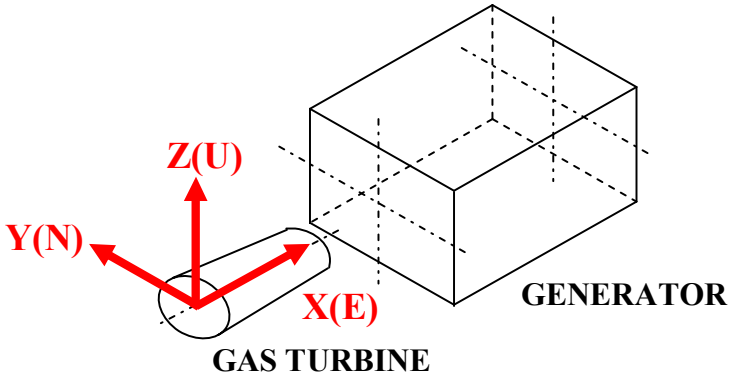
Foundation loads intensity

This documentation shall be read together with drawing 2098470



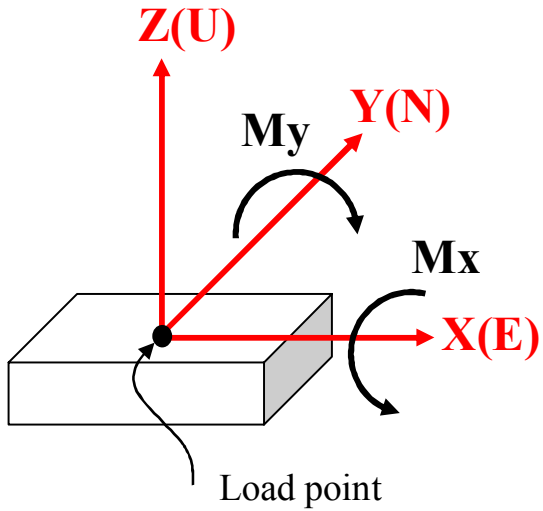
Wind load specification

Mean Return Interval = 50 years
Basic wind speed (3-s. gust at 10m): V = 45 m/s
Exposure category: D
Topographic factor: K_{ZT} = 1.0
Wind directionality factor: K_d = 0.85
Velocity pressure exposure coefficient (MWFRS): $K_{h,MWFRS}$ = 1.06
Importance factor: I = 1.15
Gust factor: G = 0.85
Height of Air Handling Unit centroid: z_{AHU} =9.1 m
Velocity pressure exposure coefficient (AHU): $K_{z,AHU}$ = 1.16
Force coefficient (AHU): C_f = 1.31

Seismic load specification

Modal response spectrum analysis

Occupancy category: III
Site class: D
Short period acceleration: S_s = 1.5g
1-second period acceleration: S_1 = 0.625g
Long period transition period: T_L= 4.0 s
Seismic coefficient: 3.25
Importance factor (seismic): I = 1.25
Seismic coefficient: F_a= 1.0
Seismic coefficient: F_v= 1.5
Redundancy Factor = 1.3
Seismic design category: D



Note 1: Tabled loads are loads on each support.
Note 2: Loads act at the centre of each support.
Note 3: Combine loads and safety factors as needed.
Note 4: Tabled loads are excluding dead load.

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh Approved Stefan Arfvedsson 2012-11-15	Anders Johansson 2012-11-15 Resp dept GKMI 2	HG 9100	Foundation loads intensity Typical SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	E Language en
				SIEMENS		Date 2012-11-15	Document No. 2098471	Sh./No. of sh. 1 (11)

Static loads from base frame with eight point support, (A1 – A8)

Foundation loads intensity		Static loads											
		Dead loads						Operating loads					
		Fx	Fy	Fz	Mx	My	Mz	Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	0	1	-180	2	-1	0	0	5	-14	-1	0	0
Base frame	A2	0	7	-203	-6	-1	0	0	-6	-15	1	0	0
Base frame	A3	0	-6	-140	1	0	0	0	4	-23	-2	0	0
Base frame	A4	0	-7	-157	-2	0	0	0	4	5	-1	0	0
Base frame	A5	0	1	-142	0	-1	0	0	7	-34	-2	0	0
Base frame	A6	0	-5	-173	1	0	0	0	-1	-138	0	3	0
Base frame	A7	11	10	-368	9	15	-3	-26	-14	88	7	-14	3
Base frame	A8	-11	0	-638	-10	0	0	26	0	-145	7	-11	0

Foundation loads intensity		Static loads					
		Loads due to thermal expansion					
		Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm
Support feet	A1	± 103	± 103	± 0	± 41	± 41	± 0
Support feet	A2	± 108	± 108	± 0	± 43	± 43	± 0
Support feet	A3	± 95	± 95	± 0	± 38	± 38	± 0
Support feet	A4	± 99	± 99	± 0	± 39	± 39	± 0
Support feet	A5	± 96	± 96	± 0	± 38	± 38	± 0
Support feet	A6	± 102	± 102	± 0	± 40	± 40	± 0
Support feet	A7	± 294	± 128	± 0	± 50	± 116	± 0
Support feet	A8	± 308	± 128	± 0	± 50	± 122	± 0

Dynamic loads from base frame with eight point support, (A1 – A8)

Foundation loads intensity		Dynamic loads											
		Seismic load in X-direction ±0,5G						Seismic load in Y-direction ±0,5G					
		Fx	Fy	Fz	Mx	My	Mz	Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	± 0	± 3	± 87	± 2	± 1	± 0	± 0	± 74	± 199	± 31	± 2	± 0
Base frame	A2	± 0	± 5	± 61	± 3	± 1	± 0	± 0	± 67	± 191	± 27	± 2	± 0
Base frame	A3	± 0	± 3	± 27	± 1	± 0	± 0	± 0	± 110	± 67	± 36	± 0	± 0
Base frame	A4	± 0	± 3	± 11	± 0	± 0	± 0	± 0	± 150	± 85	± 38	± 0	± 0
Base frame	A5	± 0	± 3	± 53	± 1	± 2	± 0	± 0	± 48	± 133	± 16	± 1	± 0
Base frame	A6	± 0	± 6	± 107	± 1	± 2	± 0	± 0	± 45	± 119	± 14	± 1	± 0
Base frame	A7	± 484	± 1	± 131	± 1	± 197	± 43	± 17	± 509	± 285	± 186	± 5	± 1
Base frame	A8	± 517	± 0	± 140	± 3	± 201	± 3	± 17	± 0	± 289	± 15	± 14	± 3

Foundation loads intensity		Dynamic loads					
		Seismic load in Z-direction ±0,2G					
		Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	± 0	± 1	± 36	± 0	± 0	± 0
Base frame	A2	± 0	± 1	± 42	± 1	± 0	± 0
Base frame	A3	± 0	± 1	± 27	± 0	± 0	± 0
Base frame	A4	± 0	± 2	± 30	± 0	± 0	± 0
Base frame	A5	± 0	± 0	± 30	± 0	± 0	± 0
Base frame	A6	± 0	± 1	± 34	± 0	± 0	± 0
Base frame	A7	± 1	± 2	± 73	± 2	± 3	± 0
Base frame	A8	± 1	± 0	± 128	± 2	± 0	± 0

Loads from base frame with eight point support, (A1 – A8)

Foundation loads intensity		Dynamic loads											
		Wind loads in +Y direction						Wind loads in -Y direction					
		Fx	Fy	Fz	Mx	My	Mz	Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	0	58	-283	-24	-3	0	0	-37	289	12	2	0
Base frame	A2	0	45	290	-16	3	0	0	-71	-284	30	-3	0
Base frame	A3	0	45	-13	-15	0	0	0	-25	51	11	0	0
Base frame	A4	0	61	48	-15	0	0	0	-81	-13	23	0	0
Base frame	A5	0	9	-55	-3	-1	0	0	-10	60	3	1	0
Base frame	A6	0	8	56	-3	1	0	0	-11	-56	4	-1	0
Base frame	A7	12	61	-35	-23	4	-2	-38	-60	61	23	-14	6
Base frame	A8	-31	0	66	-3	-8	-1	19	0	-33	3	4	1

Foundation loads intensity		Dynamic loads											
		Wind loads in +X direction						Wind loads in -X direction					
		Fx	Fy	Fz	Mx	My	Mz	Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	0	5	108	-3	2	0	0	-3	-53	2	-2	0
Base frame	A2	0	-4	77	3	1	0	0	0	-36	0	-1	0
Base frame	A3	0	-3	-59	1	0	0	0	10	52	-1	0	0
Base frame	A4	0	2	-36	-1	0	0	0	-5	41	2	0	0
Base frame	A5	0	0	-8	0	-1	0	0	-1	3	0	1	0
Base frame	A6	0	1	11	0	-1	0	0	-1	-9	0	1	0
Base frame	A7	88	-1	-10	-1	36	-8	-84	-1	35	-1	-35	9
Base frame	A8	90	0	-9	1	36	-1	-79	0	42	2	-31	0

Loads from base frame with eight point support, (A1 – A8)

Foundation loads intensity		Dynamic loads											
		Generator short-circuit						Turbine blade-loss					
		Fx	Fy	Fz	Mx	My	Mz	Fx	Fy	Fz	Mx	My	Mz
Component	**Item**	kN	kN	kN	kNm	kNm	kNm	kN	kN	kN	kNm	kNm	kNm
Base frame	A1	± 0	± 0	± 2	± 0	± 0	± 0	± 0	± 16	± 9	± 7	± 0	± 0
Base frame	A2	± 0	± 1	± 3	± 0	± 0	± 0	± 0	± 17	± 10	± 8	± 0	± 0
Base frame	A3	± 0	± 7	± 14	± 2	± 0	± 0	± 0	± 54	± 128	± 19	± 1	± 0
Base frame	A4	± 0	± 8	± 29	± 2	± 0	± 0	± 0	± 71	± 136	± 18	± 1	± 0
Base frame	A5	± 0	± 3	± 169	± 1	± 2	± 0	± 0	± 26	± 145	± 9	± 3	± 0
Base frame	A6	± 0	± 4	± 178	± 2	± 4	± 0	± 0	± 24	± 138	± 8	± 3	± 0
Base frame	A7	± 40	± 21	± 659	± 4	± 19	± 8	± 21	± 78	± 23	± 28	± 10	± 4
Base frame	A8	± 40	± 0	± 661	± 51	± 15	± 3	± 21	± 0	± 27	± 1	± 8	± 6

Static loads from lube oil cooler, (B1)

Foundation loads intensity		Static loads
		Dead loads
* = Total weight of unit		Fz
Component	Item	kN
Lube oil cooler	B1	*-15,0

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh	Anders Johansson 2012-11-15		Foundation loads intensity Typical	E
				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. 2098471	Sh./No. of sh. 6 (11)

Static loads from Roll Out Frame (C1 – C8)

Foundation loads intensity		Static load
		Dead Loads
		Fz
Component	Item	kN
GG-removal	C1	-33,0
GG-removal	C2	-33,0
GG-removal	C3	-33,0
GG-removal	C4	-33,0
GG-removal	C5	-33,0
GG-removal	C6	-33,0
GG-removal	C7	-33,0
GG-removal	C8	-33,0

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh	Anders Johansson 2012-11-15		Foundation loads intensity Typical	E
				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. 2098471	Sh./No. of sh. 7 (11)

Static loads from exhaust support structure, (D1 – D6)

Foundation loads intensity		Static loads					
		Dead loads					
		Fx	Mx	Fy	My	Fz	Mz
Component	Item	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	-	-	-	-	-18,1	-
Exhaust	D2	-	-	-	-	-18,1	-
Exhaust	D3	-	-	-	-	-18,1	-
Exhaust	D4	-	-	-	-	-18,1	-
Exhaust	D5	-	-	-	-	-18,1	-
Exhaust	D6	-	-	-	-	-18,1	-

		Wind loads, +X direction						Wind loads, -X direction					
		Fx	Mx	Fy	My	Fz	Mz	Fx	Mx	Fy	My	Fz	Mz
		kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	9,8	-	-	6,7	14,4	-	-9,8	-	-	-6,7	-14,4	-
Exhaust	D2	9,8	-	-	6,7	-14,4	-	-9,8	-	-	-6,7	14,4	-
Exhaust	D3	9,8	-	-	6,7	14,4	-	-9,8	-	-	-6,7	-14,4	-
Exhaust	D4	9,8	-	-	6,7	-14,4	-	-9,8	-	-	-6,7	14,4	-
Exhaust	D5	9,8	-	-	6,7	14,4	-	-9,8	-	-	-6,7	-14,4	-
Exhaust	D6	9,8	-	-	6,7	-14,4	-	-9,8	-	-	-6,7	14,4	-

		Wind loads, +Y direction						Wind loads, -Y direction					
		Fx	Mx	Fy	My	Fz	Mz	Fx	Mx	Fy	My	Fz	Mz
		kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	-	-1,4	2,6	-	-4,6	-	-	1,3	-2,3	-	5,2	-
Exhaust	D2	-	-1,4	2,6	-	-4,6	-	-	1,3	-2,3	-	5,2	-
Exhaust	D3	-	-1,4	2,8	-	-1,0	-	-	1,4	-2,8	-	-1,0	-
Exhaust	D4	-	-1,4	2,8	-	-1,0	-	-	1,4	-2,8	-	-1,0	-
Exhaust	D5	-	-1,3	2,3	-	5,3	-	-	1,4	-2,6	-	-4,9	-

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh	Anders Johansson 2012-11-15		Foundation loads intensity Typical	E
				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. 2098471	Sh./No. of sh. 8 (11)

Exhaust	D6	-	-1,3	2,3	-	5,3	-	-	1,4	-2,6	-	-4,9	-	

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh	Anders Johansson 2012-11-15		Foundation loads intensity Typical	E
				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. **2098471**	Sh./No. of sh. 9 (11)

Dynamic loads from exhaust support structure, (D1 – D6)

Foundation loads intensity		Dynamic loads											
		Seismic loads, +X direction						Seismic loads, -X direction					
		Fx	Mx	Fy	My	Fz	Mz	Fx	Mx	Fy	My	Fz	Mz
Component	Item	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	20,8	-	-	14,3	28,4	-	-20,8	-	-	-14,3	-28,4	-
Exhaust	D2	20,8	-	-	14,3	-28,4	-	-20,8	-	-	-14,3	28,4	-
Exhaust	D3	20,8	-	-	14,3	28,4	-	-20,8	-	-	-14,3	-28,4	-
Exhaust	D4	20,8	-	-	14,3	-28,4	-	-20,8	-	-	-14,3	28,4	-
Exhaust	D5	20,8	-	-	14,3	28,4	-	-20,8	-	-	-14,3	-28,4	-
Exhaust	D6	20,8	-	-	14,3	-28,4	-	-20,8	-	-	-14,3	28,4	-
		Seismic loads, +Y direction						Seismic loads, -Y direction					
		Fx	Mx	Fy	My	Fz	Mz	Fx	Mx	Fy	My	Fz	Mz
		kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	-	-8,3	16,0	-	-24,4	-	-	8,3	-16,0	-	24,4	-
Exhaust	D2	-	-8,3	16	-	-24,4	-	-	8,3	-16,0	-	24,4	-
Exhaust	D3	-	-8,7	16,9	-	-3,1	-	-	8,7	-16,9	-	3,1	-
Exhaust	D4	-	-8,7	16,9	-	-3,1	-	-	8,7	-16,9	-	3,1	-
Exhaust	D5	-	-8,4	16,1	-	27,4	-	-	8,4	-16,1	-	-27,4	-
Exhaust	D6	-	-8,4	16,1	-	27,4	-	-	8,4	-16,1	-	-27,4	-
		Seismic loads, +Z direction						Seismic loads, -Z direction					
		Fx	Mx	Fy	My	Fz	Mz	Fx	Mx	Fy	My	Fz	Mz
		kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm	kN	kNm
Exhaust	D1	-	-	-	-	7,2	-	-	-	-	-	-7,2	-
Exhaust	D2	-	-	-	-	7,2	-	-	-	-	-	-7,2	-
Exhaust	D3	-	-	-	-	7,2	-	-	-	-	-	-7,2	-
Exhaust	D4	-	-	-	-	7,2	-	-	-	-	-	-7,2	-
Exhaust	D5	-	-	-	-	7,2	-	-	-	-	-	-7,2	-
Exhaust	D6	-	-	-	-	7,2	-	-	-	-	-	-7,2	

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				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. 2098471	Sh./No. of sh. 10 (11)

Static loads from CO2 cabinet, (E1)

Foundation loads intensity		Static loads
		Dead loads
* = Total weight of unit		Fz
Component	**Item**	kN
CO2 cabinet	E1	*-29,0

Rev	Specification	Date	Sign	Prepared	Checked	Archive	Title	Revision
E	Sheet 1 wind load specification updated Sheet 2 loads for A1-A8 updated	13-10-18	AR AL	K.Ebrahimzadeh	Anders Johansson 2012-11-15		Foundation loads intensity Typical	E
				Approved Stefan Arfvedsson 2012-11-15	Resp dept GKMI 2	HG 9100	SGT-700, IBC 2009, S_S = 1,5g , V = 45 m/s	Language en
				SIEMENS		Date 2012-11-15	Document No. **2098471**	Sh./No. of sh. 11 (11)