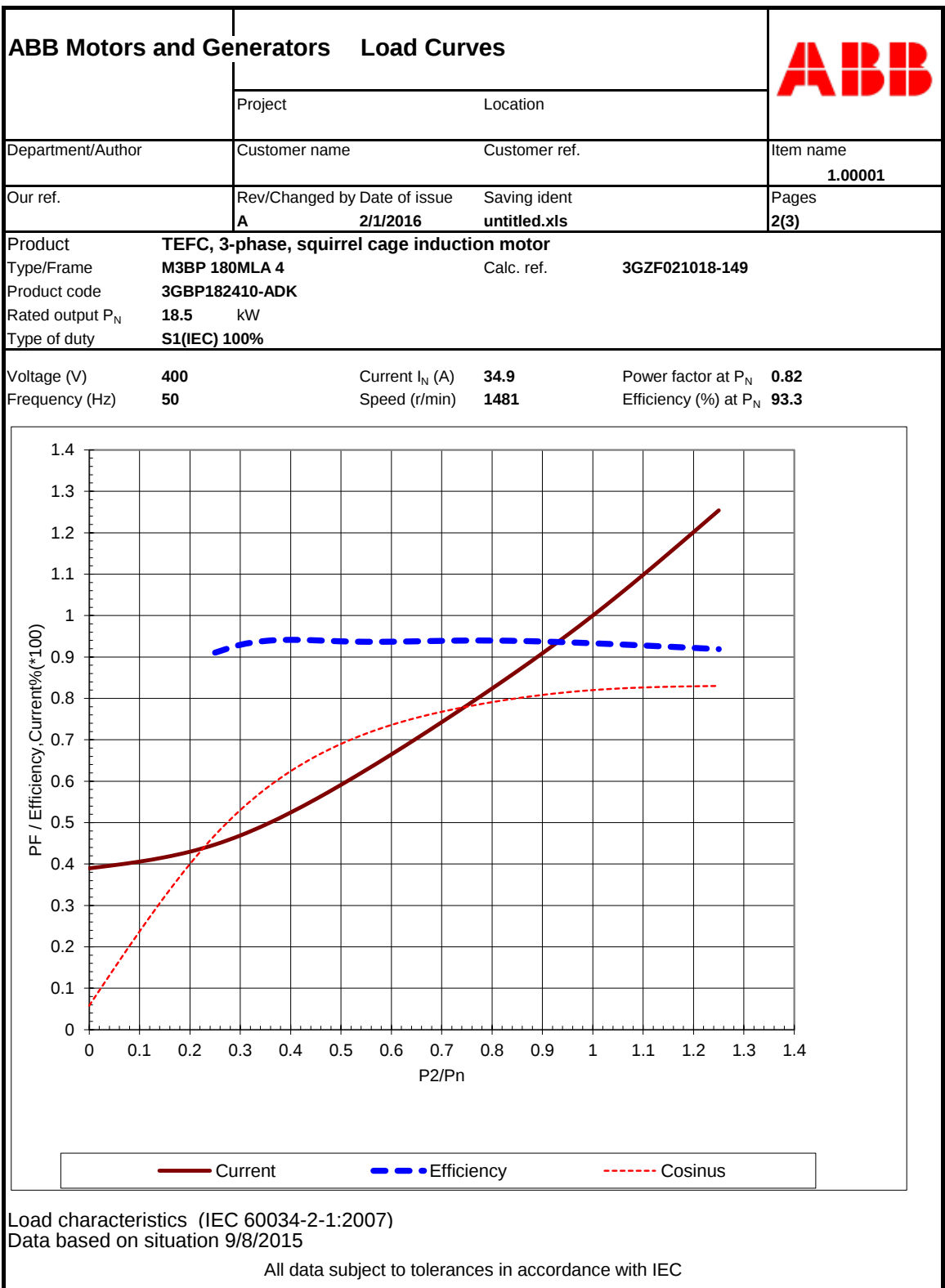


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18184-PPN (3GBP182410-A) Calc. ref. 3GZF021018-149		
3	Type/Frame	M3BP 180MLA 4		
4	Mounting	IM1001, B3(foot)		
5	Rated output P_N	18.5	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	1481	r/min	
11	Rated current I_N	34.9	A	
12	No-load current	13.6	A	
13	Starting current I_s/I_N	7.6		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	119	Nm	
15	Locked rotor torque T_s/T_N	3		
16	Maximum torque T_{max}/T_N	3.1		
17	Minimum torque T_{min}/T_N	2.3		
18	Speed at minimum torque	300	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	34.9	93.3 / IE3
20		75	27.3	94
21		50	20.6	93.8
22		Start	265	0.43
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)	62	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.217	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	58	kg	
41	Total weight of motor	224	kg	
42	Dimension drawing no.			
43				
44				
45				
Ex-motors				
46				
47				
48				
Option Variant Codes / Definition				
49				
50				
51				
52				
Remarks:				
Data based on situation 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



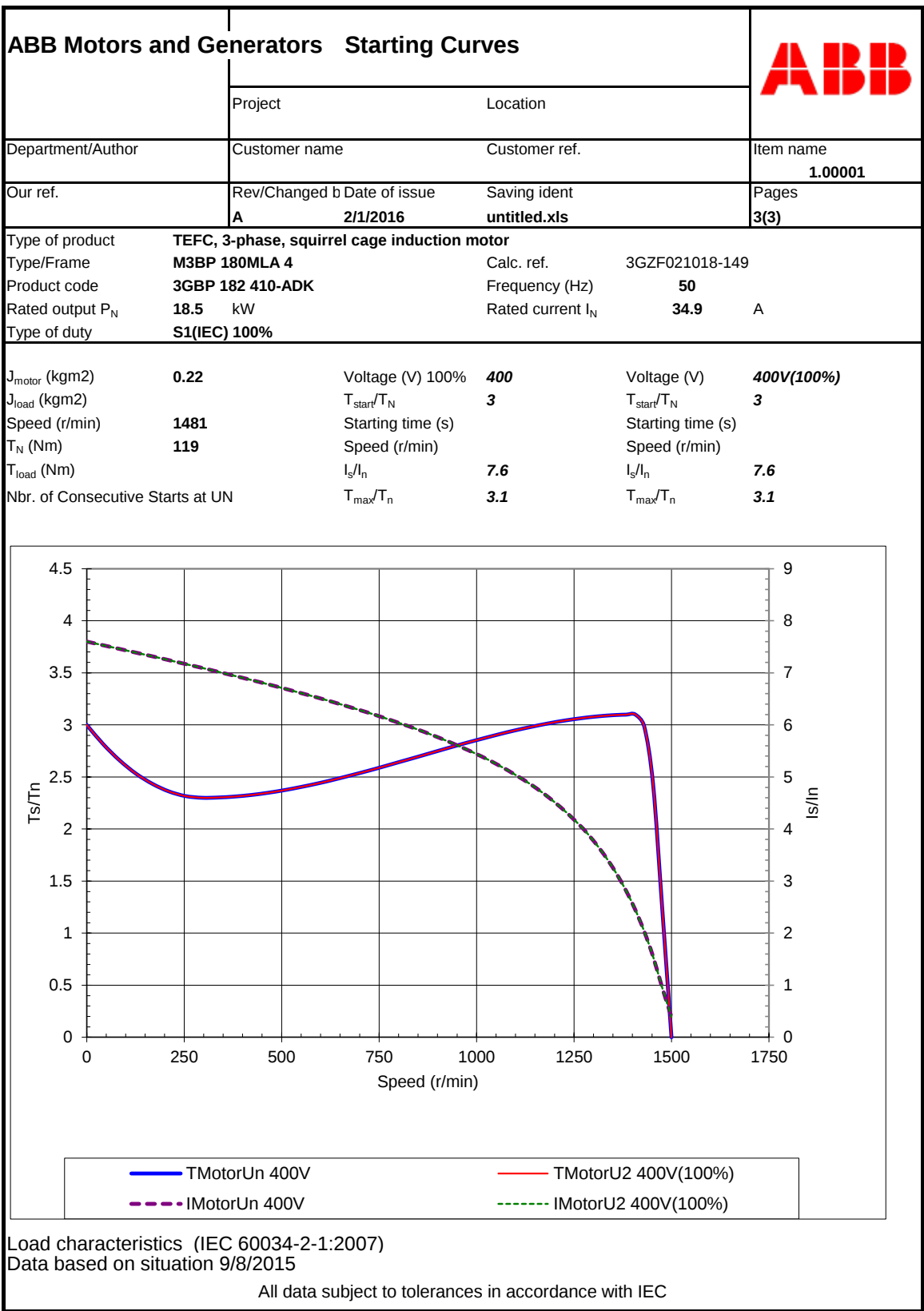
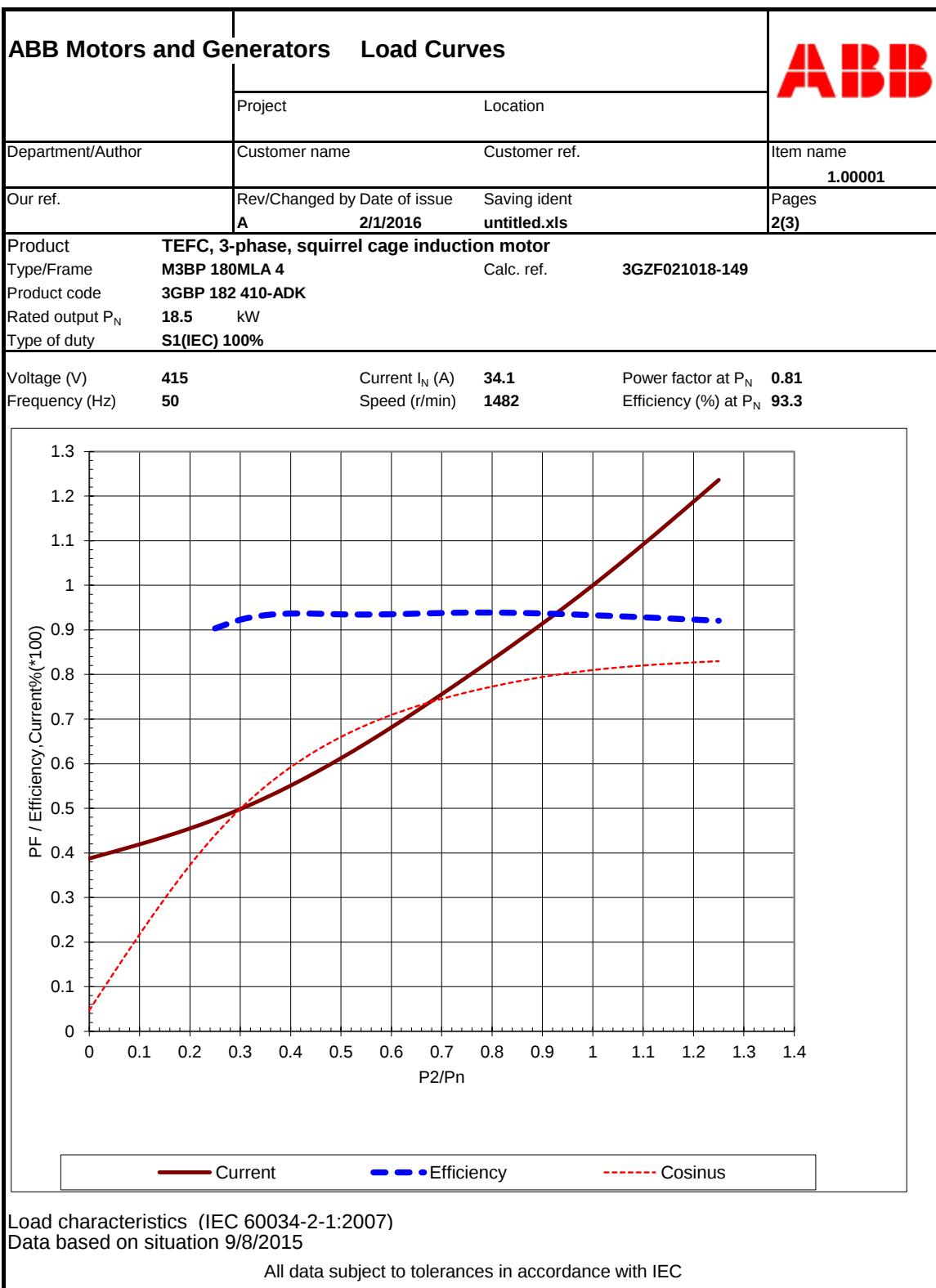


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18184-PPN (3GBP182410-A) Calc. ref. 3GZF021018-149		
3	Type/Frame	M3BP 180MLA 4		
4	Mounting	IM1001, B3(foot)		
5	Rated output P_N	18.5	kW	
6	Service factor	1		
7	Type of duty	S1(IEC) 100%		
8	Rated voltage U_N	415	VD	$\pm 5\%$ (IEC 60034-1)
9	Rated frequency f_N	50	Hz	$\pm 2\%$ (IEC 60034-1)
10	Rated speed n_N	1482	r/min	
11	Rated current I_N	34.1	A	
12	No-load current	13.2	A	
13	Starting current I_s/I_N	8.2		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	119	Nm	
15	Locked rotor torque T_s/T_N	3.3		
16	Maximum torque T_{max}/T_N	3.3		
17	Minimum torque T_{min}/T_N	2.3		
18	Speed at minimum torque	300	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	34.1	93.3 / IE3
20		75	27.1	93.9
21		50	20.9	93.5
22		Start	279	0.44
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)	62	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.217	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	58	kg	
41	Total weight of motor	224	kg	
42	Dimension drawing no.			
43				
44				
45				
Ex-motors				
46				
47				
48				
Option Variant Codes / Definition				
49				
50				
51				
52				
Remarks:				
Data based on situation 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



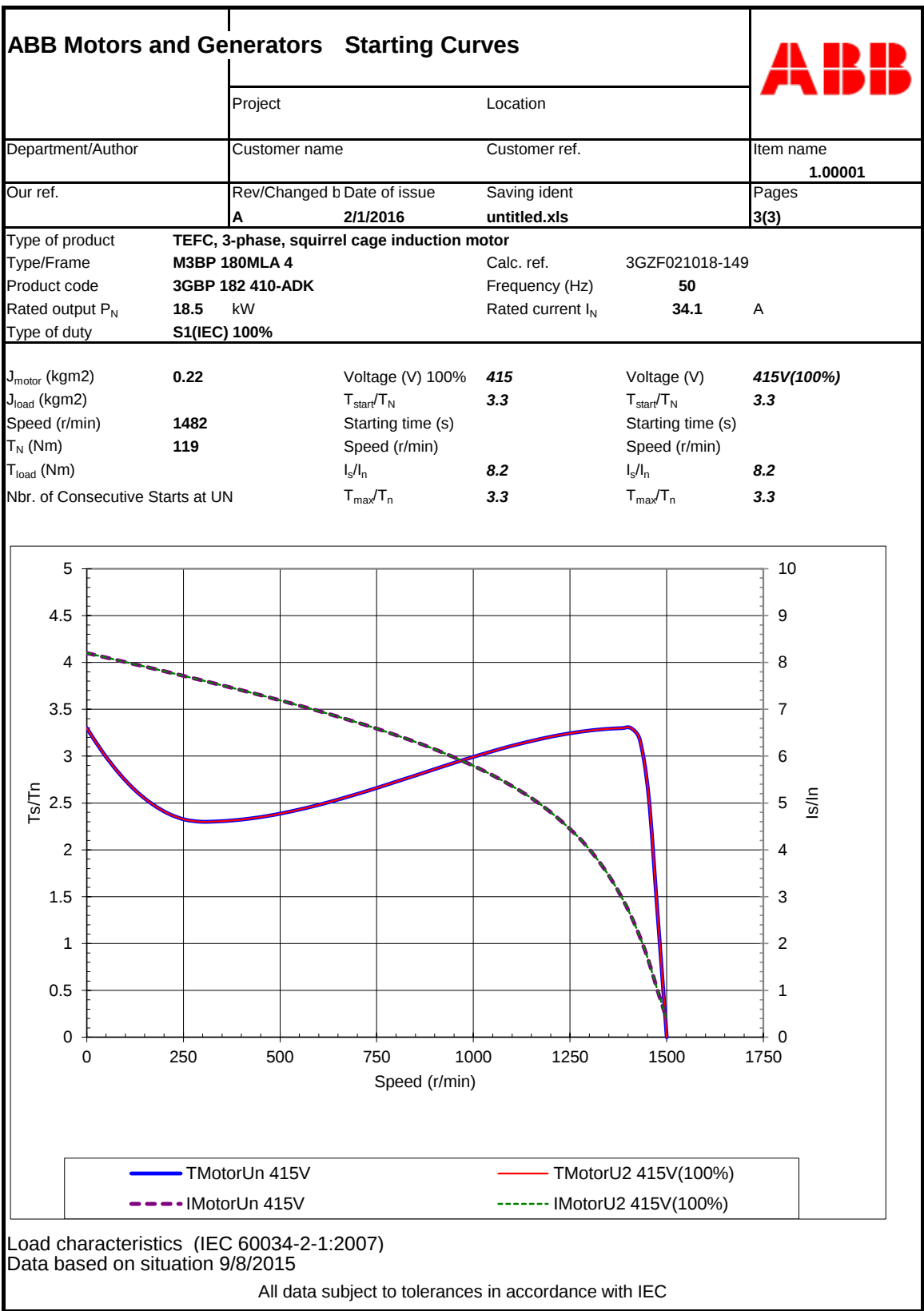
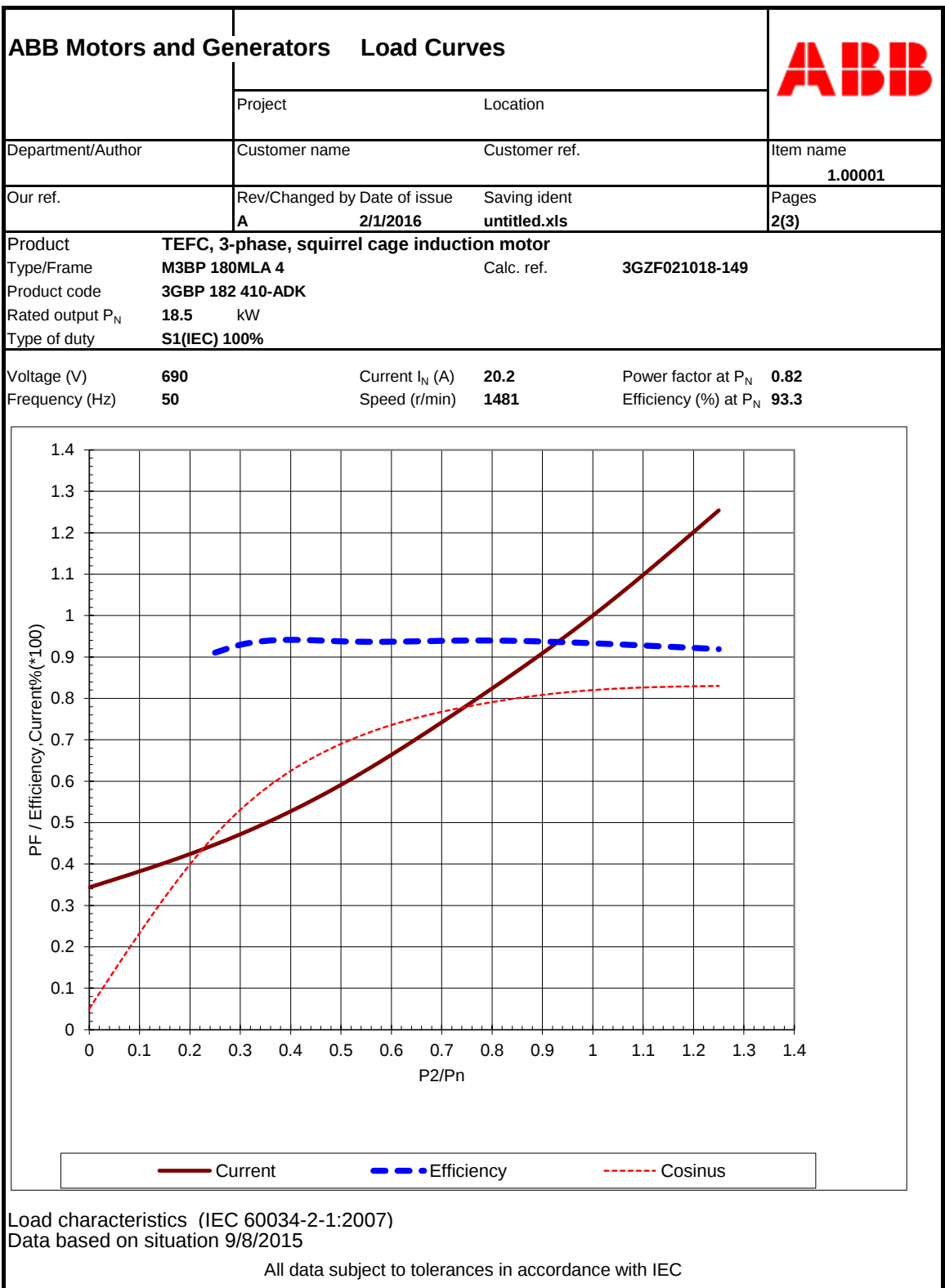


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author	Customer name	Customer ref.		Item name 1.00001
Our ref.	Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls	Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18184-PPN (3GBP182410-A) Calc. ref. 3GZF021018-149		
3	Type/Frame	M3BP 180MLA 4		
4	Mounting	IM1001, B3(foot)		
5	Rated output P_N	18.5	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	1481	r/min	
11	Rated current I_N	20.2	A	
12	No-load current	6.9	A	
13	Starting current I_s/I_N	7.6		Fullfilled IEC 60034-12 design N,H
14	Nominal torque T_N	119	Nm	
15	Locked rotor torque T_s/T_N	3		
16	Maximum torque T_{max}/T_N	3.1		
17	Minimum torque T_{min}/T_N	2.3		
18	Speed at minimum torque	300	r/min	
Load characteristics (IEC 60034-2-1:2007)		Load %	Current A	Efficiency %
19	PLL determined from residual loss	100	20.2	93.3 / IE3
20		75	15.8	94
21		50	12	93.8
22		Start	154	0.43
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)	62	dB(A)	at load
33	Moment of inertia $J = \frac{1}{4} GD^2$	0.217	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	58	kg	
41	Total weight of motor	224	kg	
42	Dimension drawing no.			
43				
44				
45				
Ex-motors				
46				
47				
48				
Option Variant Codes / Definition				
49				
50				
51				
52				
Remarks:				
Data based on situation 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				



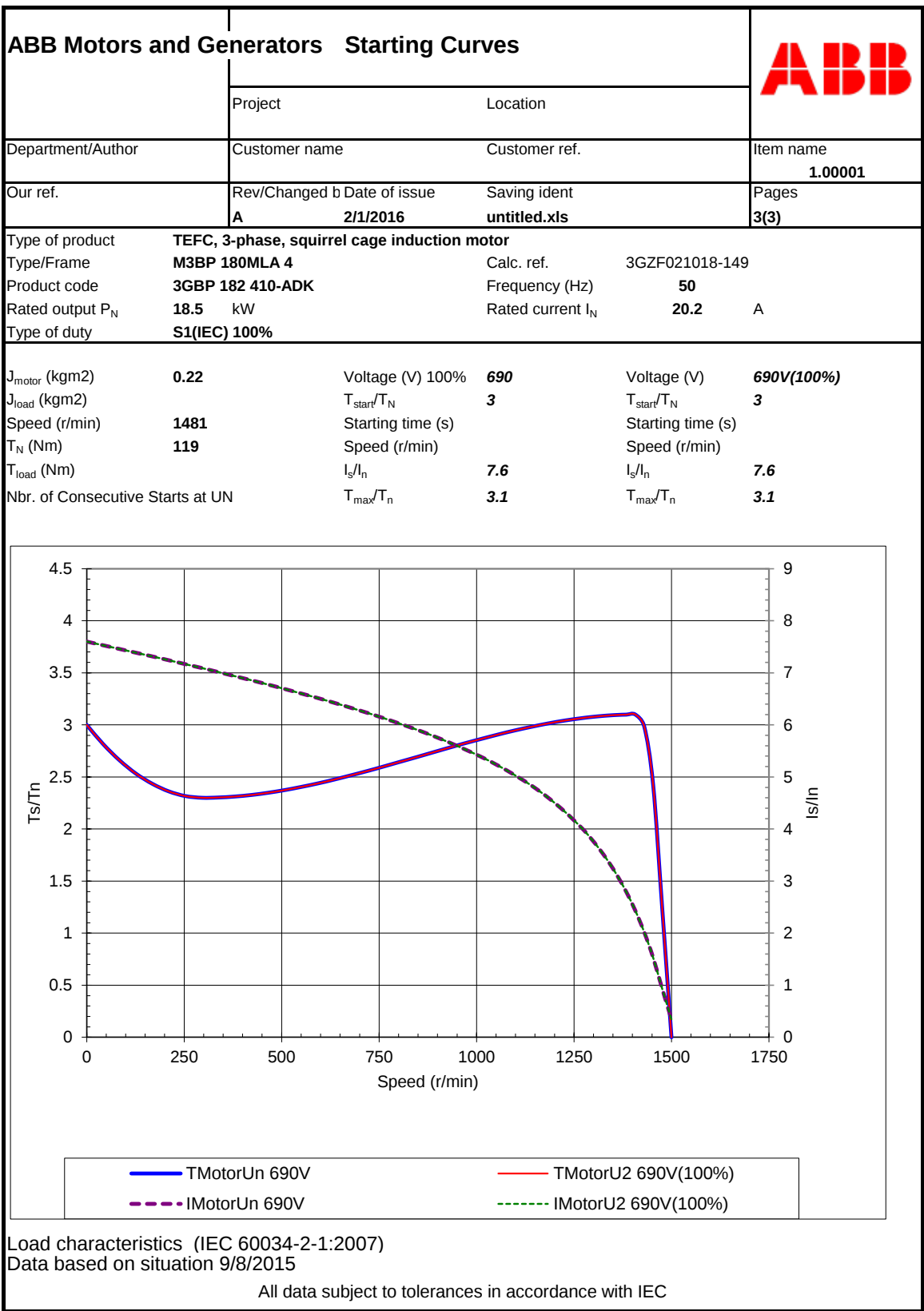


ABB Motors and Generators		Technical Data Sheet - DOL		
Project		Location		
Department/Author		Customer name		Customer ref.
Our ref.		Rev/Changed by A	Date of issue 2/1/2016	Saving ident untitled.xls
				Item name 1.00001
				Pages 1(3)
No.	Definition	Data	Unit	Remarks
1	Product	TEFC, 3-phase, squirrel cage induction motor		
2	Product code	EMM18184-PPN (3GBP182410-A)		
3	Type/Frame	Calc. ref. 3GZF021018-149		
4	Mounting	M3BP 180MLA 4		
5	Rated output P _N	IM1001, B3(foot)		
6	Service factor	18.5 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	1782 r/min		
12	No-load current	30.6 A		
13	Starting current I _s /I _N	11.3 A		
14	Nominal torque T _N	8.5 Fullfilled IEC 60034-12 design N,H		
15	Locked rotor torque T _s /T _N	99 Nm		
16	Maximum torque T _{max} /T _N	3.2		
17	Minimum torque T _{min} /T _N	3.4		
18	Speed at minimum torque	2.4		
19	Load characteristics (IEC 60034-2-1:2007)	360 r/min		
20	PLL determined from residual loss	Load %	Current A	Efficiency %
21		100	30.6	93.6 / IE3
22		75	24.4	93.9
23		50	18.9	93.2
24		Start	260	0.4
25	Maximum starting time from hot	15 s		
26	Maximum starting time from cold	27 s		
27	Insulation class / Temperature class	F / B		
28	Ambient temperature	40 °C		
29	Altitude	1000 m.a.s.l.		
30	Enclosure	IP55		
31	Cooling system	IC411 self ventilated		
32	Bearing DE/NDE	6310/C3 - 6209/C3		
33	Type of Grease			
34	Sound pressure level (LP dB(A) 1m)	70 dB(A) at load		
35	Moment of inertia J = ¼ GD2	0.217 kg-m2		
36	Balancing			
37	Vibration class			
38	Position of terminal box	Top		
39	Terminal box entries; no, dimens.			
40	Number of power terminals			
41	Direction of rotation	CW or CCW		
42	Weight of rotor	58 kg		
43	Total weight of motor	224 kg		
44	Dimension drawing no.			
45				
Ex-motors				
46				
47				
48				
Option Variant Codes / Definition				
49				
50				
51				
52				
Remarks:				
Data based on situation 9/8/2015				
All data subject to tolerances in accordance with IEC				
Guaranteed values on request				

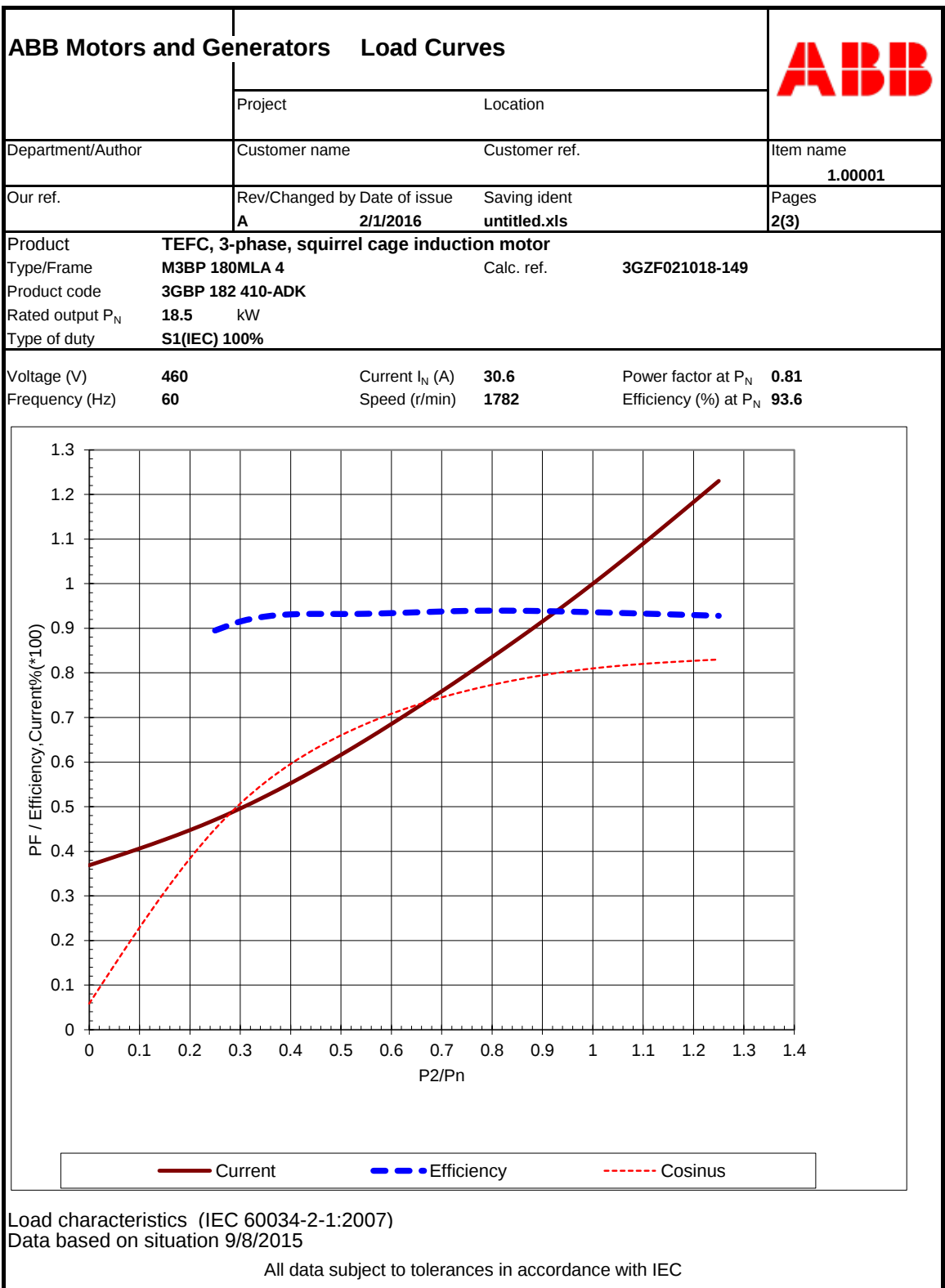


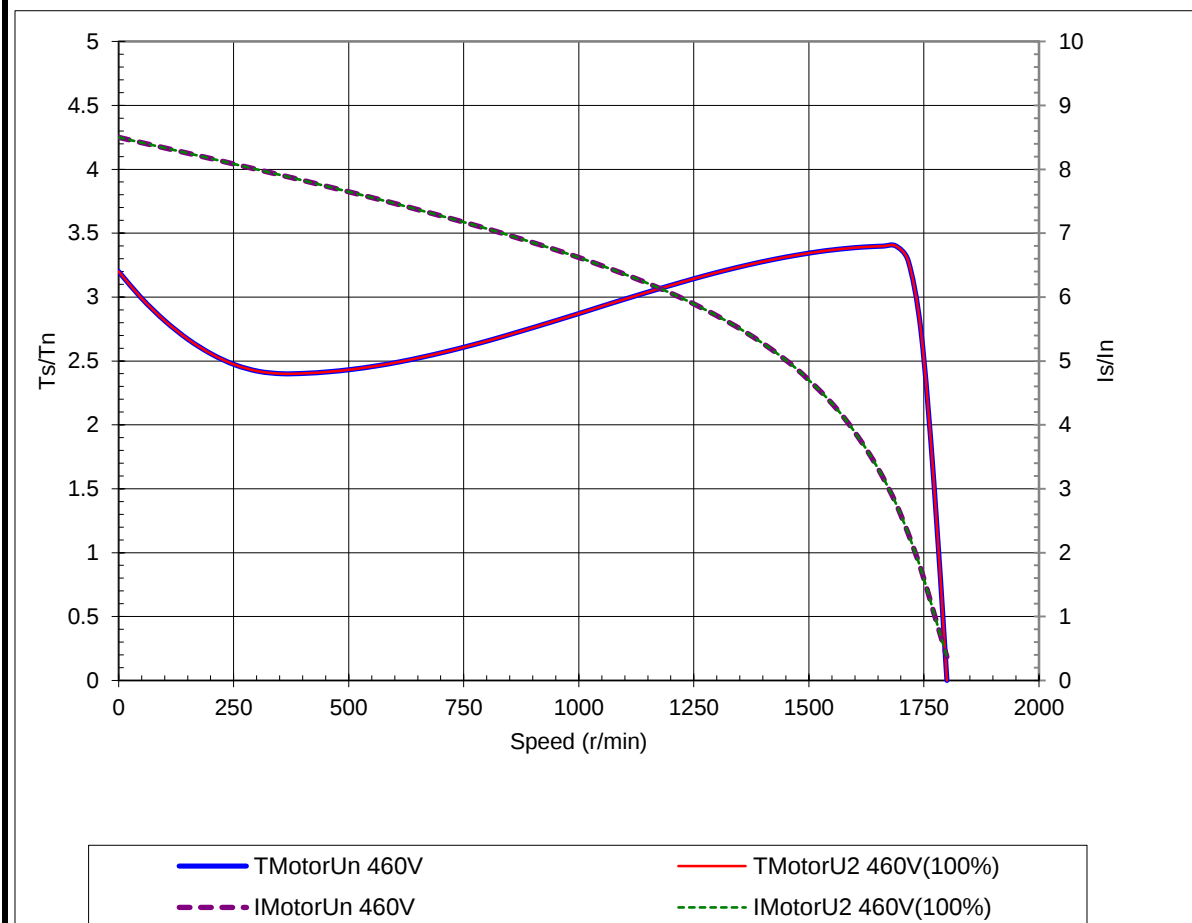
ABB Motors and Generators Starting Curves



	Project	Location	
Department/Author	Customer name	Customer ref.	Item name
			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 4	Calc. ref.	3GZF021018-149
Product code	3GBP 182 410-ADK	Frequency (Hz)	60
Rated output P_N	18.5 kW	Rated current I_N	30.6 A
Type of duty	S1(IEC) 100%		

J_{motor} (kgm ²)	0.22	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)	1782	Starting time (s)		Starting time (s)	
T_N (Nm)	99	Speed (r/min)		Speed (r/min)	
T_{load} (Nm)		I_s/I_N	8.5	I_s/I_N	8.5
Nbr. of Consecutive Starts at UN		T_{max}/T_n	3.4	T_{max}/T_n	3.4



Load characteristics (IEC 60034-2-1:2007)
Data based on situation 9/8/2015

All data subject to tolerances in accordance with IEC