DANIELI MORGÅRDSHAMMAR	**JOB N°** **DPC68X01**	**Doc**.: 000-000-375-617 **Rev**: 00 **Page**: 1/82
	Customer: BARRAMANSA	

ROLLING MILL CALCULATIONS

FOR ANGLES

Remarks:

- For rolling sequences see drawing 000-000-361-342
- Calculations consider following average temperatures at first stand entry:
  Angles 100mm and 4": 1100°C;
  Angles 5": 1150°C;
  Angles 6" and 8": 1170°C.
- Billet lengths according to sequences 000-000-361-342

Rev.	Date	Description	Compiled	Checked	Approved
00	25-05-2023	Issued	Baggio M.	Paron L.	

DOCUMENT CONTENTS

Remark:

- R-factor = elongation

1 Gear ratios and motors summarizing table

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 28/03/23

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

STAND NO.	STAND TYPE	GEAR RATIO 1^	GEAR RATIO 2^	MOTOR TYPE	MOTOR POWER (kW)	MOTOR RPM (RPM)
1H	GCC7555	118.730		AC	450	0 /1000 /2000
2V	GCC7555	85.673		AC	450	0 /1000 /2000
3H	GCC7555	118.730		AC	450	0 /1000 /2000
4H/V	GCC6548	74.409		AC	450	0 /1000 /2000
5H	GUC8548	87.594		AC	800	0 /1000 /2000
6H/V	GCC6548	68.825		AC	450	0 /1000 /2000
7H	GUC8548	55.247	73.990	AC	800	0 /1000 /2000
8H/V	GUC8548	43.393	58.768	AC	800	0 /1000 /2000
9H	GUC8548	37.442	49.768	AC	800	0 /1000 /2000
10H/V	GUC8548	27.471	37.083	AC	800	0 /1000 /2000
11H	GCC6548	17.428	26.576	AC	800	0 /1000 /2000
12H/V	GUC8548	13.852	27.600	AC	800	0 /1000 /2000
13H	GUC8548	11.734	22.354	AC	800	0 /1000 /2000
14H/V	GCC6548	9.471	18.603	AC	800	0 /1000 /2000
15H	GUC8548	9.841	19.250	AC	800	0 /1000 /2000

***Subject to the confidentiality clause ***

TERMINATED AT 17:50:15

2 Roll pass design calculations for billets 180x180 and 230x150

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.56 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4871 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUC TION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	5.00	ANGLE	10.4	47.70 X 176.70	2090.4	28.2
13H	585.0	5.50	ANGLE	8.27	53.50 X 174.20	1661.0	20.5
14H	584.0	7.15	ANGLE	7.21	77.85 X 145.50	1453.5	12.5
15H	584.0	6.00	ANGLE	6.40	77.28 X 145.50	1309.4	9.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

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Hot rolling
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TOTAL ROLLING POWER : 4871 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1906.3	110.55	510	63.7
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1953.1	95.16	681	85.1
12H	2.86	578.2	94.4	13.852	1307	1.393	6.8	2020.1	82.72	818	102.2
13H	3.60	581.0	118.2	11.734	1387	1.259	4.0	1575.4	47.91	593	74.1
14H	4.11	581.2	135.0	9.471	1279	1.143	2.8	950.9	26.99	382	47.7
15H	4.56	581.0	149.9	9.841	1476	1.110	3.0	731.1	17.64	277	34.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.69 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4187 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	6.00	ANGLE	11.3	48.70 X 176.70	2262.9	22.3
13H	585.0	6.50	ANGLE	9.23	54.50 X 174.50	1828.3	19.2
14H	584.0	8.32	ANGLE	8.04	78.44 X 145.50	1617.1	11.6

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DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/16
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ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4187 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1906.3	110.55	510	63.7
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1953.1	95.16	681	85.1
12H	2.64	578.2	87.2	13.852	1208	1.286	6.8	1628.0	59.28	541	67.6
13H	3.27	581.0	107.4	11.734	1260	1.238	4.0	1493.8	45.26	509	63.6
14H	3.69	581.2	121.4	9.471	1149	1.131	2.8	917.0	26.40	336	41.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.11 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3642 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	4.50	ANGLE	17.9	49.70 X 174.20	3490.4	22.9
12H	585.0	4.50	ANGLE	14.1	51.20 X 174.10	2772.3	20.6
13H	585.0	4.50	ANGLE	11.2	55.70 X 172.00	2220.0	19.9
14H	584.0	10.58	ANGLE	9.64	79.57 X 145.50	1919.7	13.5

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DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.11 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3642 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1411.8	68.30	283	35.4
11H	1.71	569.5	57.4	17.428	1000	1.297	15.5	1591.4	74.20	446	55.7
12H	2.15	573.6	71.7	13.852	994	1.259	11.4	1502.2	58.70	441	55.5
13H	2.69	576.6	89.1	11.734	1046	1.249	8.4	1523.3	53.26	497	62.1
14H	3.11	581.4	102.2	9.471	968	1.156	2.6	1000.9	34.06	365	47.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.69 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3217 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	5.60	ANGLE	19.0	50.80 X 174.30	3679.0	18.7
12H	585.0	5.80	ANGLE	15.3	52.50 X 174.20	2999.0	18.5
13H	585.0	6.30	ANGLE	12.9	57.50 X 173.10	2533.8	15.5
14H	584.0	12.87	ANGLE	11.2	80.71 X 145.50	2217.1	12.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.69 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3217 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1411.8	68.30	283	35.4
11H	1.62	569.5	54.4	17.428	949	1.231	15.5	1339.8	56.62	323	42.5
12H	1.99	573.6	66.3	13.852	919	1.227	11.4	1376.6	52.23	363	49.4
13H	2.36	576.7	78.1	11.734	916	1.184	8.3	1244.3	39.71	325	44.3
14H	2.69	581.6	88.5	9.471	838	1.143	2.4	971.0	33.86	314	46.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.38 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2904 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	6.20	ANGLE	19.6	51.40 X 174.30	3784.0	16.4
12H	585.0	7.00	ANGLE	16.5	53.70 X 174.20	3208.1	15.2
13H	585.0	7.60	ANGLE	14.1	58.80 X 173.10	2754.7	14.1
14H	584.0	15.15	ANGLE	12.8	81.85 X 145.50	2509.3	8.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.38 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2904 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1411.8	68.30	283	35.4
11H	1.58	569.5	52.9	17.428	923	1.196	15.5	1198.2	47.56	264	35.7
12H	1.86	573.6	62.0	13.852	859	1.180	11.4	1171.7	41.05	266	38.8
13H	2.17	576.7	71.8	11.734	843	1.165	8.3	1155.6	36.37	273	40.6
14H	2.38	581.9	78.1	9.471	740	1.098	2.1	817.6	25.31	207	35.0

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.94 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2422 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	32.0	55.20 X 171.00	5895.0	21.1
10H	655.0	5.00	ANGLE	25.4	53.70 X 171.00	4723.0	19.9
11H	585.0	5.00	ANGLE	22.4	54.20 X 170.00	4146.0	12.2
12H	585.0	5.00	ANGLE	19.0	56.20 X 166.70	3505.0	15.5
13H	585.0	5.00	ANGLE	17.8	61.50 X 162.70	3280.0	6.4
14H	584.0	19.69	ANGLE	16.0	84.12 X 145.50	3078.3	6.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.94 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2422 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.01	625.5	30.9	37.442	1158	1.267	29.5	1470.7	87.91	285	35.6
10H	1.26	632.4	38.2	27.471	1049	1.248	22.6	1429.8	74.28	297	37.1
11H	1.44	565.6	48.6	17.428	848	1.139	19.4	925.8	32.65	166	24.5
12H	1.70	569.0	57.2	13.852	792	1.183	16.0	1122.9	42.31	253	40.0
13H	1.82	569.8	61.0	11.734	716	1.069	15.2	577.2	13.81	88	15.4
14H	1.94	582.5	63.6	9.471	602	1.066	1.5	628.4	17.73	118	24.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.65 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2115 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	7.50	ANGLE	34.5	57.70 X 171.00	6291.0	15.8
10H	655.0	7.60	ANGLE	28.0	56.30 X 171.00	5164.0	17.9
11H	585.0	7.60	ANGLE	25.0	56.80 X 170.00	4581.0	11.3
12H	585.0	8.30	ANGLE	22.2	59.50 X 166.70	4051.0	11.6
13H	585.0	8.20	ANGLE	20.8	64.70 X 162.70	3796.0	6.3
14H	584.0	24.24	ANGLE	19.3	86.40 X 145.50	3626.5	4.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.65 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2115 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	0.95	625.7	29.0	37.442	1085	1.188	29.3	1172.1	60.85	185	23.1
10H	1.16	632.4	34.9	27.471	960	1.218	22.6	1321.2	67.26	246	32.1
11H	1.30	565.7	44.0	17.428	767	1.127	19.3	886.7	31.34	144	23.5
12H	1.47	569.0	49.5	13.852	686	1.131	16.0	899.2	30.92	160	29.2
13H	1.57	569.9	52.7	11.734	619	1.067	15.1	583.9	14.80	82	16.5
14H	1.65	583.3	53.9	9.471	511	1.047	0.7	572.2	14.82	84	20.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 6mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.61 m/s
AXV : 5562.11 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 69.8 s
INTER BILLET : 63.9 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4886 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	4.70	ANGLE	10.1	47.40 X 176.70	2035.0	30.1
13H	585.0	5.20	ANGLE	7.98	53.20 X 174.20	1614.0	20.7
14H	584.0	6.71	ANGLE	6.90	76.53 X 143.30	1363.0	15.6
15H	584.0	5.54	ANGLE	6.07	75.95 X 143.30	1205.3	11.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 6mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.61 m/s
AXV : 5562.11 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 69.8 s
INTER BILLET : 63.9 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4886 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	ROLLING LOAD	ROLLING TORQUE	ROLLING POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.22	649.7	6.4	118.730	759	1.297	100.3	1896.7	253.63	170	49.7
2V	0.27	638.9	8.0	85.673	681	1.222	111.1	1310.5	169.76	141	46.1
3H	0.35	717.5	9.3	118.730	1105	1.315	32.5	1643.4	197.53	193	42.8
4V	0.38	521.9	13.7	74.409	1022	1.073	138.1	363.2	22.66	33	7.2
5H	0.48	660.0	14.0	87.594	1223	1.286	0.0	1566.4	147.98	216	27.0
6V	0.51	514.4	19.0	68.825	1308	1.061	145.6	264.1	15.34	31	6.8
7H	0.59	603.5	18.6	55.247	1025	1.145	51.5	1035.9	56.48	110	13.7
8H	0.74	616.3	23.1	43.393	1001	1.270	38.7	1481.7	99.23	240	30.0
9H	1.00	627.3	30.5	37.442	1141	1.344	27.7	1740.3	117.17	374	46.7
10H	1.37	636.9	41.0	27.471	1127	1.367	18.1	1929.7	111.91	481	60.1
11H	1.91	573.5	63.6	17.428	1109	1.397	11.5	1978.1	96.38	642	80.3
12H	2.73	578.2	90.3	13.852	1251	1.431	6.8	2178.6	92.04	870	108.8
13H	3.45	580.9	113.3	11.734	1329	1.261	4.1	1606.6	48.63	577	72.1
14H	4.08	581.2	134.1	9.471	1270	1.184	2.8	1110.4	34.40	483	60.4
15H	4.61	581.1	151.7	9.841	1492	1.131	2.9	827.0	20.54	326	40.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 7mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.28 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4730 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	5.00	ANGLE	10.4	47.70 X 176.70	2090.4	28.2
13H	585.0	5.50	ANGLE	8.27	53.50 X 174.20	1661.0	20.5
14H	584.0	6.98	ANGLE	7.09	76.66 X 143.30	1397.1	15.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 7mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.28 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4730 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1906.3	110.55	510	63.7
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1953.1	95.16	681	85.1
12H	2.86	578.2	94.4	13.852	1307	1.393	6.8	2020.1	82.72	818	102.2
13H	3.60	581.0	118.2	11.734	1387	1.259	4.0	1575.4	47.91	593	74.1
14H	4.28	581.2	140.5	9.471	1330	1.189	2.8	1111.3	35.22	518	64.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 8mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.76 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4244 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	6.00	ANGLE	11.3	48.70 X 176.70	2262.9	22.3
13H	585.0	6.50	ANGLE	9.23	54.50 X 174.20	1828.3	19.2
14H	584.0	8.41	ANGLE	8.10	77.38 X 143.30	1587.0	13.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 8mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.76 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4244 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1906.3	110.55	510	63.7
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1953.1	95.16	681	85.1
12H	2.64	578.2	87.2	13.852	1208	1.286	6.8	1628.0	59.28	541	67.6
13H	3.27	581.0	107.4	11.734	1260	1.238	4.0	1490.0	45.26	509	63.6
14H	3.76	581.3	123.6	9.471	1171	1.152	2.7	993.3	30.29	392	49.0

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 9mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.37 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3893 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	6.00	ANGLE	11.3	48.70 X 176.70	2262.9	22.3
13H	585.0	7.35	ANGLE	10.0	55.35 X 174.20	1975.0	12.7
14H	584.0	9.84	ANGLE	9.12	78.10 X 143.30	1774.8	10.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 9mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.37 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3893 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1906.3	110.55	510	63.7
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1953.1	95.16	681	85.1
12H	2.64	578.2	87.2	13.852	1208	1.286	6.8	1628.0	59.28	541	67.6
13H	3.02	581.0	99.4	11.734	1166	1.146	4.0	1040.5	26.03	271	33.9
14H	3.37	581.5	110.5	9.471	1047	1.113	2.5	861.6	24.16	280	35.0

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 10mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.05 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3583 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2V	750.0	35.00	BOX		153.50 X 143.06	20907.9	18.2
3H	750.0	30.00	FLAT		95.00 X 170.71	15904.2	23.9
4V	660.0	16.00	EDGING		156.00 X 96.22	14823.4	6.8
5H	660.0	69.00	FLAT		69.00 X 169.88	11526.7	22.2
6V	660.0	10.00	EDGING		160.00 X 69.83	10862.8	5.8
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	4.50	ANGLE	17.9	49.70 X 174.20	3490.4	22.9
12H	585.0	4.50	ANGLE	14.1	51.20 X 174.10	2772.3	20.6
13H	585.0	4.50	ANGLE	11.2	55.70 X 172.00	2220.0	19.9
14H	584.0	11.28	ANGLE	10.1	78.81 X 143.30	1960.5	11.7

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 100 x 10mm
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.05 m/s
AXV : 5972.85 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 65.0 s
INTER BILLET : 68.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3583 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.23	649.7	6.9	118.730	816	1.297	100.3	1910.5	255.47	184	50.1
2V	0.29	638.9	8.5	85.673	732	1.222	111.1	1315.3	170.38	152	46.3
3H	0.38	717.5	10.0	118.730	1187	1.315	32.5	1645.1	197.75	207	46.0
4V	0.40	521.9	14.7	74.409	1097	1.073	138.1	362.6	22.62	35	7.8
5H	0.52	660.0	15.0	87.594	1313	1.286	0.0	1561.4	147.51	232	29.0
6V	0.55	514.4	20.4	68.825	1405	1.061	145.6	262.6	15.25	33	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1026.6	55.97	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1466.4	98.21	255	31.8
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1720.5	115.83	397	49.6
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1411.8	68.30	283	35.4
11H	1.71	569.5	57.4	17.428	1000	1.297	15.5	1591.4	74.20	446	55.7
12H	2.15	573.6	71.7	13.852	994	1.259	11.4	1502.2	58.70	441	55.5
13H	2.69	576.6	89.1	11.734	1046	1.249	8.4	1523.3	53.26	497	62.1
14H	3.05	581.6	100.0	9.471	947	1.132	2.4	919.2	29.12	305	40.3

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 1/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.30 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 5550 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2			DUMMY				
3H	750.0	45.00	FLAT		110.00 X 210.40	22908.7	10.4
4			DUMMY				
5H	660.0	94.00	FLAT		94.00 X 216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X 96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X 200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X 203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	33.0	68.80 X 208.00	7830.0	24.9
10H	655.0	5.00	ANGLE	23.7	55.00 X 210.00	5693.0	27.3
11H	585.0	5.00	ANGLE	17.1	62.00 X 211.30	4187.0	26.5
12H	585.5	4.51	ANGLE	12.0	64.01 X 211.40	2993.0	28.5
13H	585.0	5.00	ANGLE	9.20	69.60 X 208.00	2313.0	22.7
14H	584.0	7.15	ANGLE	7.21	95.90 X 181.60	1790.0	22.6
15H	584.0	6.00	ANGLE	6.40	95.33 X 181.60	1640.4	8.4

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 1/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.30 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 5550 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.28	649.7	8.1	118.730	964	1.297	100.3	1684.6	225.26	191	44.2
2			DUMMY								
3H	0.31	717.5	8.2	118.730	974	1.116	32.5	1048.5	89.39	77	17.5
4			DUMMY								
5H	0.35	660.0	10.1	87.594	885	1.133	0.0	1193.0	92.63	98	13.8
6V	0.39	522.1	14.4	68.825	990	1.126	137.9	540.0	48.27	73	16.3
7H	0.51	590.3	16.4	55.247	905	1.287	64.7	1695.2	150.97	259	35.8
8H	0.68	608.7	21.2	43.393	921	1.337	46.3	1857.1	156.89	349	47.3
9H	0.90	622.4	27.7	37.442	1036	1.332	32.6	1929.9	141.54	410	51.3
10H	1.24	632.9	37.4	27.471	1028	1.375	22.1	2168.5	142.59	559	69.8
11H	1.69	570.2	56.5	17.428	984	1.360	14.8	2085.3	109.55	648	82.3
12H	2.36	575.9	78.2	13.852	1083	1.399	9.6	2347.8	110.40	904	113.0
13H	3.05	578.9	100.7	11.734	1181	1.294	6.1	2006.6	73.71	777	97.1
14H	3.94	581.3	129.6	9.471	1227	1.292	2.7	1790.0	69.58	944	118.0
15H	4.30	581.0	141.5	9.841	1392	1.091	3.0	791.9	17.62	261	32.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 5/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.48 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4734 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE	182.30	X 182.30	33147.4	
1H	750.0	25.00	BOX	129.00	X 204.05	25558.6	22.9
2			DUMMY				
3H	750.0	45.00	FLAT	110.00	X 210.40	22908.7	10.4
4			DUMMY				
5H	660.0	94.00	FLAT	94.00	X 216.68	20212.4	11.8
6V	660.0	48.00	EDGING	188.00	X 96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X 200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X 203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	33.0	68.80 X 208.00	7830.0	24.9
10H	655.0	5.00	ANGLE	23.7	55.00 X 210.00	5693.0	27.3
11H	585.0	5.00	ANGLE	17.1	62.00 X 211.30	4187.0	26.5
12H	585.5	4.51	ANGLE	12.0	64.01 X 211.40	2993.0	28.5
13H	585.0	5.00	ANGLE	9.20	69.60 X 208.00	2313.0	22.7
14H	584.0	8.32	ANGLE	8.04	96.49 X 181.60	2030.9	12.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 5/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.48 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4734 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.28	649.7	8.1	118.730	964	1.297	100.3	1684.6	225.26	191	44.2
2			DUMMY								
3H	0.31	717.5	8.2	118.730	974	1.116	32.5	1048.5	89.39	77	17.5
4			DUMMY								
5H	0.35	660.0	10.1	87.594	885	1.133	0.0	1193.0	92.63	98	13.8
6V	0.39	522.1	14.4	68.825	990	1.126	137.9	540.0	48.27	73	16.3
7H	0.51	590.3	16.4	55.247	905	1.287	64.7	1695.2	150.97	259	35.8
8H	0.68	608.7	21.2	43.393	921	1.337	46.3	1857.1	156.89	349	47.3
9H	0.90	622.4	27.7	37.442	1036	1.332	32.6	1929.9	141.54	410	51.3
10H	1.24	632.9	37.4	27.471	1028	1.375	22.1	2168.5	142.59	559	69.8
11H	1.69	570.2	56.5	17.428	984	1.360	14.8	2085.3	109.55	648	82.3
12H	2.36	575.9	78.2	13.852	1083	1.399	9.6	2347.8	110.40	904	113.0
13H	3.05	578.9	100.7	11.734	1181	1.294	6.1	2006.6	73.71	777	97.1
14H	3.48	581.1	114.2	9.471	1082	1.139	2.9	1088.2	32.55	389	48.7

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.92 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4012 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE		STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X	182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X	204.05	25558.6	22.9
2			DUMMY					
3H	750.0	45.00	FLAT		110.00 X	210.40	22908.7	10.4
4			DUMMY					
5H	660.0	94.00	FLAT		94.00 X	216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X	96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X	200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X	203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	33.0	68.80 X	208.00	7830.0	24.9
10H	655.0	5.00	ANGLE	23.7	55.00 X	210.00	5693.0	27.3
11H	585.0	5.00	ANGLE	17.1	62.00 X	211.30	4187.0	26.5
12H	585.5	6.64	ANGLE	14.1	66.14 X	211.40	3425.6	18.2
13H	585.0	7.10	ANGLE	11.1	71.70 X	208.00	2738.5	20.1
14H	584.0	10.58	ANGLE	9.64	97.62 X	181.60	2416.2	11.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.92 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4012 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.28	649.7	8.1	118.730	964	1.297	100.3	1684.6	225.26	191	44.2
2			DUMMY								
3H	0.31	717.5	8.2	118.730	974	1.116	32.5	1048.5	89.39	77	17.5
4			DUMMY								
5H	0.35	660.0	10.1	87.594	885	1.133	0.0	1193.0	92.63	98	13.8
6V	0.39	522.1	14.4	68.825	990	1.126	137.9	540.0	48.27	73	16.3
7H	0.51	590.3	16.4	55.247	905	1.287	64.7	1695.2	150.97	259	35.8
8H	0.68	608.7	21.2	43.393	921	1.337	46.3	1857.1	156.89	349	47.3
9H	0.90	622.4	27.7	37.442	1036	1.332	32.6	1929.9	141.54	410	51.3
10H	1.24	632.9	37.4	27.471	1028	1.375	22.1	2168.5	142.59	559	69.8
11H	1.69	570.2	56.5	17.428	984	1.360	14.8	2085.3	109.55	648	82.3
12H	2.06	575.9	68.3	13.852	947	1.222	9.6	1570.9	58.79	421	55.6
13H	2.58	578.9	85.0	11.734	998	1.251	6.1	1798.8	65.45	583	73.0
14H	2.92	581.3	96.0	9.471	909	1.133	2.7	1071.5	34.29	345	47.4

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.52 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3534 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE		STOCK HEIGHT	WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X	182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X	204.05	25558.6	22.9
2			DUMMY					
3H	750.0	45.00	FLAT		110.00 X	210.40	22908.7	10.4
4			DUMMY					
5H	660.0	94.00	FLAT		94.00 X	216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X	96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X	200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X	203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	33.0	68.80 X	208.00	7830.0	24.9
10H	655.0	5.00	ANGLE	23.7	55.00 X	210.00	5693.0	27.3
11H	585.0	5.00	ANGLE	17.1	62.00 X	211.30	4187.0	26.5
12H	585.5	6.64	ANGLE	14.1	66.14 X	211.40	3425.6	18.2
13H	585.0	8.85	ANGLE	12.8	73.45 X	208.00	3081.6	10.0
14H	584.0	12.87	ANGLE	11.2	98.76 X	181.60	2796.4	9.3

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.52 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3534 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.28	649.7	8.1	118.730	964	1.297	100.3	1684.6	225.26	191	44.2
2			DUMMY								
3H	0.31	717.5	8.2	118.730	974	1.116	32.5	1048.5	89.39	77	17.5
4			DUMMY								
5H	0.35	660.0	10.1	87.594	885	1.133	0.0	1193.0	92.63	98	13.8
6V	0.39	522.1	14.4	68.825	990	1.126	137.9	540.0	48.27	73	16.3
7H	0.51	590.3	16.4	55.247	905	1.287	64.7	1695.2	150.97	259	35.8
8H	0.68	608.7	21.2	43.393	921	1.337	46.3	1857.1	156.89	349	47.3
9H	0.90	622.4	27.7	37.442	1036	1.332	32.6	1929.9	141.54	410	51.3
10H	1.24	632.9	37.4	27.471	1028	1.375	22.1	2168.5	142.59	559	69.8
11H	1.69	570.2	56.5	17.428	984	1.360	14.8	2085.3	109.55	648	82.3
12H	2.06	575.9	68.3	13.852	947	1.222	9.6	1570.9	58.79	421	55.6
13H	2.29	579.0	75.6	11.734	887	1.112	6.0	991.0	25.83	204	28.8
14H	2.52	581.5	82.9	9.471	785	1.102	2.5	932.9	28.27	245	39.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.23 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3200 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2			DUMMY				
3H	750.0	45.00	FLAT		110.00 X 210.40	22908.7	10.4
4			DUMMY				
5H	660.0	94.00	FLAT		94.00 X 216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X 96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X 200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X 203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	33.0	68.80 X 208.00	7830.0	24.9
10H	655.0	5.00	ANGLE	23.7	55.00 X 210.00	5693.0	27.3
11H	585.0	5.00	ANGLE	21.5	66.30 X 210.80	5199.0	8.7
12H	585.0	5.00	ANGLE	17.5	69.30 X 210.50	4278.0	17.7
13H	585.0	5.00	ANGLE	14.4	74.60 X 208.50	3529.0	17.5
14H	584.0	15.15	ANGLE	12.8	99.90 X 181.60	3171.4	10.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.23 m/s
AXV : 7058.82 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 55.0 s
INTER BILLET : 78.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3200 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.28	649.7	8.1	118.730	964	1.297	100.3	1684.6	225.26	191	44.2
2			DUMMY								
3H	0.31	717.5	8.2	118.730	974	1.116	32.5	1048.5	89.39	77	17.5
4			DUMMY								
5H	0.35	660.0	10.1	87.594	885	1.133	0.0	1193.0	92.63	98	13.8
6V	0.39	522.1	14.4	68.825	990	1.126	137.9	540.0	48.27	73	16.3
7H	0.51	590.3	16.4	55.247	905	1.287	64.7	1695.2	150.97	259	35.8
8H	0.68	608.7	21.2	43.393	921	1.337	46.3	1857.1	156.89	349	47.3
9H	0.90	622.4	27.7	37.442	1036	1.332	32.6	1929.9	141.54	410	51.3
10H	1.24	632.9	37.4	27.471	1028	1.375	22.1	2168.5	142.59	559	69.8
11H	1.36	565.3	45.9	17.428	799	1.095	19.7	849.0	26.58	128	20.0
12H	1.65	569.7	55.3	13.852	766	1.215	15.3	1533.0	64.26	372	60.7
13H	2.00	573.1	66.7	11.734	782	1.212	11.9	1604.0	61.41	429	68.5
14H	2.23	581.7	73.1	9.471	692	1.113	2.3	993.0	33.48	256	46.3

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.99 m/s
AXV : 7764.71 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 50.0 s
INTER BILLET : 83.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2852 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2			DUMMY				
3H	750.0	45.00	FLAT		110.00 X 210.40	22908.7	10.4
4			DUMMY				
5H	660.0	94.00	FLAT		94.00 X 216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X 96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X 200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X 203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	40.0	75.80 X 202.30	9171.0	12.1
10H	655.0	5.00	ANGLE	32.5	73.80 X 204.00	7520.0	18.0
11H	585.0	5.00	ANGLE	27.1	71.90 X 205.60	6370.0	15.3
12H	585.0	5.00	ANGLE	22.6	74.20 X 206.20	5373.0	15.7
13H	585.0	5.00	ANGLE	18.8	77.60 X 205.60	4478.5	16.6
14H	584.0	19.69	ANGLE	16.0	102.17 X 181.60	3905.8	12.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.99 m/s
AXV : 7764.71 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 50.0 s
INTER BILLET : 83.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2852 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.30	649.7	8.9	118.730	1060	1.297	100.3	1703.3	227.76	213	47.3
2			DUMMY								
3H	0.34	717.5	9.0	118.730	1071	1.116	32.5	1052.2	89.71	85	18.8
4			DUMMY								
5H	0.38	660.0	11.1	87.594	974	1.133	0.0	1190.0	92.39	108	13.8
6V	0.43	522.1	15.8	68.825	1089	1.126	137.9	536.9	47.99	80	17.7
7H	0.56	590.3	18.0	55.247	995	1.287	64.7	1677.1	149.36	282	35.4
8H	0.74	608.7	23.4	43.393	1014	1.337	46.3	1833.7	154.91	379	47.4
9H	0.85	614.7	26.3	37.442	985	1.137	40.3	1057.4	56.03	154	19.6
10H	1.03	623.1	31.6	27.471	869	1.220	31.9	1470.9	87.36	290	41.6
11H	1.22	559.0	41.6	17.428	726	1.181	26.0	1273.4	60.25	263	45.3
12H	1.45	563.9	48.9	13.852	678	1.186	21.1	1335.2	59.01	302	55.8
13H	1.73	568.2	58.3	11.734	684	1.200	16.8	1483.9	62.14	379	69.3
14H	1.99	582.2	65.2	9.471	618	1.147	1.8	1108.7	46.60	318	64.4

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.68 m/s
AXV : 7764.71 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 50.0 s
INTER BILLET : 83.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2434 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		182.30 X 182.30	33147.4	
1H	750.0	25.00	BOX		129.00 X 204.05	25558.6	22.9
2			DUMMY				
3H	750.0	45.00	FLAT		110.00 X 210.40	22908.7	10.4
4			DUMMY				
5H	660.0	94.00	FLAT		94.00 X 216.68	20212.4	11.8
6V	660.0	48.00	EDGING		188.00 X 96.57	17952.5	11.2
7H	655.0	5.00	ANGLE	64.0	84.50 X 200.00	13947.0	22.3
8H	655.0	5.00	ANGLE	46.0	75.50 X 203.30	10431.0	25.2
9H	655.0	5.00	ANGLE	40.0	75.80 X 202.30	9171.0	12.1
10H	655.0	5.00	ANGLE	32.5	73.80 X 204.00	7520.0	18.0
11H	585.0	6.90	ANGLE	29.0	73.80 X 205.60	6721.0	10.6
12H	585.0	7.53	ANGLE	25.0	76.73 X 206.20	5886.0	12.4
13H	585.0	8.40	ANGLE	22.0	81.00 X 205.60	5164.0	12.3
14H	584.0	24.24	ANGLE	19.3	104.45 X 181.60	4619.6	10.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 5 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.68 m/s
AXV : 7764.71 mm²m/s
BILLET SIZE : 182.3 mm SQUARE
BILLET WEIGHT : 2970.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 50.0 s
INTER BILLET : 83.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2434 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.30	649.7	8.9	118.730	1060	1.297	100.3	1703.3	227.76	213	47.3
2			DUMMY								
3H	0.34	717.5	9.0	118.730	1071	1.116	32.5	1052.2	89.71	85	18.8
4			DUMMY								
5H	0.38	660.0	11.1	87.594	974	1.133	0.0	1190.0	92.39	108	13.8
6V	0.43	522.1	15.8	68.825	1089	1.126	137.9	536.9	47.99	80	17.7
7H	0.56	590.3	18.0	55.247	995	1.287	64.7	1677.1	149.36	282	35.4
8H	0.74	608.7	23.4	43.393	1014	1.337	46.3	1833.7	154.91	379	47.4
9H	0.85	614.7	26.3	37.442	985	1.137	40.3	1057.4	56.03	154	19.6
10H	1.03	623.1	31.6	27.471	869	1.220	31.9	1470.9	87.36	290	41.6
11H	1.16	559.2	39.5	17.428	688	1.119	25.8	983.3	38.88	161	29.2
12H	1.32	564.0	44.7	13.852	619	1.142	21.0	1129.0	45.64	213	43.1
13H	1.50	568.3	50.5	11.734	593	1.140	16.7	1169.1	44.10	233	49.2
14H	1.68	582.8	55.1	9.471	522	1.118	1.2	1004.0	41.16	237	56.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.04 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 4609 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL		152.00 X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	35.00	FLAT		100.00 X 280.00	27492.1	9.6
4V	660.0	30.00	EDGING		235.00 X 102.97	23921.7	13.0
5H	653.5	6.50	ANGLE	67.5	96.20 X 249.30	18192.0	24.0
6H	654.5	5.50	ANGLE	49.5	85.90 X 251.20	13954.0	23.3
7H	655.0	5.00	ANGLE	35.4	79.10 X 253.50	10120.0	27.5
8			DUMMY				
9H	655.0	5.00	ANGLE	24.7	74.30 X 255.20	7296.7	27.9
10H	655.0	5.00	ANGLE	18.4	72.40 X 256.00	5483.0	24.9
11H	585.0	5.00	ANGLE	15.5	77.00 X 256.00	4617.0	15.8
12H	585.0	5.00	ANGLE	13.0	83.40 X 254.50	3902.0	15.5
13H	581.6	10.64	ANGLE	11.2	117.10 X 218.36	3366.0	13.7
14H	581.6	8.38	ANGLE	9.60	115.97 X 218.36	2920.5	13.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 3/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.04 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 4609 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	643.3	8.7	118.730	1030	1.162	106.7	1289.3	188.24	171	38.0
2			DUMMY								
3H	0.32	717.5	8.6	118.730	1021	1.106	32.5	1292.0	104.75	94	21.0
4V	0.37	457.7	15.5	74.409	1153	1.149	202.3	545.4	53.99	88	19.5
5H	0.49	587.0	15.9	87.594	1392	1.315	66.5	1820.9	171.77	286	35.7
6H	0.64	604.5	20.1	68.825	1385	1.304	50.0	1798.4	151.42	319	70.9
7H	0.88	620.1	27.0	55.247	1494	1.379	34.9	2274.1	180.78	512	64.0
8			DUMMY								
9H	1.22	631.4	36.8	37.442	1379	1.387	23.6	2484.6	172.43	665	83.1
10H	1.62	638.6	48.5	27.471	1331	1.331	16.4	2366.8	131.91	669	83.7
11H	1.92	572.0	64.3	17.428	1120	1.188	13.0	1588.9	58.77	395	49.4
12H	2.28	574.7	75.7	13.852	1048	1.183	10.3	1635.1	55.67	441	55.1
13H	2.64	576.8	87.4	11.734	1025	1.159	4.8	1398.2	52.29	478	59.8
14H	3.04	576.6	100.8	9.471	954	1.153	5.0	1352.1	46.45	490	64.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.63 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 4102 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL		152.00 X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	35.00	FLAT		100.00 X 280.00	27492.1	9.6
4V	660.0	30.00	EDGING		235.00 X 102.97	23921.7	13.0
5H	653.5	6.50	ANGLE	67.5	96.20 X 249.30	18192.0	24.0
6H	654.5	5.50	ANGLE	49.5	85.90 X 251.20	13954.0	23.3
7H	655.0	5.00	ANGLE	35.4	79.10 X 253.50	10120.0	27.5
8			DUMMY				
9H	655.0	5.00	ANGLE	24.7	74.30 X 255.20	7296.7	27.9
10H	655.0	5.00	ANGLE	18.4	72.40 X 256.00	5483.0	24.9
11H	585.0	5.00	ANGLE	15.5	77.00 X 256.00	4617.0	15.8
12H	585.0	5.00	ANGLE	13.0	83.40 X 254.50	3902.0	15.5
13H	581.6	10.64	ANGLE	11.2	117.10 X 218.36	3383.4	13.3

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 7/16
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.63 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 4102 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	643.3	8.7	118.730	1030	1.162	106.7	1289.3	188.24	171	38.0
2			DUMMY								
3H	0.32	717.5	8.6	118.730	1021	1.106	32.5	1292.0	104.75	94	21.0
4V	0.37	457.7	15.5	74.409	1153	1.149	202.3	545.4	53.99	88	19.5
5H	0.49	587.0	15.9	87.594	1392	1.315	66.5	1820.9	171.77	286	35.7
6H	0.64	604.5	20.1	68.825	1385	1.304	50.0	1798.4	151.42	319	70.9
7H	0.88	620.1	27.0	55.247	1494	1.379	34.9	2274.1	180.78	512	64.0
8			DUMMY								
9H	1.22	631.4	36.8	37.442	1379	1.387	23.6	2484.6	172.43	665	83.1
10H	1.62	638.6	48.5	27.471	1331	1.331	16.4	2366.8	131.91	669	83.7
11H	1.92	572.0	64.3	17.428	1120	1.188	13.0	1588.9	58.77	395	49.4
12H	2.28	574.7	75.7	13.852	1048	1.183	10.3	1635.1	55.67	441	55.1
13H	2.63	576.8	86.9	11.734	1020	1.153	4.9	1367.4	50.63	461	57.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.31 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 3639 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL		152.00 X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	35.00	FLAT		100.00 X 280.00	27492.1	9.6
4V	660.0	30.00	EDGING		235.00 X 102.97	23921.7	13.0
5H	653.5	6.50	ANGLE	67.5	96.20 X 249.30	18192.0	24.0
6H	654.5	5.50	ANGLE	49.5	85.90 X 251.20	13954.0	23.3
7H	655.0	5.00	ANGLE	35.4	79.10 X 253.50	10120.0	27.5
8			DUMMY				
9H	655.0	5.00	ANGLE	24.7	74.30 X 255.20	7296.7	27.9
10H	655.0	8.10	ANGLE	21.5	75.50 X 256.00	6269.0	14.1
11H	585.0	7.00	ANGLE	17.4	79.00 X 256.00	5117.0	18.4
12H	585.0	6.43	ANGLE	14.3	84.83 X 254.50	4263.0	16.7
13H	581.6	13.08	ANGLE	12.9	118.32 X 218.36	3841.2	9.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 1/2
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.31 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 3639 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	643.3	8.7	118.730	1030	1.162	106.7	1289.3	188.24	171	38.0
2			DUMMY								
3H	0.32	717.5	8.6	118.730	1021	1.106	32.5	1292.0	104.75	94	21.0
4V	0.37	457.7	15.5	74.409	1153	1.149	202.3	545.4	53.99	88	19.5
5H	0.49	587.0	15.9	87.594	1392	1.315	66.5	1820.9	171.77	286	35.7
6H	0.64	604.5	20.1	68.825	1385	1.304	50.0	1798.4	151.42	319	70.9
7H	0.88	620.1	27.0	55.247	1494	1.379	34.9	2274.1	180.78	512	64.0
8			DUMMY								
9H	1.22	631.4	36.8	37.442	1379	1.387	23.6	2484.6	172.43	665	83.1
10H	1.42	638.6	42.4	27.471	1164	1.164	16.4	1456.1	61.44	273	34.1
11H	1.74	572.0	58.0	17.428	1010	1.225	13.0	1810.7	75.78	460	57.5
12H	2.08	574.7	69.3	13.852	959	1.200	10.3	1740.7	64.06	465	60.5
13H	2.31	577.1	76.5	11.734	898	1.110	4.5	1145.3	38.27	307	42.7

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.87 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2944 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm²)	(%)
			RECTANGL	152.00	X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0 141.00	X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	35.00	FLAT	100.00	X 280.00	27492.1	9.6
4V	660.0	30.00	EDGING	235.00	X 102.97	23921.7	13.0
5H	653.5	6.50	ANGLE	67.5 96.20	X 249.30	18192.0	24.0
6H	654.5	5.50	ANGLE	49.5 85.90	X 251.20	13954.0	23.3
7H	655.0	5.00	ANGLE	35.4 79.10	X 253.50	10120.0	27.5
8			DUMMY				
9H	655.0	5.00	ANGLE	32.5 81.70	X 251.00	9057.0	10.5
10H	655.0	5.00	ANGLE	27.1 81.10	X 250.20	7530.0	16.9
11H	585.0	5.00	ANGLE	22.6 83.90	X 249.00	6452.0	14.3
12H	585.0	5.00	ANGLE	18.8 87.15	X 247.70	5398.0	16.3
13H	581.6	17.57	ANGLE	16.1 120.56	X 218.36	4741.1	12.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.87 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2944 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	ROLLING LOAD	ROLLING TORQUE	ROLLING POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	643.3	8.7	118.730	1030	1.162	106.7	1289.3	188.24	171	38.0
2			DUMMY								
3H	0.32	717.5	8.6	118.730	1021	1.106	32.5	1292.0	104.75	94	21.0
4V	0.37	457.7	15.5	74.409	1153	1.149	202.3	545.4	53.99	88	19.5
5H	0.49	587.0	15.9	87.594	1392	1.315	66.5	1820.9	171.77	286	35.7
6H	0.64	604.5	20.1	68.825	1385	1.304	50.0	1798.4	151.42	319	70.9
7H	0.88	620.1	27.0	55.247	1494	1.379	34.9	2274.1	180.78	512	64.0
8			DUMMY								
9H	0.98	623.9	30.0	37.442	1124	1.117	31.1	1102.5	47.35	149	18.6
10H	1.18	629.9	35.8	27.471	983	1.203	25.1	1643.5	82.95	311	39.5
11H	1.38	564.1	46.6	17.428	812	1.167	20.9	1412.8	58.96	288	44.3
12H	1.65	568.2	55.3	13.852	766	1.195	16.8	1642.0	68.08	394	64.3
13H	1.87	577.5	62.0	11.734	727	1.139	4.1	1240.9	51.30	333	57.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.58 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2494 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL		152.00 X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	35.00	FLAT		100.00 X 280.00	27492.1	9.6
4V	660.0	30.00	EDGING		235.00 X 102.97	23921.7	13.0
5H	653.5	6.50	ANGLE	67.5	96.20 X 249.30	18192.0	24.0
6H	654.5	5.50	ANGLE	49.5	85.90 X 251.20	13954.0	23.3
7H	655.0	5.00	ANGLE	35.4	79.10 X 253.50	10120.0	27.5
8			DUMMY				
9H	655.0	5.00	ANGLE	32.5	81.70 X 251.00	9057.0	10.5
10H	655.0	6.90	ANGLE	29.0	83.00 X 250.20	8000.0	11.7
11H	585.0	7.45	ANGLE	25.0	86.35 X 249.00	7065.0	11.7
12H	585.0	8.30	ANGLE	21.9	90.45 X 247.70	6206.0	12.2
13H	581.6	22.12	ANGLE	19.3	122.84 X 218.36	5620.4	9.4

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 6 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.58 m/s
AXV : 8883.96 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 35.0 s
INTER BILLET : 107.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2494 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	643.3	8.7	118.730	1030	1.162	106.7	1289.3	188.24	171	38.0
2			DUMMY								
3H	0.32	717.5	8.6	118.730	1021	1.106	32.5	1292.0	104.75	94	21.0
4V	0.37	457.7	15.5	74.409	1153	1.149	202.3	545.4	53.99	88	19.5
5H	0.49	587.0	15.9	87.594	1392	1.315	66.5	1820.9	171.77	286	35.7
6H	0.64	604.5	20.1	68.825	1385	1.304	50.0	1798.4	151.42	319	70.9
7H	0.88	620.1	27.0	55.247	1494	1.379	34.9	2274.1	180.78	512	64.0
8			DUMMY								
9H	0.98	623.9	30.0	37.442	1124	1.117	31.1	1102.5	47.35	149	18.6
10H	1.11	629.9	33.7	27.471	925	1.132	25.1	1239.5	52.56	185	25.0
11H	1.26	564.1	42.6	17.428	742	1.132	20.9	1219.2	47.40	211	35.6
12H	1.43	568.2	48.1	13.852	666	1.138	16.8	1297.9	48.65	245	46.0
13H	1.58	578.0	52.2	11.734	613	1.104	3.6	1091.4	42.82	234	47.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 8 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.21 m/s
AXV : 7765.42 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 40.0 s
INTER BILLET : 102.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2255 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL	152.00	X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	10.00	SHAPE	80.0	97.34 X 292.20	24441.9	19.6
4H	660.0	9.70	SHAPE	87.7	103.20 X 300.40	22587.0	7.6
5H	612.0	10.00	ANGLE	57.5	99.80 X 319.20	17703.0	21.6
6H	650.2	18.00	ANGLE	48.0	129.00 X 332.80	15531.0	12.3
7H	650.2	9.40	ANGLE	39.4	120.40 X 332.80	13257.0	14.6
8H	686.7	17.00	ANGLE	30.3	118.00 X 333.00	11490.0	13.3
9H	686.7	12.40	ANGLE	25.7	113.40 X 333.00	10082.0	12.3
10H	668.1	15.20	ANGLE	24.2	116.20 X 328.00	9135.0	9.4
11H	668.1	12.00	ANGLE	21.0	113.00 X 328.00	8144.0	10.8
12H	670.6	14.20	ANGLE	19.2	103.70 X 333.50	7319.0	10.1
13H	646.7	16.30	ANGLE	18.3	129.30 X 311.50	6770.3	7.5
14H	629.7	15.80	ANGLE	16.1	156.13 X 289.50	6418.2	5.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 8 x 5/8
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.21 m/s
AXV : 7765.42 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 40.0 s
INTER BILLET : 102.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 2255 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.26	643.3	7.6	118.730	900	1.162	106.7	1266.3	184.87	147	36.2
2			DUMMY								
3H	0.32	676.4	9.0	118.730	1065	1.244	73.6	1867.2	232.50	218	48.5
4H	0.34	594.5	11.0	74.409	822	1.082	65.5	967.1	92.18	107	28.8
5H	0.44	566.5	14.8	87.594	1295	1.276	45.5	2102.1	141.01	218	27.3
6H	0.50	621.5	15.4	68.825	1057	1.140	28.7	1581.1	73.99	119	26.5
7H	0.59	619.8	18.1	55.247	997	1.172	30.4	1906.4	93.55	177	22.2
8H	0.68	669.2	19.3	43.393	837	1.154	17.5	1916.0	96.32	195	29.1
9H	0.77	668.8	22.0	37.442	824	1.140	17.9	1890.4	87.54	202	30.6
10H	0.85	655.4	24.8	27.471	680	1.104	12.7	1567.9	58.61	152	27.9
11H	0.95	655.3	27.8	17.428	484	1.122	12.8	1860.0	72.31	210	54.3
12H	1.06	662.9	30.6	13.852	423	1.113	7.7	1945.8	66.37	212	62.7
13H	1.15	641.3	34.2	11.734	401	1.081	5.4	1520.0	45.27	162	50.5
14H	1.21	623.3	37.1	9.471	351	1.055	6.4	1216.4	35.01	136	48.4

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 8 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.02 m/s
AXV : 7765.42 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 40.0 s
INTER BILLET : 102.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 1901 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			RECTANGL	152.00	X 233.00	35330.2	
1H	750.0	10.00	SHAPE	95.0	141.00 X 260.50	30408.0	13.9
2			DUMMY				
3H	750.0	10.00	SHAPE	80.0	97.34 X 292.20	24441.9	19.6
4H	660.0	9.70	SHAPE	87.7	103.20 X 300.40	22587.0	7.6
5H	612.0	10.00	ANGLE	57.5	99.80 X 319.20	17703.0	21.6
6H	650.2	18.00	ANGLE	48.0	129.00 X 332.80	15531.0	12.3
7H	650.2	9.40	ANGLE	39.4	120.40 X 332.80	13257.0	14.6
8H	686.7	17.00	ANGLE	30.3	118.00 X 333.00	11490.0	13.3
9			DUMMY				
10H	668.1	18.40	ANGLE	27.4	119.40 X 328.00	10178.0	11.4
11			DUMMY				
12H	670.6	19.20	ANGLE	24.2	108.70 X 333.50	8975.0	11.8
13H	646.7	20.80	ANGLE	22.8	133.80 X 311.50	8188.0	8.8
14H	629.7	20.30	ANGLE	19.2	158.38 X 289.50	7628.5	6.8

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:36

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 8 x 3/4
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.02 m/s
AXV : 7765.42 mm²m/s
BILLET SIZE : 233.0x152.0 mm RECTANGLE
BILLET WEIGHT : 2378.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 40.0 s
INTER BILLET : 102.7 s
PRODUCTION : 60.0 t/h
TOTAL ROLLING POWER : 1901 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.26	643.3	7.6	118.730	900	1.162	106.7	1266.3	184.87	147	36.2
2			DUMMY								
3H	0.32	676.4	9.0	118.730	1065	1.244	73.6	1867.2	232.50	218	48.5
4H	0.34	594.5	11.0	74.409	822	1.082	65.5	967.1	92.18	107	28.8
5H	0.44	566.5	14.8	87.594	1295	1.276	45.5	2102.1	141.01	218	27.3
6H	0.50	621.5	15.4	68.825	1057	1.140	28.7	1581.1	73.99	119	26.5
7H	0.59	619.8	18.1	55.247	997	1.172	30.4	1906.4	93.55	177	22.2
8H	0.68	669.2	19.3	43.393	837	1.154	17.5	1916.0	96.32	195	29.1
9			DUMMY								
10H	0.76	655.5	22.2	27.471	611	1.129	12.6	1778.5	76.74	179	36.6
11			DUMMY								
12H	0.87	662.9	24.9	13.852	345	1.134	7.7	2081.8	83.60	218	79.0
13H	0.95	641.2	28.2	11.734	331	1.096	5.5	1617.2	56.07	166	62.6
14H	1.02	623.6	31.2	9.471	295	1.073	6.1	1347.6	48.33	158	66.8

*** Subject to the confidentiality clause *** M

3 Roll pass design calculations for EA 4” from billet 150x150

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED	:	EA 4 x 1/4 blt150 Hot rolling
MATERIAL	:	Rebar Steel
ROLLING SPEED	:	4.56 m/s
AXV	:	5972.67 mm²m/s
BILLET SIZE	:	152.0 mm SQUARE
BILLET WEIGHT	:	2065.0 kg
MAX HEATING CAPABILITY	:	80.0 t/h
ROLLING TIME	:	45.2 s
INTER BILLET	:	47.7 s
PRODUCTION	:	80.0 t/h
TOTAL ROLLING POWER	:	4613 kW

STAND NO.	ROLL DIA (mm)	GAP (mm)	GROOVE TYPE	STOCK HEIGHT (mm)	STOCK WIDTH (mm)	AREA (mm²)	REDUCTION (%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	5.00	ANGLE	10.4	47.70 X 176.70	2090.4	28.2
13H	585.0	5.50	ANGLE	8.27	53.50 X 174.20	1661.0	20.5
14H	584.0	7.15	ANGLE	7.21	77.85 X 145.50	1453.5	12.5
15H	584.0	6.00	ANGLE	6.40	77.28 X 145.50	1309.4	9.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/4 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 4.56 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 4613 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1726.8	116.25	398	49.8
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1912.7	110.93	512	64.0
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1959.1	95.45	683	85.4
12H	2.86	578.2	94.4	13.852	1307	1.393	6.8	2025.8	82.95	820	102.5
13H	3.60	581.0	118.2	11.734	1387	1.259	4.0	1579.3	48.03	595	74.3
14H	4.11	581.2	135.0	9.471	1279	1.143	2.8	953.1	27.05	383	47.8
15H	4.56	581.0	149.9	9.841	1476	1.110	3.0	732.6	17.68	278	34.7

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/16 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.69 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3928 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	5.00	ANGLE	20.9	49.20 X 175.70	4066.4	26.8
11H	585.0	5.00	ANGLE	14.6	46.40 X 176.50	2911.2	28.4
12H	585.0	6.00	ANGLE	11.3	48.70 X 176.70	2262.9	22.3
13H	585.0	6.50	ANGLE	9.23	54.50 X 174.50	1828.3	19.2
14H	584.0	8.32	ANGLE	8.04	78.44 X 145.50	1617.1	11.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/16 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.69 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3928 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1726.8	116.25	398	49.8
10H	1.47	636.9	44.0	27.471	1210	1.367	18.1	1912.7	110.93	512	64.0
11H	2.05	573.5	68.3	17.428	1191	1.397	11.5	1959.1	95.45	683	85.4
12H	2.64	578.2	87.2	13.852	1208	1.286	6.8	1632.6	59.44	543	67.8
13H	3.27	581.0	107.4	11.734	1260	1.238	4.0	1497.6	45.37	510	63.8
14H	3.69	581.2	121.4	9.471	1149	1.131	2.8	919.1	26.47	336	42.0

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/8 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.11 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3381 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	4.50	ANGLE	17.9	49.70 X 174.20	3490.4	22.9
12H	585.0	4.50	ANGLE	14.1	51.20 X 174.10	2772.3	20.6
13H	585.0	4.50	ANGLE	11.2	55.70 X 172.00	2220.0	19.9
14H	584.0	10.58	ANGLE	9.64	79.57 X 145.50	1919.7	13.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/8 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 3.11 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 3381 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1726.8	116.25	398	49.8
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1416.6	68.53	284	35.5
11H	1.71	569.5	57.4	17.428	1000	1.297	15.5	1596.5	74.44	447	55.9
12H	2.15	573.6	71.7	13.852	994	1.259	11.4	1506.7	58.88	442	55.6
13H	2.69	576.6	89.1	11.734	1046	1.249	8.4	1527.4	53.40	498	62.3
14H	3.11	581.4	102.2	9.471	968	1.156	2.6	1003.4	34.14	365	47.2

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 7/16 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.69 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2955 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	5.60	ANGLE	19.0	50.80 X 174.30	3679.0	18.7
12H	585.0	5.80	ANGLE	15.3	52.50 X 174.20	2999.0	18.5
13H	585.0	6.30	ANGLE	12.9	57.50 X 173.10	2533.8	15.5
14H	584.0	12.87	ANGLE	11.2	80.71 X 145.50	2217.1	12.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 7/16 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.69 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2955 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1726.8	116.25	398	49.8
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1416.6	68.53	284	35.5
11H	1.62	569.5	54.4	17.428	949	1.231	15.5	1344.2	56.80	324	42.7
12H	1.99	573.6	66.3	13.852	919	1.227	11.4	1380.7	52.38	364	49.5
13H	2.36	576.7	78.1	11.734	916	1.184	8.3	1247.7	39.82	326	44.4
14H	2.69	581.6	88.5	9.471	838	1.143	2.4	973.4	33.94	314	46.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/2 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.38 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2641 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	29.5	52.90 X 170.10	5558.8	25.6
10H	655.0	7.60	ANGLE	23.5	51.80 X 176.30	4527.3	18.6
11H	585.0	6.20	ANGLE	19.6	51.40 X 174.30	3784.0	16.4
12H	585.0	7.00	ANGLE	16.5	53.70 X 174.20	3208.1	15.2
13H	585.0	7.60	ANGLE	14.1	58.80 X 173.10	2754.7	14.1
14H	584.0	15.15	ANGLE	12.8	81.85 X 145.50	2509.3	8.9

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 1/2 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 2.38 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2641 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.07	627.3	32.7	37.442	1225	1.344	27.7	1726.8	116.25	398	49.8
10H	1.32	636.9	39.6	27.471	1087	1.228	18.1	1416.6	68.53	284	35.5
11H	1.58	569.5	52.9	17.428	923	1.196	15.5	1202.1	47.71	264	35.8
12H	1.86	573.6	62.0	13.852	859	1.180	11.4	1175.3	41.17	267	38.9
13H	2.17	576.7	71.8	11.734	843	1.165	8.3	1158.9	36.47	274	40.7
14H	2.38	581.9	78.1	9.471	740	1.098	2.1	819.7	25.38	208	35.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/8 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.94 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2158 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	5.00	ANGLE	32.0	55.20 X 171.00	5895.0	21.1
10H	655.0	5.00	ANGLE	25.4	53.70 X 171.00	4723.0	19.9
11H	585.0	5.00	ANGLE	22.4	54.20 X 170.00	4146.0	12.2
12H	585.0	5.00	ANGLE	19.0	56.20 X 166.70	3505.0	15.5
13H	585.0	5.00	ANGLE	17.8	61.50 X 162.70	3280.0	6.4
14H	584.0	19.69	ANGLE	16.0	84.12 X 145.50	3078.3	6.1

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 5/8 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.94 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 2158 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	1.01	625.5	30.9	37.442	1158	1.267	29.5	1476.1	88.23	286	35.7
10H	1.26	632.4	38.2	27.471	1049	1.248	22.6	1434.8	74.53	298	37.3
11H	1.44	565.6	48.6	17.428	848	1.139	19.4	928.8	32.76	167	24.6
12H	1.70	569.0	57.2	13.852	792	1.183	16.0	1126.4	42.44	254	40.1
13H	1.82	569.8	61.0	11.734	716	1.069	15.2	578.9	13.85	89	15.5
14H	1.94	582.5	63.6	9.471	602	1.066	1.5	630.1	17.78	118	24.6

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/4 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.65 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 1850 kW

STAND NO.	ROLL DIA	GAP	GROOVE TYPE	STOCK HEIGHT	STOCK WIDTH	AREA	REDUCTION
	(mm)	(mm)		(mm)	(mm)	(mm²)	(%)
			SQUARE		151.95 X 151.95	23003.0	
1H	750.0	25.00	BOX		129.00 X 159.81	20615.2	10.4
2V	750.0	35.00	BOX		153.50 X 130.66	19759.5	4.2
3H	750.0	30.00	FLAT		95.00 X 167.65	15616.3	21.0
4V	660.0	16.00	EDGING		156.00 X 95.85	14781.1	5.3
5H	660.0	69.00	FLAT		69.00 X 169.73	11516.8	22.1
6V	660.0	10.00	EDGING		160.00 X 69.82	10861.0	5.7
7H	655.0	5.00	ANGLE	55.5	66.50 X 167.90	9487.0	12.7
8H	655.0	5.00	ANGLE	41.0	59.70 X 171.10	7471.0	21.3
9H	655.0	7.50	ANGLE	34.5	57.70 X 171.00	6291.0	15.8
10H	655.0	7.60	ANGLE	28.0	56.30 X 171.00	5164.0	17.9
11H	585.0	7.60	ANGLE	25.0	56.80 X 170.00	4581.0	11.3
12H	585.0	8.30	ANGLE	22.2	59.50 X 166.70	4051.0	11.6
13H	585.0	8.20	ANGLE	20.8	64.70 X 162.70	3796.0	6.3
14H	584.0	24.24	ANGLE	19.3	86.40 X 145.50	3626.5	4.5

*** Subject to the confidentiality clause *** M

DANIELI-MORGARDSHAMMAR PASS DESIGN DEPT.
SPEED CALCULATION FOR HOT ROLLING MILL 24/05/23 AT 14:37

JOB NO. : DPC68X01 LAYOUT NO. : 000-000-361-342

SECTION ROLLED : EA 4 x 3/4 blt150
Hot rolling
MATERIAL : Rebar Steel
ROLLING SPEED : 1.65 m/s
AXV : 5972.67 mm²m/s
BILLET SIZE : 152.0 mm SQUARE
BILLET WEIGHT : 2065.0 kg
MAX HEATING CAPABILITY : 80.0 t/h
ROLLING TIME : 45.2 s
INTER BILLET : 47.7 s
PRODUCTION : 80.0 t/h
TOTAL ROLLING POWER : 1850 kW

STAND NO.	SPEED	WORK DIA	ROLL RPM	GEAR RATIO	MOTOR RPM	R FACTOR	GROOVE FACTOR	R O L L I N G LOAD	TORQUE	POWER	UTIL
	(m/s)	(mm)	(RPM)		(RPM)		(mm)	(kN)	(kNm)	(kW)	(%)
	1.20										
1H	0.29	646.0	8.6	118.730	1017	1.116	104.0	981.9	93.02	83	18.5
2V	0.30	633.8	9.1	85.673	780	1.043	116.2	456.7	28.83	27	7.8
3H	0.38	717.5	10.2	118.730	1209	1.265	32.5	1477.8	162.90	174	38.6
4V	0.40	521.8	14.8	74.409	1100	1.057	138.2	302.9	16.72	26	5.8
5H	0.52	660.0	15.0	87.594	1315	1.283	0.0	1557.7	146.47	230	28.8
6V	0.55	514.4	20.4	68.825	1405	1.060	145.6	261.2	15.08	32	7.2
7H	0.63	603.5	19.9	55.247	1101	1.145	51.5	1029.9	56.11	117	14.6
8H	0.80	616.3	24.8	43.393	1075	1.270	38.7	1472.1	98.58	256	32.0
9H	0.95	625.7	29.0	37.442	1085	1.188	29.3	1176.4	61.08	185	23.2
10H	1.16	632.4	34.9	27.471	960	1.218	22.6	1325.8	67.50	247	32.2
11H	1.30	565.7	44.0	17.428	767	1.127	19.3	889.7	31.45	145	23.6
12H	1.47	569.0	49.5	13.852	686	1.131	16.0	902.1	31.02	161	29.3
13H	1.57	569.9	52.7	11.734	619	1.067	15.1	585.7	14.85	82	16.6
14H	1.65	583.3	53.9	9.471	511	1.047	0.7	573.8	14.86	84	20.5

*** Subject to the confidentiality clause *** M

4 Motor utilization diagrams