
APPENDIX

(1)

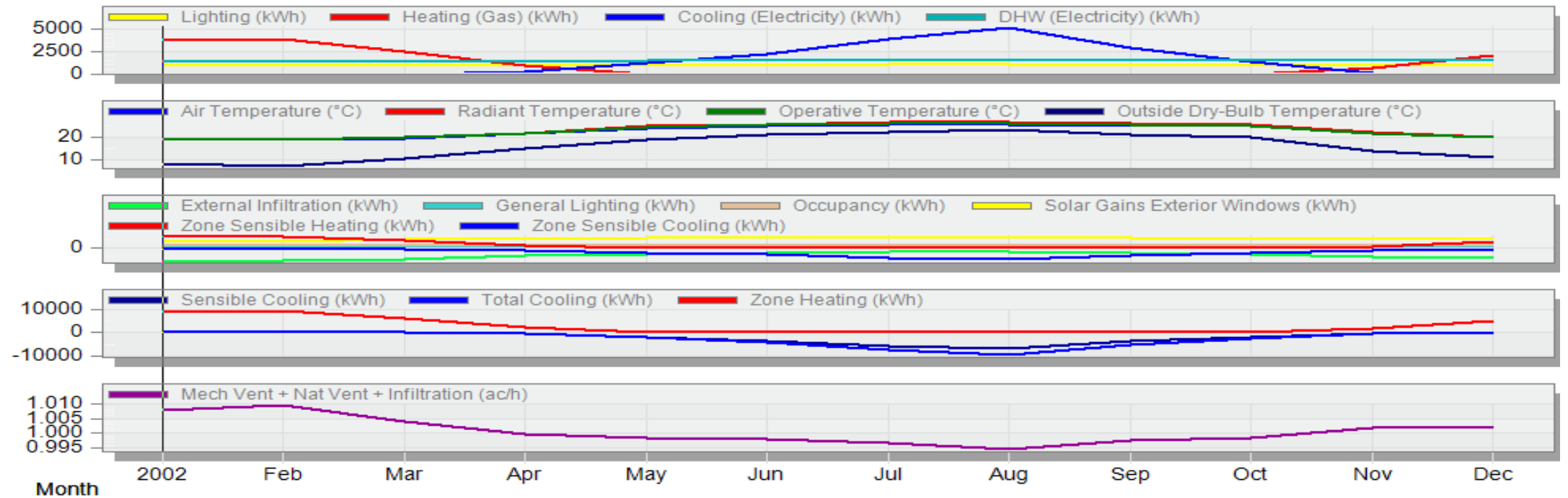
A: Heating and cooling loads Total BUILDING with Topography.

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

EnergyPlus Output

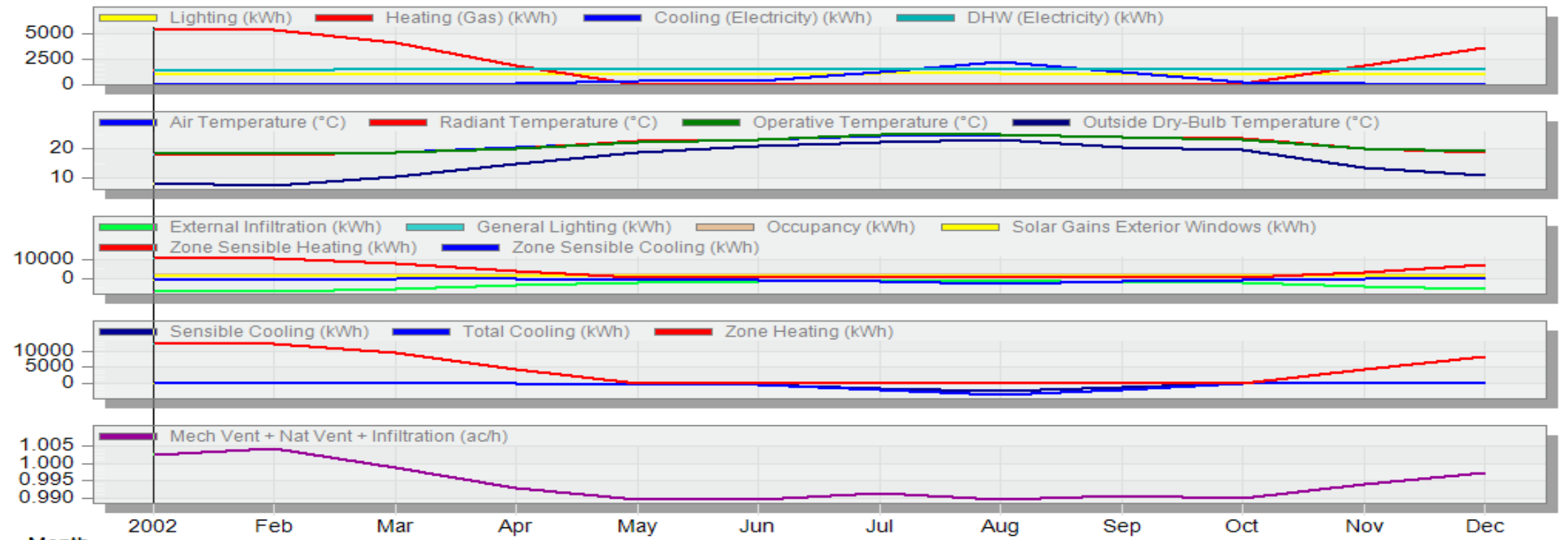
Licensec



Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	3697.96	3872.36	2476.94	898.64	0.00	0.00	0.00	0.00	0.00	0.00	699.81	2101.64
Cooling (Electricity) (kWh)	0.00	0.00	0.00	262.51	1149.57	2159.52	3901.40	5145.12	2844.31	1339.86	53.14	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	19.10	18.90	19.55	21.35	24.02	24.88	25.46	25.56	25.02	24.71	21.48	19.74
Radiant Temperature (°C)	19.16	18.89	19.71	21.68	24.71	25.56	26.29	26.39	25.78	25.39	22.01	19.94
Operative Temperature (°C)	19.13	18.89	19.63	21.52	24.36	25.22	25.87	25.98	25.40	25.05	21.75	19.84
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7426.35	-7245.83	-6264.50	-4323.96	-3598.43	-2594.86	-2103.18	-1686.08	-2808.84	-3277.77	-5164.61	-5930.86
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2120.92	1926.66	2082.53	1839.96	1633.93	1482.92	1480.18	1463.25	1473.62	1555.17	1846.59	2067.44
Solar Gains Exterior Windows (kWh)	4654.70	4197.10	5086.29	5550.76	6104.46	6434.42	6548.01	6386.50	5861.54	5626.57	4991.99	5136.07
Zone Sensible Heating (kWh)	6799.58	7175.05	4311.38	1562.36	67.07	62.88	39.77	98.42	56.64	25.59	1030.99	3545.27
Zone Sensible Cooling (kWh)	-796.50	-708.23	-625.91	-1114.64	-2951.25	-3761.71	-5905.69	-6551.92	-4102.49	-2944.65	-1166.31	-584.34
Sensible Cooling (kWh)	0.00	0.00	0.00	-471.01	-2027.13	-3317.29	-5675.87	-6541.56	-3549.25	-2157.87	-89.34	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-472.51	-2069.22	-3887.14	-7022.51	-9261.22	-5119.76	-2411.75	-95.65	0.00
Zone Heating (kWh)	8690.20	9100.04	5820.81	2111.80	0.00	0.00	0.00	0.00	0.00	0.00	1644.54	4938.87
Mech Vent + Nat Vent + Infiltration (ac/h)	1.01	1.01	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00

Fig (1): Pattern (1) Heating and cooling loads Total BUILDING with Topography

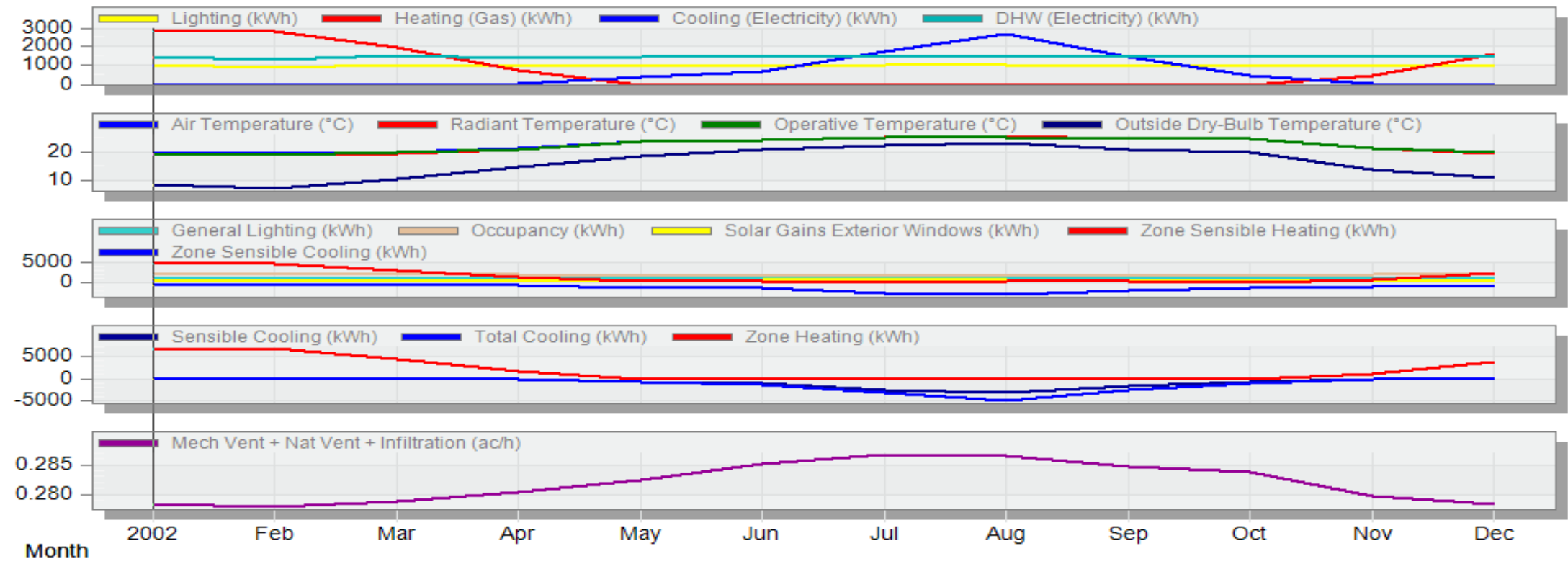
Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING 1 Jan - 31 Dec, Monthly



Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5357.64	5375.13	4068.47	1766.82	0.00	0.00	0.00	0.00	0.00	3.85	1776.29	3581.89
Cooling (Electricity) (kWh)	0.00	0.00	0.00	42.40	275.28	295.87	1154.22	2241.65	1201.57	183.81	0.44	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.57	18.42	19.01	20.35	22.27	23.28	24.61	24.80	23.85	23.25	20.15	19.22
Radiant Temperature (°C)	18.27	18.09	18.77	20.26	22.53	23.35	24.87	25.08	24.16	23.46	20.22	19.01
Operative Temperature (°C)	18.42	18.26	18.89	20.31	22.40	23.32	24.74	24.94	24.01	23.36	20.19	19.12
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7131.82	-7021.84	-5959.09	-3711.09	-2448.39	-1572.87	-1546.51	-1182.62	-2065.55	-2314.45	-4343.85	-5630.79
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2153.58	1952.07	2115.84	1927.21	1810.16	1631.81	1552.16	1527.32	1582.31	1702.41	1962.62	2099.80
Solar Gains Exterior Windows (kWh)	941.33	846.45	1032.33	1131.83	1251.20	1325.85	1343.48	1294.13	1194.12	1143.58	999.06	1044.09
Zone Sensible Heating (kWh)	10662.07	10693.09	7998.30	3563.47	209.59	226.51	102.80	177.25	110.07	125.16	3297.86	6949.32
Zone Sensible Cooling (kWh)	-686.48	-638.43	-495.40	-473.16	-1133.15	-761.73	-1925.15	-2693.99	-1656.03	-857.52	-535.31	-432.59
Sensible Cooling (kWh)	0.00	0.00	0.00	-76.32	-479.82	-480.44	-1770.79	-2721.50	-1284.27	-308.40	-0.79	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-76.32	-495.51	-532.57	-2077.60	-4034.97	-2162.82	-330.86	-0.79	0.00
Zone Heating (kWh)	12590.45	12631.57	9560.90	4152.04	0.00	0.00	0.00	0.00	0.00	9.05	4174.28	8417.45
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (2): Pattern (2) Heating and cooling loads **Total BUILDING with Topography**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING 1 Jan - 31 Dec, Monthly

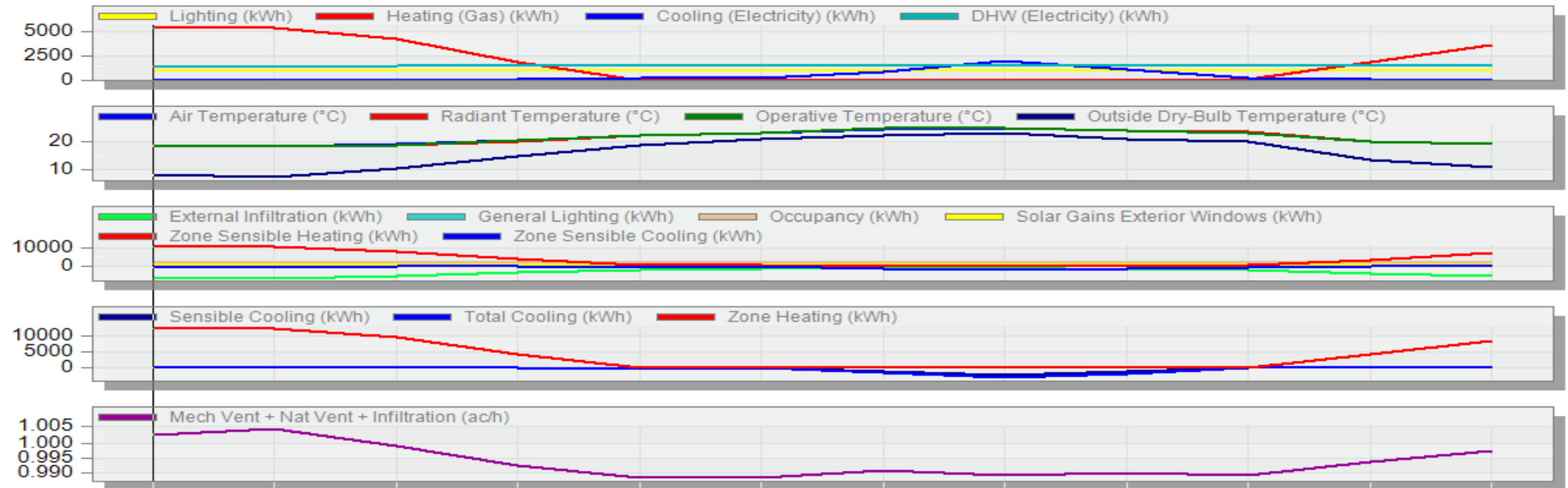


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	2768.01	2821.44	1914.50	712.08	0.00	0.00	0.00	0.00	0.00	0.00	465.53	1613.52
Cooling (Electricity) (kWh)	0.00	0.00	0.00	45.20	378.76	677.87	1738.20	2631.79	1434.63	479.27	10.36	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	19.59	19.48	19.91	21.16	23.67	24.38	25.14	25.27	24.80	24.48	21.55	20.06
Radiant Temperature (°C)	19.12	18.97	19.52	20.91	23.68	24.33	25.28	25.43	24.89	24.49	21.50	19.70
Operative Temperature (°C)	19.36	19.23	19.72	21.04	23.68	24.36	25.21	25.35	24.85	24.49	21.52	19.88
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2093.45	1897.73	2065.24	1875.25	1680.64	1541.26	1517.75	1501.19	1502.42	1586.30	1852.50	2051.23
Solar Gains Exterior Windows (kWh)	313.26	281.07	340.08	374.32	414.03	441.73	448.47	431.05	392.96	376.42	334.29	345.76
Zone Sensible Heating (kWh)	4632.45	4733.38	2995.34	1192.97	149.43	140.97	82.15	157.22	85.41	61.93	526.95	2380.65
Zone Sensible Cooling (kWh)	-874.15	-800.02	-669.92	-710.97	-1566.75	-1441.86	-2698.32	-3218.55	-2227.30	-1531.33	-1129.24	-601.81
Sensible Cooling (kWh)	0.00	0.00	0.00	-81.29	-658.36	-1037.88	-2490.75	-3212.74	-1699.68	-769.96	-18.31	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-81.37	-681.76	-1220.17	-3128.75	-4737.22	-2582.33	-862.69	-18.66	0.00
Zone Heating (kWh)	6504.81	6630.39	4499.07	1673.40	0.00	0.00	0.00	0.00	0.00	0.00	1094.01	3791.77
Mech Vent + Nat Vent + Infiltration (ac/h)	0.28	0.28	0.28	0.28	0.28	0.29	0.29	0.29	0.28	0.28	0.28	0.28

Fig (3): Pattern (3) Heating and cooling loads **Total BUILDING with Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly



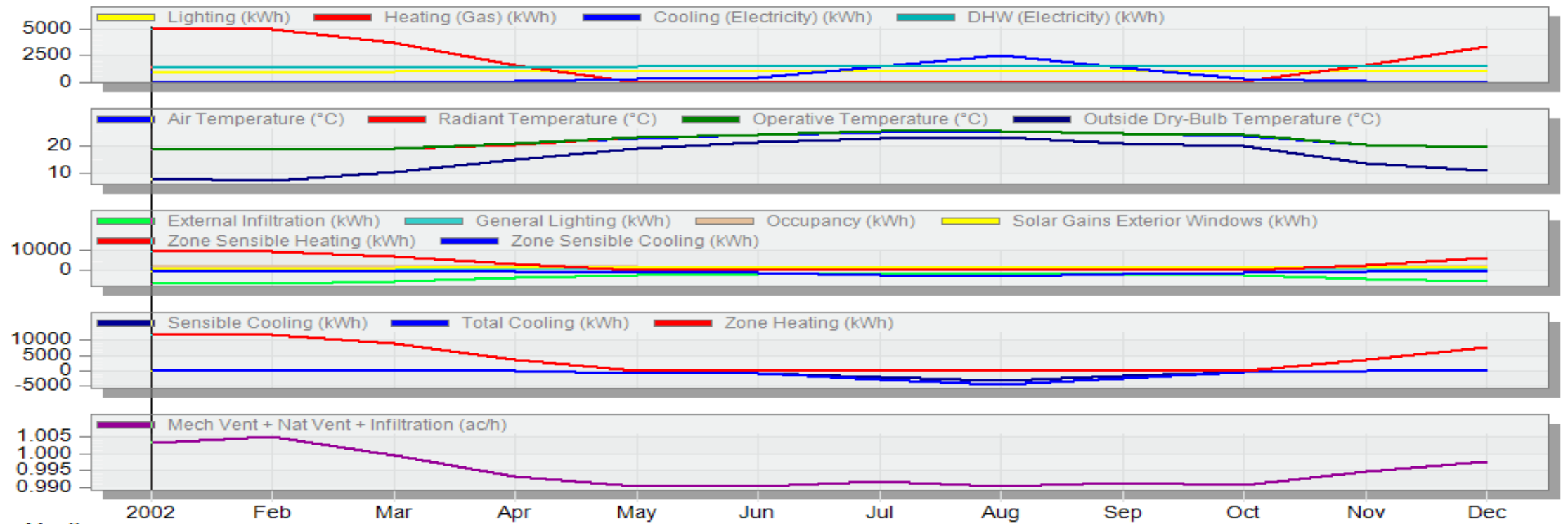
Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5414.59	5427.03	4180.28	1840.41	0.00	0.00	0.00	0.00	0.00	5.46	1839.42	3668.19
Cooling (Electricity) (kWh)	0.00	0.00	0.00	26.12	193.88	170.11	873.97	1937.78	1101.25	128.64	0.33	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.62	18.48	19.05	20.31	22.14	23.05	24.51	24.73	23.78	23.10	20.14	19.27
Radiant Temperature (°C)	18.33	18.16	18.79	20.18	22.34	23.04	24.69	24.94	24.04	23.26	20.17	19.04
Operative Temperature (°C)	18.48	18.32	18.92	20.24	22.24	23.05	24.60	24.83	23.91	23.18	20.15	19.15
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7170.62	-7060.94	-5984.59	-3686.11	-2356.37	-1427.76	-1482.78	-1138.27	-2019.22	-2214.41	-4332.84	-5660.86
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2148.89	1947.82	2112.95	1932.43	1825.54	1655.77	1561.31	1533.88	1590.61	1719.83	1964.82	2095.52
Solar Gains Exterior Windows (kWh)	271.39	238.44	291.01	326.14	353.73	374.49	381.71	376.58	345.03	324.68	286.70	304.58
Zone Sensible Heating (kWh)	10799.52	10817.89	8262.31	3743.08	238.00	267.01	117.68	188.96	116.29	149.88	3433.41	7152.48
Zone Sensible Cooling (kWh)	-700.41	-651.23	-503.37	-437.60	-982.40	-545.27	-1522.83	-2317.65	-1514.99	-746.10	-516.37	-443.02
Sensible Cooling (kWh)	0.00	0.00	0.00	-47.01	-338.24	-280.28	-1373.50	-2347.10	-1156.04	-216.13	-0.59	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-47.01	-348.98	-306.20	-1573.15	-3488.00	-1982.24	-231.56	-0.59	0.00
Zone Heating (kWh)	12724.29	12753.52	9823.66	4324.95	0.00	0.00	0.00	0.00	0.00	12.84	4322.65	8620.25
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (4): Pattern (4) Heating and cooling loads **Total BUILDING with Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

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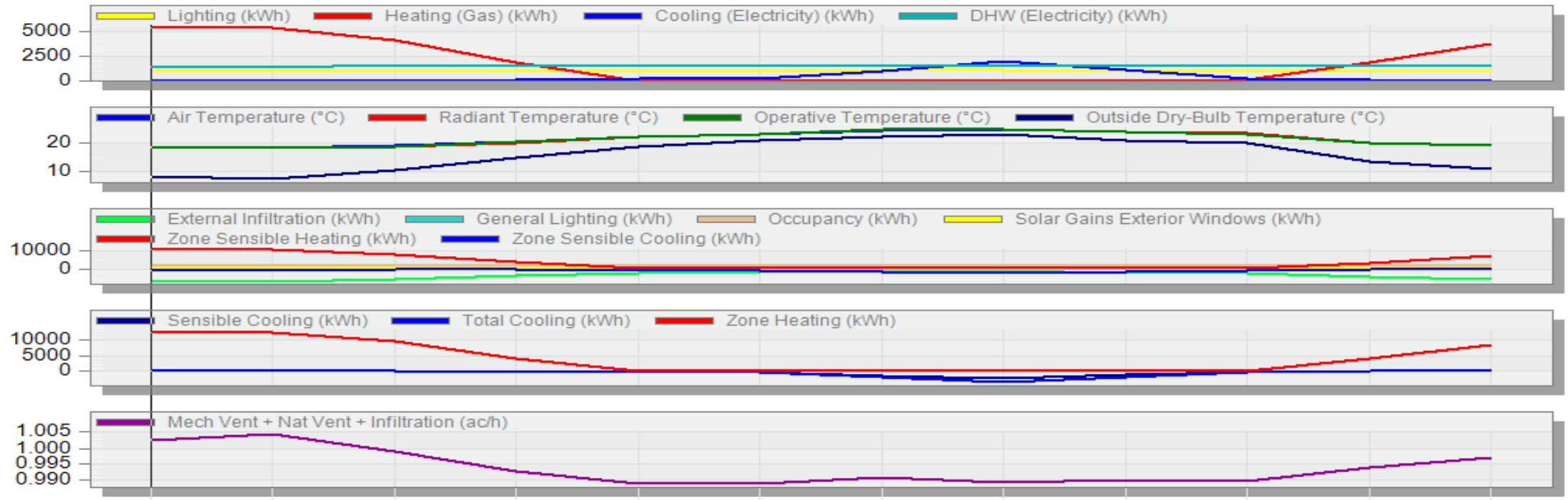
Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5073.94	5089.83	3779.51	1601.24	0.00	0.00	0.00	0.00	0.00	0.06	1580.77	3358.81
Cooling (Electricity) (kWh)	0.00	0.00	0.00	56.43	336.62	432.54	1439.86	2548.95	1324.04	247.05	1.72	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.69	18.55	19.14	20.49	22.54	23.55	24.77	24.93	24.04	23.46	20.33	19.32
Radiant Temperature (°C)	18.45	18.28	18.96	20.46	22.84	23.68	25.09	25.26	24.39	23.71	20.46	19.16
Operative Temperature (°C)	18.57	18.42	19.05	20.48	22.69	23.62	24.93	25.09	24.22	23.58	20.40	19.24
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7220.64	-7107.31	-6048.14	-3808.29	-2629.40	-1748.66	-1654.61	-1268.55	-2190.47	-2454.26	-4461.62	-5700.97
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2146.35	1945.33	2108.57	1916.04	1784.14	1606.34	1538.47	1516.59	1564.15	1681.70	1949.15	2093.99
Solar Gains Exterior Windows (kWh)	1051.13	959.79	1177.27	1298.07	1449.63	1555.24	1576.01	1504.35	1361.86	1287.78	1125.36	1148.99
Zone Sensible Heating (kWh)	9999.17	10026.11	7322.41	3174.81	186.77	191.33	91.71	165.28	100.88	107.24	2866.29	6427.61
Zone Sensible Cooling (kWh)	-706.39	-657.22	-515.47	-525.39	-1281.58	-997.99	-2346.61	-3095.06	-1863.82	-1000.57	-597.76	-448.73
Sensible Cooling (kWh)	0.00	0.00	0.00	-101.57	-587.70	-693.97	-2175.41	-3113.98	-1460.69	-413.12	-3.08	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-101.57	-605.92	-778.57	-2591.74	-4588.10	-2383.27	-444.70	-3.10	0.00
Zone Heating (kWh)	11923.76	11961.10	8881.86	3762.91	0.00	0.00	0.00	0.00	0.00	0.14	3714.81	7893.20
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.01	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (5): Pattern (5) Heating and cooling loads **Total BUILDING with Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

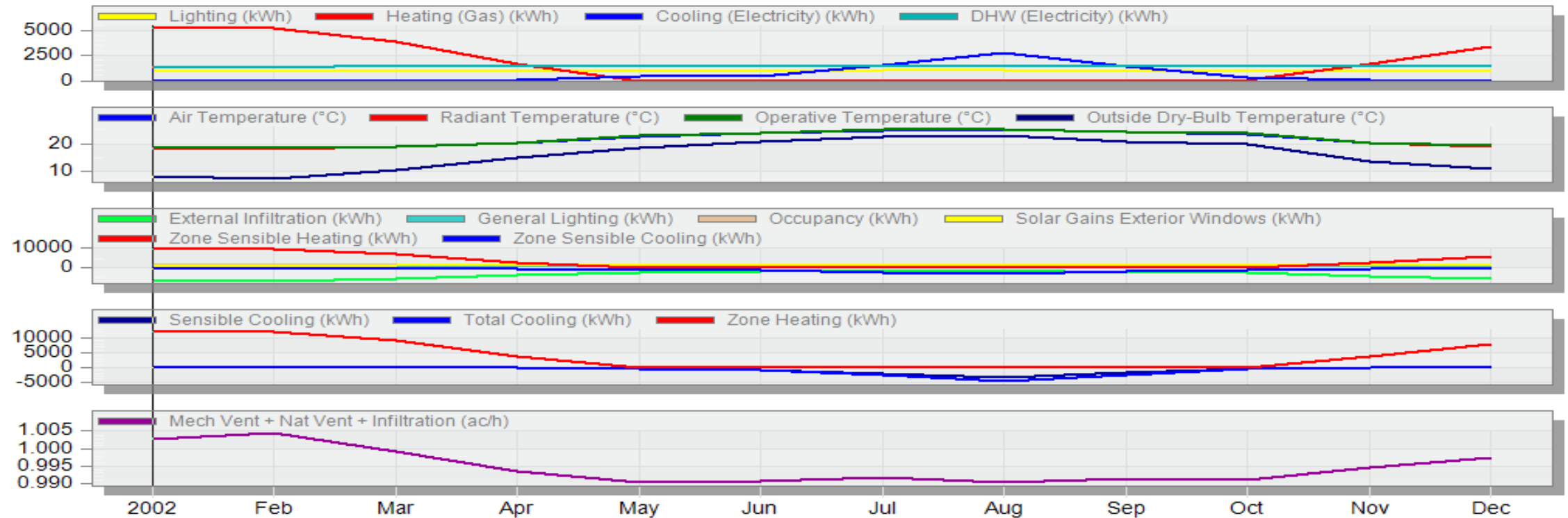
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Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5387.40	5366.23	4092.93	1801.75	0.00	0.00	0.00	0.00	0.00	5.41	1828.79	3656.98
Cooling (Electricity) (kWh)	0.00	0.00	0.00	35.13	232.17	226.46	962.72	2010.17	1129.68	151.63	0.44	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.57	18.44	19.03	20.31	22.14	23.11	24.51	24.72	23.77	23.14	20.12	19.22
Radiant Temperature (°C)	18.28	18.13	18.78	20.20	22.35	23.12	24.70	24.94	24.03	23.31	20.15	18.99
Operative Temperature (°C)	18.43	18.29	18.91	20.26	22.25	23.11	24.60	24.83	23.90	23.23	20.14	19.11
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7135.51	-7036.50	-5969.90	-3688.29	-2360.76	-1463.96	-1480.55	-1130.63	-2012.06	-2243.91	-4321.26	-5629.44
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2152.58	1950.15	2114.17	1930.20	1822.42	1647.58	1560.14	1533.30	1589.49	1712.71	1965.21	2098.73
Solar Gains Exterior Windows (kWh)	278.47	255.42	312.58	342.93	377.44	403.29	408.07	393.78	363.45	347.28	299.77	305.52
Zone Sensible Heating (kWh)	10732.83	10673.09	8056.42	3646.70	225.58	251.14	114.07	186.97	114.67	138.08	3408.65	7124.90
Zone Sensible Cooling (kWh)	-689.69	-644.27	-500.22	-453.82	-1043.74	-638.31	-1650.42	-2410.55	-1552.36	-788.94	-515.98	-434.17
Sensible Cooling (kWh)	0.00	0.00	0.00	-63.24	-404.96	-369.98	-1502.28	-2441.03	-1193.05	-254.62	-0.78	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-63.24	-417.91	-407.63	-1732.90	-3618.30	-2033.42	-272.93	-0.79	0.00
Zone Heating (kWh)	12660.40	12610.64	9618.38	4234.12	0.00	0.00	0.00	0.00	0.00	12.70	4297.65	8593.91
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (6): Pattern (6) Heating and cooling loads **Total BUILDING with Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING 1 Jan - 31 Dec, Monthly



Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5222.79	5249.29	3879.70	1640.72	0.00	0.00	0.00	0.00	0.00	0.76	1614.87	3422.38
Cooling (Electricity) (kWh)	0.00	0.00	0.00	64.01	369.41	463.67	1523.80	2704.20	1404.21	276.38	1.95	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.62	18.47	19.08	20.49	22.56	23.58	24.78	24.95	24.07	23.51	20.33	19.28
Radiant Temperature (°C)	18.34	18.16	18.87	20.45	22.86	23.73	25.13	25.32	24.43	23.77	20.44	19.10
Operative Temperature (°C)	18.48	18.32	18.98	20.47	22.71	23.65	24.95	25.13	24.25	23.64	20.39	19.19
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7168.37	-7054.01	-6007.25	-3803.68	-2638.05	-1768.16	-1663.76	-1284.67	-2206.49	-2487.65	-4457.25	-5671.07
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2148.75	1947.99	2110.03	1912.87	1779.62	1600.40	1534.95	1511.94	1558.57	1672.97	1946.45	2094.15
Solar Gains Exterior Windows (kWh)	1205.87	1091.85	1333.32	1459.75	1610.64	1708.01	1739.95	1676.15	1530.12	1459.01	1290.65	1327.20
Zone Sensible Heating (kWh)	10347.80	10399.19	7557.02	3259.70	172.04	176.16	83.32	154.85	94.92	91.98	2947.96	6577.64
Zone Sensible Cooling (kWh)	-699.75	-649.73	-511.55	-538.87	-1333.76	-1046.73	-2471.72	-3281.72	-1961.00	-1052.47	-606.54	-448.85
Sensible Cooling (kWh)	0.00	0.00	0.00	-115.21	-644.74	-744.42	-2301.84	-3302.37	-1552.11	-462.19	-3.49	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-115.21	-664.94	-834.60	-2742.84	-4867.56	-2527.57	-497.49	-3.51	0.00
Zone Heating (kWh)	12273.56	12335.82	9117.30	3855.70	0.00	0.00	0.00	0.00	0.00	1.78	3794.95	8042.59
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (7): Pattern (7) Heating and cooling loads Total BUILDING with Topography.

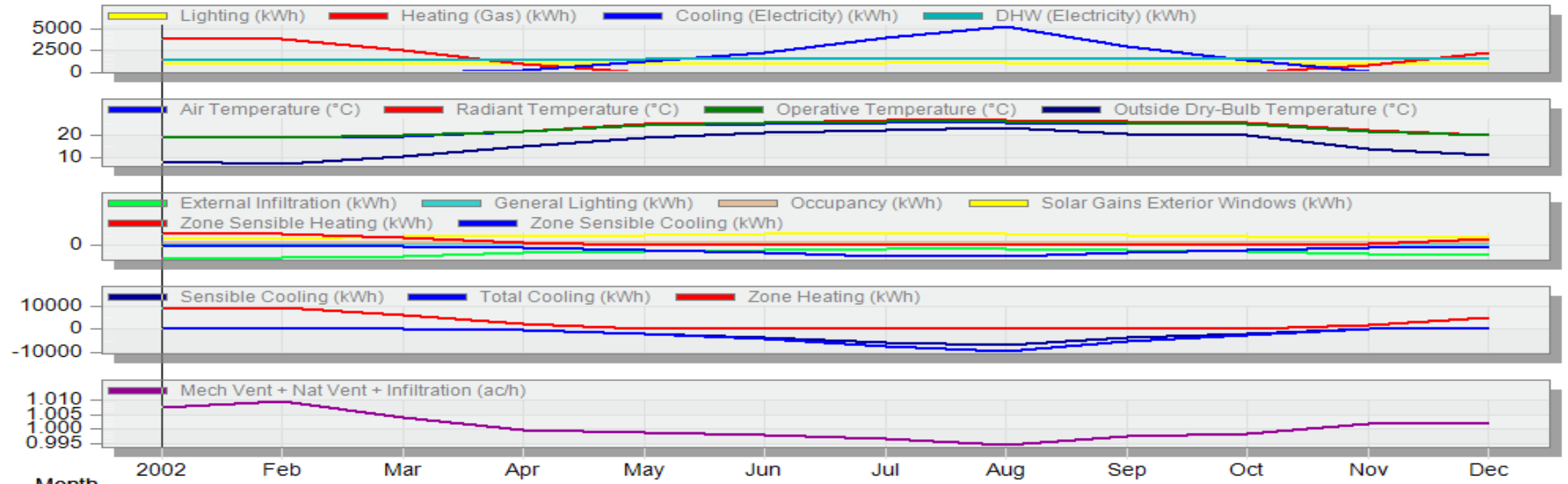
B: Heating and cooling loads Total BUILDING with Topography.

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

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EnergyPlus Output

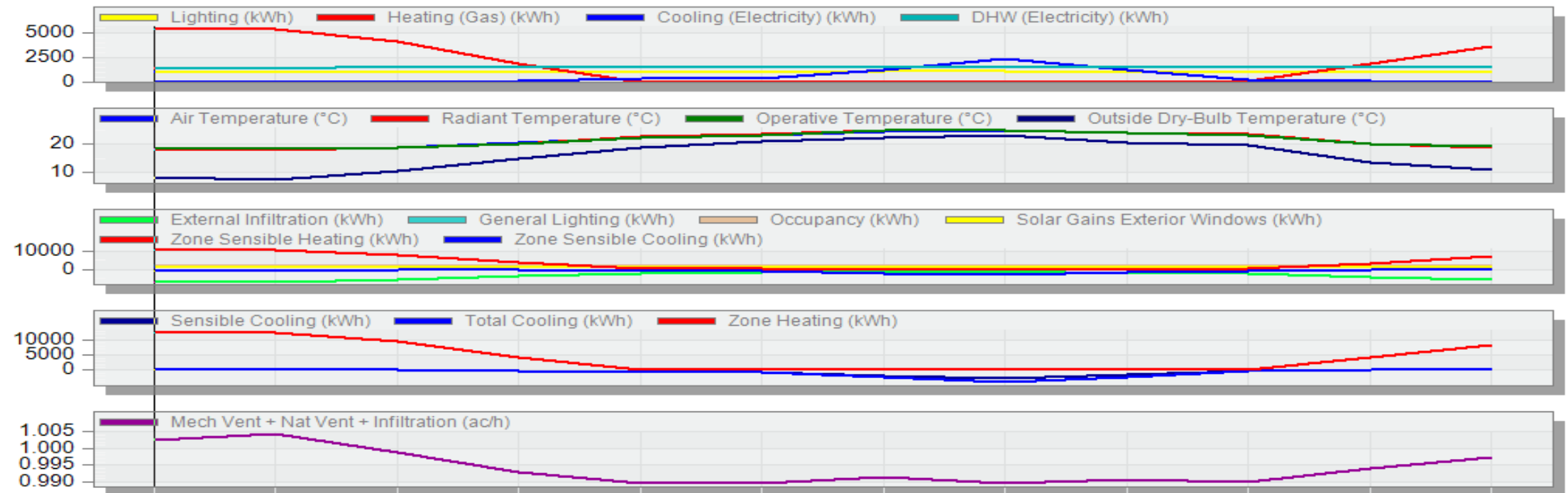


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	3744.76	3876.11	2458.29	887.85	0.00	0.00	0.00	0.00	0.00	0.00	725.39	2177.96
Cooling (Electricity) (kWh)	0.00	0.00	0.00	268.74	1180.38	2253.43	3997.66	5198.87	2873.61	1356.47	50.30	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	19.09	18.89	19.56	21.36	24.05	24.91	25.47	25.57	25.03	24.72	21.45	19.71
Radiant Temperature (°C)	19.13	18.88	19.72	21.71	24.75	25.61	26.32	26.41	25.79	25.40	21.98	19.88
Operative Temperature (°C)	19.11	18.89	19.64	21.54	24.40	25.26	25.90	25.99	25.41	25.06	21.71	19.79
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7414.67	-7244.19	-6268.48	-4334.93	-3617.99	-2614.35	-2113.83	-1691.61	-2813.92	-3281.81	-5146.15	-5908.54
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2121.88	1926.69	2082.00	1838.21	1630.69	1480.13	1478.61	1462.39	1472.77	1554.45	1848.94	2069.74
Solar Gains Exterior Windows (kWh)	4590.42	4223.90	5162.34	5634.78	6229.46	6608.39	6716.96	6482.52	5934.88	5678.47	4932.60	4979.85
Zone Sensible Heating (kWh)	6907.51	7184.00	4268.98	1538.86	65.39	61.18	38.77	97.55	56.37	25.13	1082.38	3714.86
Zone Sensible Cooling (kWh)	-792.10	-708.15	-628.66	-1131.81	-3011.59	-3911.69	-6053.41	-6629.70	-4146.05	-2971.46	-1147.11	-569.18
Sensible Cooling (kWh)	0.00	0.00	0.00	-482.18	-2081.97	-3463.50	-5822.00	-6618.78	-3591.41	-2183.64	-84.59	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-483.73	-2124.68	-4056.18	-7195.79	-9357.97	-5172.50	-2441.64	-90.55	0.00
Zone Heating (kWh)	8800.18	9108.85	5776.98	2086.44	0.00	0.00	0.00	0.00	0.00	0.00	1704.67	5118.21
Mech Vent + Nat Vent + Infiltration (ac/h)	1.01	1.01	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00

Fig (8): Pattern (1) Heating and cooling loads Total BUILDING without Topography

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

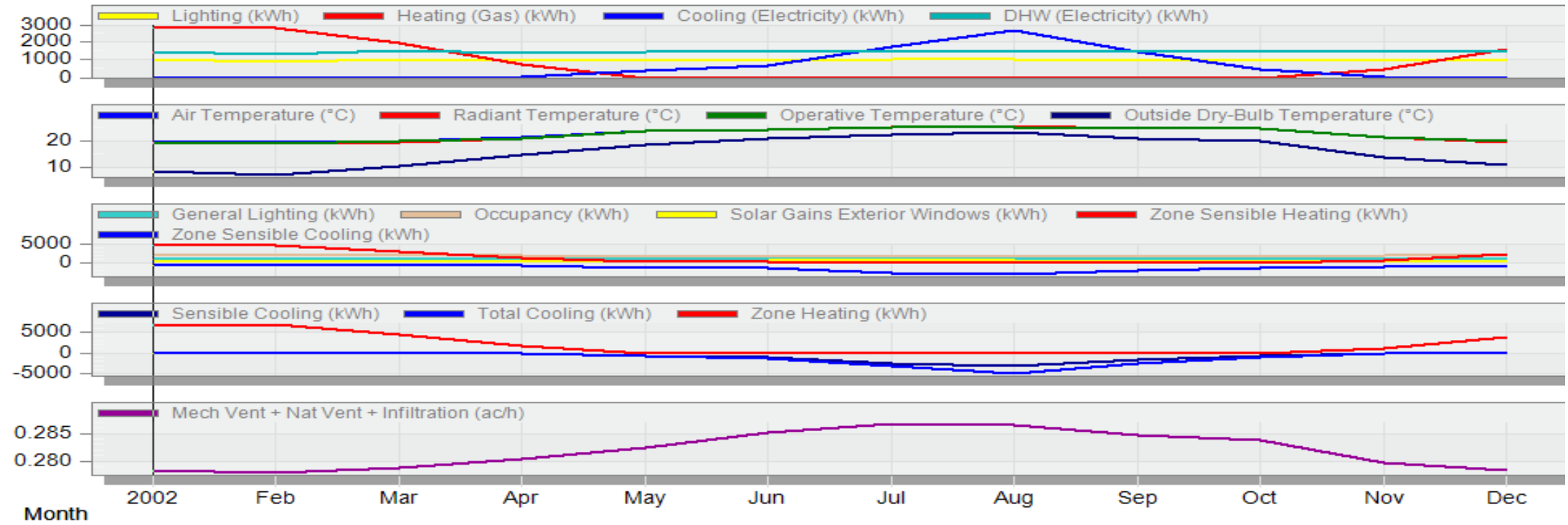


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5389.18	5385.79	4066.23	1765.41	0.00	0.00	0.00	0.00	0.00	4.22	1797.08	3615.61
Cooling (Electricity) (kWh)	0.00	0.00	0.00	41.91	277.59	307.04	1186.76	2266.13	1205.24	183.39	0.38	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.56	18.42	19.01	20.35	22.29	23.31	24.63	24.81	23.86	23.24	20.14	19.21
Radiant Temperature (°C)	18.25	18.09	18.77	20.27	22.55	23.39	24.90	25.10	24.17	23.46	20.20	18.99
Operative Temperature (°C)	18.41	18.25	18.89	20.31	22.42	23.35	24.76	24.95	24.01	23.35	20.17	19.10
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7125.53	-7019.57	-5958.93	-3712.74	-2458.15	-1593.47	-1559.24	-1189.57	-2067.22	-2309.25	-4335.03	-5624.31
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2154.04	1952.18	2115.77	1926.91	1808.58	1628.62	1550.37	1526.28	1581.95	1703.19	1963.63	2100.31
Solar Gains Exterior Windows (kWh)	931.98	848.37	1045.07	1146.42	1275.33	1361.97	1376.60	1322.31	1207.91	1147.81	990.73	1027.47
Zone Sensible Heating (kWh)	10735.98	10718.01	7993.04	3559.51	207.52	220.88	100.76	175.75	109.84	126.01	3343.99	7028.21
Zone Sensible Cooling (kWh)	-685.18	-638.07	-495.52	-472.28	-1138.82	-781.73	-1973.45	-2724.10	-1661.48	-855.08	-530.00	-431.01
Sensible Cooling (kWh)	0.00	0.00	0.00	-75.43	-483.84	-498.71	-1817.44	-2751.30	-1289.15	-307.68	-0.69	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-75.43	-499.66	-552.67	-2136.17	-4079.04	-2169.44	-330.10	-0.69	0.00
Zone Heating (kWh)	12664.56	12656.61	9555.64	4148.71	0.00	0.00	0.00	0.00	0.00	9.92	4223.14	8496.68
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (9): Pattern (1) Heating and cooling loads **Total BUILDING without Topography**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly



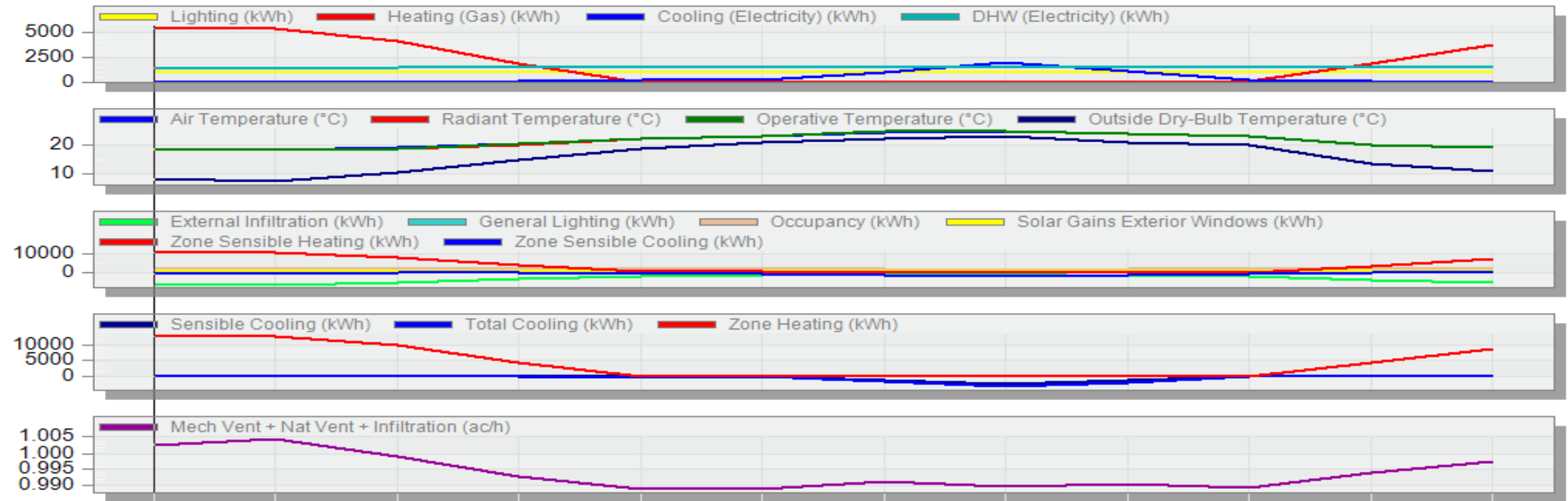
Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	2767.40	2822.55	1915.07	711.67	0.00	0.00	0.00	0.00	0.00	0.00	466.47	1619.20
Cooling (Electricity) (kWh)	0.00	0.00	0.00	43.33	376.68	680.24	1741.07	2630.22	1438.99	479.28	10.46	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	19.60	19.48	19.92	21.16	23.67	24.38	25.15	25.27	24.80	24.48	21.56	20.07
Radiant Temperature (°C)	19.13	18.97	19.53	20.91	23.68	24.34	25.28	25.43	24.90	24.49	21.50	19.70
Operative Temperature (°C)	19.36	19.23	19.72	21.04	23.68	24.36	25.22	25.35	24.85	24.49	21.53	19.88
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2093.14	1897.52	2064.86	1875.30	1680.29	1540.65	1517.25	1500.94	1501.76	1586.09	1852.08	2050.99
Solar Gains Exterior Windows (kWh)	318.85	286.16	346.30	378.68	420.57	449.19	455.41	436.86	400.30	382.53	339.89	350.01
Zone Sensible Heating (kWh)	4631.37	4736.09	2996.35	1190.62	148.97	139.34	81.65	156.86	84.99	61.52	528.71	2393.77
Zone Sensible Cooling (kWh)	-875.26	-800.65	-670.46	-706.00	-1563.06	-1445.42	-2703.85	-3217.76	-2234.65	-1531.34	-1129.91	-602.15
Sensible Cooling (kWh)	0.00	0.00	0.00	-77.93	-654.76	-1041.93	-2495.81	-3211.94	-1705.94	-769.86	-18.47	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-78.00	-678.03	-1224.42	-3133.92	-4734.40	-2590.18	-862.70	-18.82	0.00
Zone Heating (kWh)	6503.39	6632.98	4500.43	1672.43	0.00	0.00	0.00	0.00	0.00	0.00	1096.21	3805.11
Mech Vent + Nat Vent + Infiltration (ac/h)	0.28	0.28	0.28	0.28	0.28	0.29	0.29	0.29	0.28	0.28	0.28	0.28

Fig (10) : Pattern (3) Heating and cooling loads **Total BUILDING without Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

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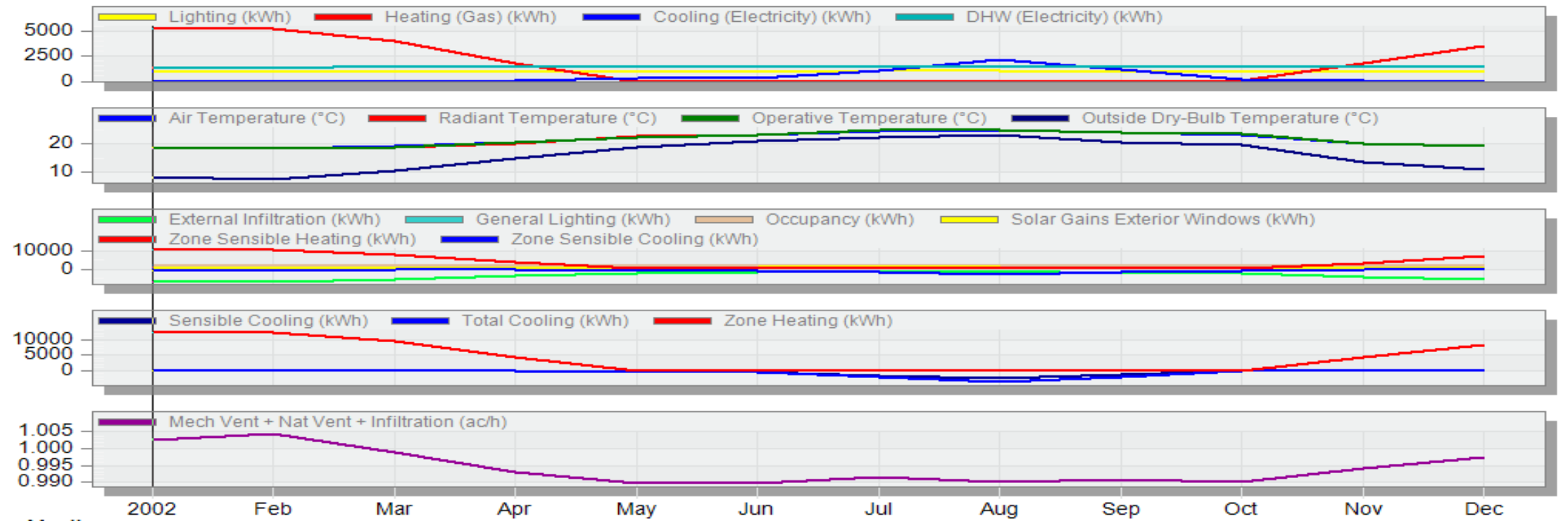


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5461.87	5448.03	4181.25	1832.66	0.00	0.00	0.00	0.00	0.00	6.69	1876.70	3726.00
Cooling (Electricity) (kWh)	0.00	0.00	0.00	28.14	204.79	190.76	912.06	1972.13	1113.94	130.38	0.31	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.60	18.47	19.05	20.32	22.16	23.08	24.52	24.74	23.79	23.08	20.11	19.24
Radiant Temperature (°C)	18.30	18.15	18.79	20.19	22.37	23.08	24.70	24.95	24.05	23.24	20.13	19.00
Operative Temperature (°C)	18.45	18.31	18.92	20.25	22.27	23.08	24.61	24.84	23.92	23.16	20.12	19.12
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7155.26	-7053.56	-5983.16	-3691.19	-2373.95	-1443.73	-1489.02	-1143.11	-2023.47	-2202.11	-4312.04	-5641.11
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2150.57	1948.56	2113.05	1931.54	1822.59	1653.14	1560.42	1533.17	1589.85	1721.84	1967.47	2097.98
Solar Gains Exterior Windows (kWh)	260.71	236.09	296.41	335.09	368.65	389.92	396.59	388.17	352.16	324.34	278.21	287.50
Zone Sensible Heating (kWh)	10910.07	10867.15	8264.58	3724.38	234.81	263.15	117.15	188.40	115.95	152.72	3517.19	7287.94
Zone Sensible Cooling (kWh)	-695.63	-649.05	-503.05	-442.86	-1005.36	-579.63	-1577.27	-2361.50	-1532.84	-743.98	-506.09	-436.41
Sensible Cooling (kWh)	0.00	0.00	0.00	-50.66	-357.25	-312.38	-1426.79	-2390.19	-1172.61	-218.80	-0.56	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-50.66	-368.62	-343.37	-1641.70	-3549.83	-2005.09	-234.68	-0.57	0.00
Zone Heating (kWh)	12835.39	12802.87	9825.95	4306.76	0.00	0.00	0.00	0.00	0.00	15.71	4410.23	8756.10
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (11): Pattern (4) Heating and cooling loads **Total BUILDING without Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

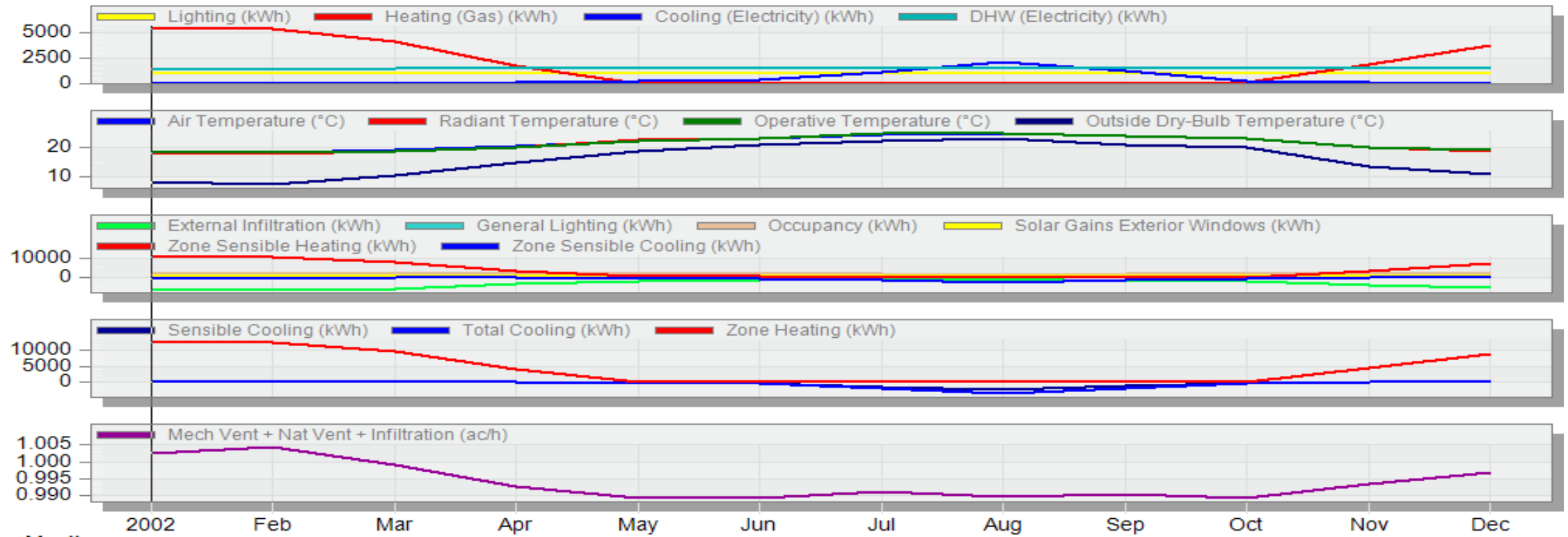


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5339.20	5313.15	4005.54	1746.98	0.00	0.00	0.00	0.00	0.00	3.15	1763.38	3605.52
Cooling (Electricity) (kWh)	0.00	0.00	0.00	39.88	264.63	282.28	1119.14	2210.91	1206.19	182.37	0.64	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.58	18.46	19.06	20.37	22.28	23.27	24.61	24.80	23.88	23.26	20.18	19.23
Radiant Temperature (°C)	18.30	18.16	18.83	20.28	22.52	23.32	24.85	25.06	24.17	23.46	20.24	19.02
Operative Temperature (°C)	18.44	18.31	18.95	20.33	22.40	23.30	24.73	24.93	24.02	23.36	20.21	19.12
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7143.80	-7047.26	-5990.16	-3726.34	-2453.94	-1569.97	-1550.15	-1185.99	-2080.34	-2324.52	-4358.06	-5635.39
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2151.83	1949.03	2112.14	1924.85	1808.35	1631.49	1550.77	1525.69	1578.60	1699.53	1960.50	2098.57
Solar Gains Exterior Windows (kWh)	519.87	486.63	596.99	645.44	713.30	759.60	771.17	744.66	686.11	657.35	565.39	566.61
Zone Sensible Heating (kWh)	10619.93	10548.92	7851.77	3515.02	207.44	223.68	101.60	174.92	107.35	120.92	3268.57	7004.90
Zone Sensible Cooling (kWh)	-691.34	-647.18	-505.47	-472.35	-1116.96	-739.14	-1883.73	-2657.76	-1667.68	-859.18	-541.46	-435.55
Sensible Cooling (kWh)	0.00	0.00	0.00	-71.79	-461.64	-460.34	-1727.95	-2684.74	-1290.75	-306.17	-1.15	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-71.79	-476.34	-508.10	-2014.44	-3979.63	-2171.14	-328.26	-1.15	0.00
Zone Heating (kWh)	12547.13	12485.90	9413.01	4105.41	0.00	0.00	0.00	0.00	0.00	7.39	4143.95	8472.98
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig(12) : Pattern (5) Heating and cooling loads **Total BUILDING without Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly

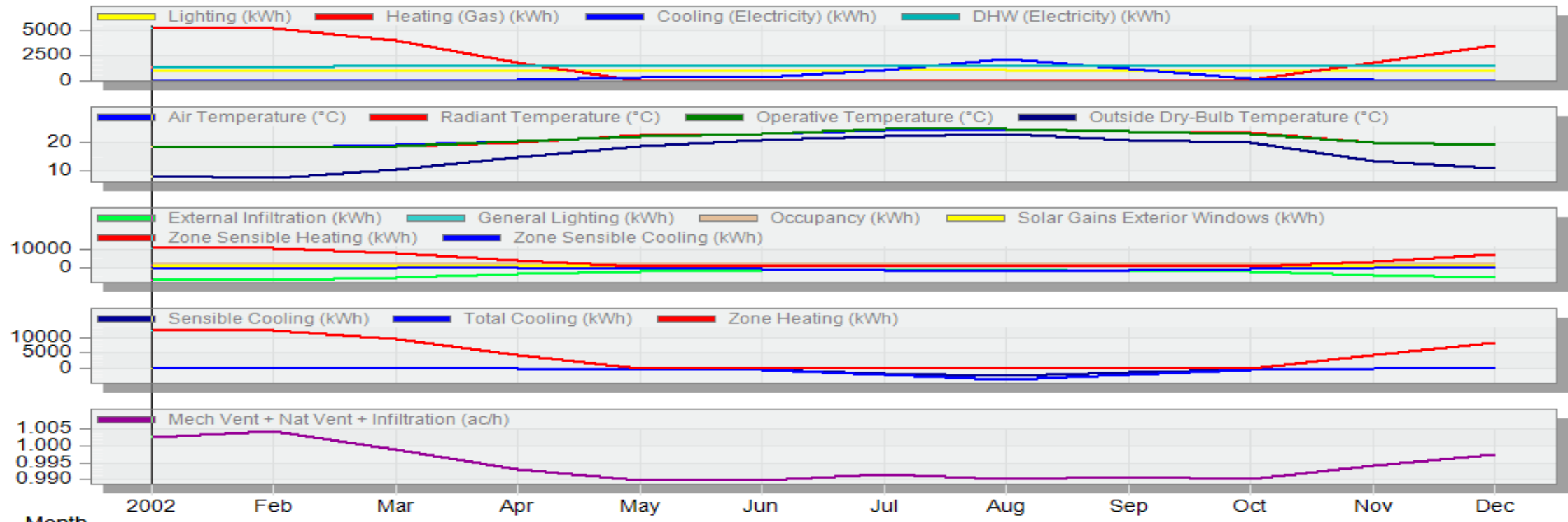


Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5460.47	5408.17	4096.40	1782.21	0.00	0.00	0.00	0.00	0.00	7.13	1889.23	3740.10
Cooling (Electricity) (kWh)	0.00	0.00	0.00	35.57	252.65	269.72	1089.32	2133.44	1153.63	142.99	0.39	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.55	18.43	19.03	20.34	22.24	23.25	24.60	24.78	23.81	23.12	20.07	19.19
Radiant Temperature (°C)	18.25	18.11	18.79	20.24	22.48	23.29	24.83	25.03	24.09	23.30	20.09	18.96
Operative Temperature (°C)	18.40	18.27	18.91	20.29	22.36	23.27	24.71	24.91	23.95	23.21	20.08	19.07
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7120.60	-7028.79	-5971.73	-3708.20	-2426.53	-1552.43	-1540.76	-1172.69	-2036.02	-2226.51	-4289.83	-5610.58
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2154.29	1950.93	2114.01	1927.66	1812.93	1634.47	1552.27	1527.59	1585.98	1715.94	1969.73	2101.29
Solar Gains Exterior Windows (kWh)	446.18	425.71	542.10	602.25	678.37	731.54	740.04	700.77	628.80	576.95	482.49	480.21
Zone Sensible Heating (kWh)	10903.20	10771.04	8064.30	3599.91	213.69	229.66	103.90	178.92	113.61	143.78	3542.16	7318.94
Zone Sensible Cooling (kWh)	-684.78	-641.71	-500.15	-459.93	-1090.99	-718.19	-1836.97	-2561.08	-1588.81	-768.34	-496.09	-427.09
Sensible Cooling (kWh)	0.00	0.00	0.00	-64.02	-440.54	-440.21	-1682.13	-2588.18	-1222.64	-240.59	-0.70	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-64.02	-454.77	-485.50	-1960.77	-3840.19	-2076.54	-257.38	-0.70	0.00
Zone Heating (kWh)	12832.11	12709.19	9626.55	4188.20	0.00	0.00	0.00	0.00	0.00	16.75	4439.69	8789.23
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig (13): Pattern (6) Heating and cooling loads **Total BUILDING without Topography.**

Temperatures, Heat Gains and Energy Consumption - Untitled, MAIN BUILDING

1 Jan - 31 Dec, Monthly



Month	2002	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Heating (Gas) (kWh)	5324.35	5327.28	4032.80	1761.89	0.00	0.00	0.00	0.00	0.00	3.21	1769.98	3584.54
Cooling (Electricity) (kWh)	0.00	0.00	0.00	39.13	255.04	264.63	1075.41	2149.07	1183.23	168.38	0.50	0.00
DHW (Electricity) (kWh)	1445.75	1330.91	1510.53	1407.47	1445.75	1472.25	1445.75	1478.14	1439.86	1445.75	1439.86	1478.14
Air Temperature (°C)	18.60	18.46	19.05	20.36	22.25	23.24	24.59	24.78	23.84	23.21	20.17	19.25
Radiant Temperature (°C)	18.32	18.15	18.81	20.26	22.47	23.27	24.81	25.02	24.11	23.38	20.22	19.03
Operative Temperature (°C)	18.46	18.31	18.93	20.31	22.36	23.25	24.70	24.90	23.98	23.30	20.20	19.14
Outside Dry-Bulb Temperature (°C)	8.37	7.34	10.47	14.85	18.74	20.91	22.33	23.08	20.73	19.87	13.68	11.14
External Infiltration (kWh)	-7153.82	-7046.40	-5985.25	-3718.66	-2433.61	-1548.91	-1536.81	-1172.73	-2057.12	-2287.82	-4355.83	-5648.35
General Lighting (kWh)	1012.45	914.47	1012.45	979.79	1012.45	979.79	1012.45	1012.45	979.79	1012.45	979.79	1012.45
Occupancy (kWh)	2150.06	1948.66	2112.08	1925.34	1810.91	1634.13	1552.08	1526.90	1581.49	1704.55	1960.10	2095.96
Solar Gains Exterior Windows (kWh)	322.71	291.97	356.69	389.40	430.66	458.77	466.47	447.49	409.11	390.39	345.78	355.47
Zone Sensible Heating (kWh)	10586.00	10582.51	7915.69	3550.05	210.20	226.61	102.54	176.32	108.70	125.84	3278.82	6956.32
Zone Sensible Cooling (kWh)	-696.72	-648.48	-505.57	-469.70	-1097.04	-708.86	-1821.98	-2582.19	-1631.53	-828.47	-536.68	-442.20
Sensible Cooling (kWh)	0.00	0.00	0.00	-70.43	-444.98	-433.11	-1667.71	-2610.17	-1259.78	-282.41	-0.90	0.00
Total Cooling (kWh)	0.00	0.00	0.00	-70.43	-459.06	-476.33	-1935.73	-3868.33	-2129.82	-303.09	-0.90	0.00
Zone Heating (kWh)	12512.23	12519.11	9477.08	4140.43	0.00	0.00	0.00	0.00	0.00	7.55	4159.46	8423.66
Mech Vent + Nat Vent + Infiltration (ac/h)	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00

Fig(14) : Pattern (7) Heating and cooling loads **Total BUILDING without Topography.**