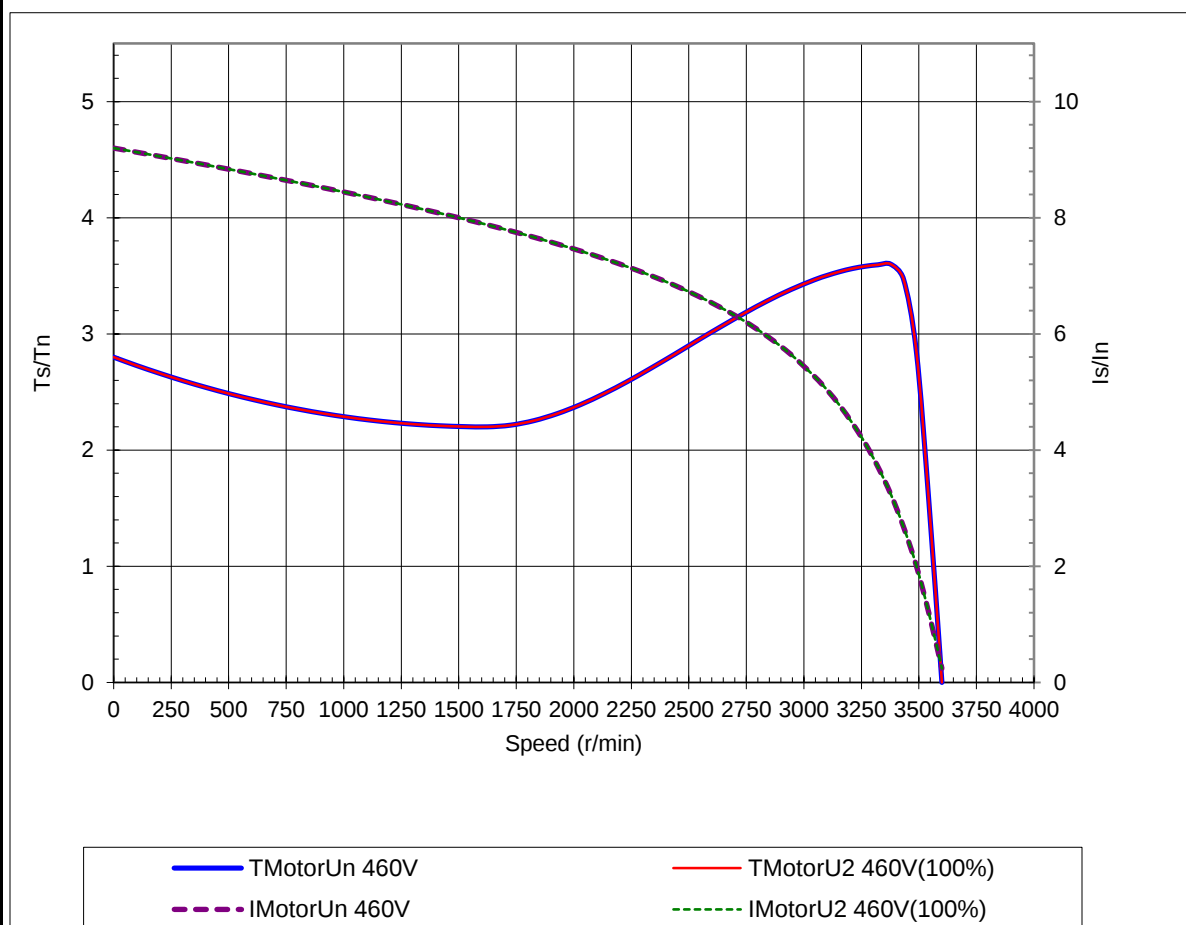
ABB Motors and Generators Starting Curves



	Project	Location	
Department/Author	Customer name	Customer ref.	Item name
			1.00001
Our ref.	Rev/Changed b Date of issue	Saving ident	Pages
	A 2/1/2016	untitled.xls	3(3)

Type of product	TEFC, 3-phase, squirrel cage induction motor		
Type/Frame	M3BP 180MLA 2	Calc. ref.	3GZF021018-148
Product code	3GBP 181 410-ADK	Frequency (Hz)	60
Rated output P_N	22 kW	Rated current I_N	32.6 A
Type of duty	S1(IEC) 100%		

J_{motor} (kgm ²)	0.12	Voltage (V) 100%	460	Voltage (V)	460V(100%)
J_{load} (kgm ²)		T_{start}/T_N	2.8	T_{start}/T_N	2.8
Speed (r/min)	3563	Starting time (s)		Starting time (s)	
T_N (Nm)	59	Speed (r/min)		Speed (r/min)	
T_{load} (Nm)		I_s/I_N	9.2	I_s/I_N	9.2
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 9/8/2015

All data subject to tolerances in accordance with IEC