

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : Restaurant calculating windows

1	Building Area	2411.1136	ft2
2	Average Ceiling Height	11.15472	ft
3	House Volume (room Volume)	26895.2971	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	5379.05942	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	124.996939	ft2
16	Determine Total Effective Inlet + Outlet Area	416.239808	ft2
17	Determine Total Effective Area As % of Floor Area	17.2633844	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	33	
	Total Effective Area	426.25044	ft2
20	Total Effective Area as Designed and Installed	426.25044	ft2

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m2)	38.6686782	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	39.5986659	m2
frame opening area (m2) =		
building area (m2) =	1.6	
average ceilling height (m) =	224	
	3.4	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : kitchen calculating windows

1	Building Area	516.6672	ft <sup>2</sup>
2	Average Ceiling Height	11.15472	ft
3	House Volume (room Volume)	5763.27795	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1152.65559	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul - Yogyakarta	
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	26.7850585	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	89.1942447	ft <sup>2</sup>
17	Determine Total Effective Area As % of Floor Area	17.2633844	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	15.06946	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	8	
	Total Effective Area	90.41676	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	90.41676	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	8.28614533	m <sup>2</sup>
Total effective area as designed and installed (should equal of step 19 or exceed step 16)	8.399717	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =		
building area (m <sup>2</sup> ) =	1.4	
average ceiling height (m) =	48	
	3.4	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : auditorium calculating windows

1	Building Area	2310.25586	ft <sup>2</sup>
2	Average Ceiling Height	11.15472	ft
3	House Volume (room Volume)	25770.2572	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	5154.05144	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	119.768273	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	398.828349	ft <sup>2</sup>
17	Determine Total Effective Area As % of Floor Area	17.2633844	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	32	
	Total Effective Area	413.33376	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	413.33376	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	37.0511536	m <sup>2</sup>
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	38.3987063	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =		
building area (m <sup>2</sup> ) =	1.6	
average ceilling height (m) =	214.63	
	3.4	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : arena bermain anak calculating windows

1	Building Area	688.8896	ft <sup>2</sup>
2	Average Ceiling Height	11.15472	ft
3	House Volume (room Volume)	7684.3706	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1536.87412	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	35.7134113	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	118.92566	ft <sup>2</sup>
17	Determine Total Effective Area As & of Floor Area	17.2633844	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	10	
	Total Effective Area	129.1668	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	129.1668	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	11.0481938	m <sup>2</sup>
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	11.9995957	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =		
building area (m <sup>2</sup> ) =	1.6	
average ceilling height (m) =	64	
	3.4	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : game centre calculating windows

1	Building Area	1108.89698	ft <sup>2</sup>
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	10914.2076	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	2182.84152	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	50.7242045	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	168.911601	ft <sup>2</sup>
17	Determine Total Effective Area As & of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	14	
	Total Effective Area	180.83352	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	180.83352	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	15.6918877	m <sup>2</sup>
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	16.799434	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =		
building area (m <sup>2</sup> ) =	1.6	
average ceilling height (m) =	103.02	
	3	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : warnet calculating windows

1	Building Area	890.389808	ft2
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	8763.57265	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1752.71453	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	40.7290448	ft2
16	Determine Total Effective Inlet + Outlet Area	135.627719	ft2
17	Determine Total Effective Area As & of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	12	
	Total Effective Area	155.00016	ft2
20	Total Effective Area as Designed and Installed	155.00016	ft2

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m2)	12.5998151	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	14.3995149	m2
frame opening area (m2) =		
building area (m2) =	1.6	
average ceilling height (m) =	82.72	
	3	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : laundry dan ruang peralatan & gudang calculating windows

1	Building Area	796.5286	ft2
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	7839.75309	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1567.95062	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	36.4355575	ft2
16	Determine Total Effective Inlet + Outlet Area	121.330406	ft2
17	Determine Total Effective Area As & of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	10	
	Total Effective Area	129.1668	ft2
20	Total Effective Area as Designed and Installed	129.1668	ft2

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m2)	11.2715947	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	11.9995957	m2
frame opening area (m2) =		
building area (m2) =	1.6	
average ceilling height (m) =	74	
	3	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : kamar calculating windows

1	Building Area	258.3336	ft2
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	2542.62262	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	508.524525	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	11.8169376	ft2
16	Determine Total Effective Inlet + Outlet Area	39.3504021	ft2
17	Determine Total Effective Area As & of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	3	
	Total Effective Area	38.75004	ft2
20	Total Effective Area as Designed and Installed	38.75004	ft2

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m2)	3.65565235	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	3.59987872	m2
frame opening area (m2) =		
building area (m2) =	1.6	
average ceilling height (m) =	24	
	3	



## Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : kamar lengkung calculating windows

1	Building Area	380.611504	ft <sup>2</sup>
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	3746.13067	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	749.226133	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	30	deg
10	Windspeed Ratio	0.45	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	77.4603522	ft/min
15	Calculated Net Aperture Inlet Area	9.67238222	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	32.2090328	ft <sup>2</sup>
17	Determine Total Effective Area As & of Floor Area	8.46244332	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	3	
	Total Effective Area	38.75004	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	38.75004	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	4.23553206	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	2.99221915	m <sup>2</sup>
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	3.59987872	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =	1.6	
building area (m <sup>2</sup> ) =	35.36	
average ceiling height (m) =	3	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : suite room calculating windows

1	Building Area	775.0008	ft2
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	7627.86787	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1525.57357	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	30	deg
10	Windspeed Ratio	0.45	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	77.4603522	ft/min
15	Calculated Net Aperture Inlet Area	19.6948959	ft2
16	Determine Total Effective Inlet + Outlet Area	65.5840034	ft2
17	Determine Total Effective Area As & of Floor Area	8.46244332	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	6	
	Total Effective Area	77.50008	ft2
20	Total Effective Area as Designed and Installed	77.50008	ft2

Calculate Window inlet Airspeed (m/s)	4.23553206	m/s
Determine total effective inlet + outlet (m2)	6.09275392	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	7.19975743	m2
frame opening area (m2) =		1.6
building area (m2) =		72
average ceiling height (m) =		3

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : peralatan dan gudang (It3) calculating windows

1	Building Area	645.834	ft <sup>2</sup>
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	6356.55656	ft <sup>3</sup>
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1271.31131	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	29.5423439	ft <sup>2</sup>
16	Determine Total Effective Inlet + Outlet Area	98.3760051	ft <sup>2</sup>
17	Determine Total Effective Area As % of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft <sup>2</sup>
	Effective Opening Factor	0.75	
	No. of This Opening Type	8	
	Total Effective Area	103.33344	ft <sup>2</sup>
20	Total Effective Area as Designed and Installed	103.33344	ft <sup>2</sup>

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m <sup>2</sup> )	9.13913088	m <sup>2</sup>
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	9.59967658	m <sup>2</sup>
frame opening area (m <sup>2</sup> ) =	1.6	
building area (m <sup>2</sup> ) =	60	
average ceiling height (m) =	3	

Worksheet for Calculating Window Areas of Naturally Ventilated Houses

Project : mee control calculating windows

1	Building Area	861.112	ft2
2	Average Ceiling Height	9.8424	ft
3	House Volume (room Volume)	8475.40875	ft3
4	Design Air Change Rate/hour	12	ACH
5	Required Air Flow Rate	1695.08175	cfm
6	Design Month	Rata-rata	per tahun
7	Name Nearest City	Bantul -	Yogyakarta
8	Windspeed	5.405	mph
9	Angle	60	deg
10	Windspeed Ratio	0.25	
11a	Terrain Correction Factor	0.47	
11b	Convection Factor	0.77	
11c	Correction Factor	1	
12	Calculated Windspeed Correction Factor	0.3619	
13	Calculated Site Windspeed in ft/min	172.134116	ft/min
14	Calculated Window Inlet Airspeed	43.033529	ft/min
15	Calculated Net Aperture Inlet Area	39.3897918	ft2
16	Determine Total Effective Inlet + Outlet Area	131.168007	ft2
17	Determine Total Effective Area As & of Floor Area	15.232398	%
18	Effective opening Factor		
19	Opening Type	jalousie	
	Frame Opening Area	17.22224	ft2
	Effective Opening Factor	0.75	
	No. of This Opening Type	11	
	Total Effective Area	142.08348	ft2
20	Total Effective Area as Designed and Installed	142.08348	ft2

Calculate Window inlet Airspeed (m/s)	2.35307337	m/s
Determine total effective inlet + outlet (m2)	12.1855078	m2
Total effective area as designed and intalled (should equal of step 19 or exceed step 16)	13.1995553	m2
frame opening area (m2) =		
building area (m2) =	1.6	
average ceiling height (m) =	80	
	3	