**综合能耗节能率计算书**

公共建筑

|  |  |
| --- | --- |
| 工程名称 | 社区活动中心改造建筑 |
| 工程地点 | 四川-成都 |
| 设计编号 |  |
| 建设单位 |  |
| 设计单位 |  |
| 设 计 人 |  |
| 审 核 人 |  |
| 审 定 人 |  |
| 设计日期 | 2020年12月28日 |



|  |  |
| --- | --- |
| 采用软件 | 能耗计算BESI2020 |
| 软件版本 | 20190808 |
| 研发单位 | 北京绿建软件有限公司 |
| 正版授权码 | T18728490057  |

 **目 录**

[1 建筑概况 4](#_Toc60082113)

[2 计算依据 4](#_Toc60082114)

[3 计算要求 4](#_Toc60082115)

[3.1 计算目标 4](#_Toc60082116)

[3.2 计算方法 4](#_Toc60082117)

[4 建筑大样 5](#_Toc60082118)

[5 围护结构 8](#_Toc60082119)

[5.1 工程材料 8](#_Toc60082120)

[5.2 围护结构作法简要说明 8](#_Toc60082121)

[5.3 体形系数 9](#_Toc60082122)

[5.4 窗墙比 9](#_Toc60082123)

[5.4.1 窗墙比 9](#_Toc60082124)

[5.4.2 外窗表 9](#_Toc60082125)

[5.5 可见光透射比 13](#_Toc60082126)

[5.6 天窗 13](#_Toc60082127)

[5.6.1 天窗屋顶比 13](#_Toc60082128)

[5.6.2 天窗类型 13](#_Toc60082129)

[5.7 屋顶构造 13](#_Toc60082130)

[5.7.1 屋顶构造一 13](#_Toc60082131)

[5.8 外墙构造 14](#_Toc60082132)

[5.8.1 外墙相关构造 14](#_Toc60082133)

[5.8.2 外墙主断面传热系数的修正系数ψ 14](#_Toc60082134)

[5.8.3 外墙平均热工特性 15](#_Toc60082135)

[5.9 挑空楼板构造 15](#_Toc60082136)

[5.9.1 挑空楼板构造一 15](#_Toc60082137)

[5.10 外窗热工 16](#_Toc60082138)

[5.10.1 外窗构造 16](#_Toc60082139)

[5.10.2 外遮阳类型 16](#_Toc60082140)

[5.10.3 平均传热系数 16](#_Toc60082141)

[5.10.4 综合太阳得热系数 20](#_Toc60082142)

[5.10.5 总体热工性能 24](#_Toc60082143)

[6 围护结构概况 24](#_Toc60082144)

[7 设计建筑 25](#_Toc60082145)

[7.1 房间类型 25](#_Toc60082146)

[7.1.1 房间表 25](#_Toc60082147)

[7.1.2 作息时间表 25](#_Toc60082148)

[7.2 系统类型 25](#_Toc60082149)

[7.3 制冷系统 25](#_Toc60082150)

[7.3.1 冷水机组 25](#_Toc60082151)

[7.3.2 水泵系统 26](#_Toc60082152)

[7.3.3 运行工况 26](#_Toc60082153)

[7.3.4 制冷能耗 26](#_Toc60082154)

[7.4 供暖系统 26](#_Toc60082155)

[7.4.1 热泵系统 26](#_Toc60082156)

[7.5 空调风机 27](#_Toc60082157)

[7.5.1 独立新排风 27](#_Toc60082158)

[7.5.2 风机盘管 27](#_Toc60082159)

[7.6 照明 27](#_Toc60082160)

[8 参照建筑 28](#_Toc60082161)

[8.1 房间类型 28](#_Toc60082162)

[8.1.1 房间表 28](#_Toc60082163)

[8.1.2 作息时间表 28](#_Toc60082164)

[8.2 系统类型 28](#_Toc60082165)

[8.3 制冷系统 28](#_Toc60082166)

[8.3.1 冷水机组 28](#_Toc60082167)

[8.3.2 冷却水泵 28](#_Toc60082168)

[8.3.3 冷冻水泵 29](#_Toc60082169)

[8.3.4 冷却塔 29](#_Toc60082170)

[8.4 供暖系统 29](#_Toc60082171)

[8.4.1 热水锅炉能耗 29](#_Toc60082172)

[8.4.2 热水循环水泵能耗 29](#_Toc60082173)

[8.5 空调风机 29](#_Toc60082174)

[8.5.1 独立新排风 29](#_Toc60082175)

[8.5.2 风机盘管 29](#_Toc60082176)

[8.6 照明 30](#_Toc60082177)

[9 计算结果 30](#_Toc60082178)

[10 附录 34](#_Toc60082179)

[10.1 工作日/节假日人员逐时在室率(%) 34](#_Toc60082180)

[10.2 工作日/节假日照明开关时间表(%) 34](#_Toc60082181)

[10.3 工作日/节假日设备逐时使用率(%) 35](#_Toc60082182)

[10.4 工作日/节假日空调系统运行时间表(1:开,0:关) 35](#_Toc60082183)

# 建筑概况

|  |  |
| --- | --- |
| 工程名称 | 社区活动中心改造建筑 |
| 工程地点 | 四川-成都 |
| 地理位置 | 北纬：31.00° | 东经：104.01° |
| 建筑面积(m2) | 地上11669 地下0 |
| 建筑层数 | 地上5 地下0 |
| 建筑高度（m） | 地上24.2 地下0.0 |
| 建筑体积(m3) | 50804.42 |
| 建筑外表面积(m2) | 15308.09 |
| 北向角度 | 119 |
| 结构类型 |  |
| 外墙太阳辐射吸收系数 | 0.75 |
| 屋顶太阳辐射吸收系数 | 0.75 |

# 计算依据

1. 《绿色建筑评价标准》(GB/T50378-2019)

2. 《民用建筑绿色性能计算标准》(JGJ/T 449-2018)

3. 《建筑能效标识技术标准》(JGJ/T 288-2012)

4. 《公共建筑节能设计标准》(GB50189-2015)

5. 《民用建筑热工设计规范》(GB50176)

# 计算要求

## 计算目标

依据《绿色建筑评价标准》(GB/T50378-2019)第7.2.8相关内容，对于采取措施后的建筑能耗降低幅度进行计算。

## 计算方法

建立参照建筑，参照建筑的热工参数、采暖空调照明形式及设备满足现行国家节能标准要求。

根据现行行业标准《民用建筑绿色性能计算标准》JGJ/T449的相关规定，分别计算设计建筑及参照建筑的供暖空调和照明系统能耗，计算其节能率并进行得分判定。

即：建筑能耗节能率 ＝ （参照建筑全年采暖空调照明耗电量 － 设计建筑全年采暖空调照明耗电量） / 参照建筑全年采暖空调照明耗电量 × 100%

# 建筑大样



立面图例



1层平面



2层平面



3层平面



4层平面



5层平面

# 围护结构

## 工程材料

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称 | 导热系数λ | 蓄热系数S | 密度ρ | 比热容Cp | 蒸汽渗透系数u | 备注 |
| W/(m.K) | W/(㎡.K) | kg/m3 | J/(kg.K) | g/(m.h.kPa) |
| 水泥砂浆 | 0.930 | 11.370 | 1800.0 | 1050.0 | 0.0210 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 节能型烧结空心砌块（孔排数≥9排，孔洞率≥50%）砌体（ρ=801~900） | 0.250 | 4.130 | 850.0 | 1050.0 | 0.0000 |  |
| 石灰砂浆 | 0.810 | 10.070 | 1600.0 | 1050.0 | 0.0443 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 钢筋混凝土 | 1.740 | 17.200 | 2500.0 | 920.0 | 0.0158 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 碎石、卵石混凝土(ρ=2300) | 1.510 | 15.360 | 2300.0 | 920.0 | 0.0173 | 来源：《民用建筑热工设计规范》GB50176-2016 |
| 混凝土多孔砖(190六孔砖） | 0.750 | 7.490 | 1450.0 | 709.4 | 0.0000 |  |
| 无机保温砂浆(ρ≤400) | 0.085 | 1.610 | 400.0 | 1050.0 | 0.0000 |  |
| 抗裂砂浆（网格布） | 0.930 | 11.306 | 1800.0 | 1050.0 | 0.0000 |  |
| 玻化微珠保温浆料 | 0.080 | 1.462 | 350.0 | 1050.0 | 0.0000 | 蒸汽渗透系数没有给出 |
| 挤塑聚苯板 | 0.033 | 0.347 | 28.0 | 1790.0 | 0.0000 |  |
| 防水珍珠岩板(ρ=150-200) | 0.060 | 1.060 | 175.0 | 1320.0 | 0.0561 |  |

## 围护结构作法简要说明

**1. 屋顶构造：**屋顶构造一：（由上到下）

 碎石、卵石混凝土(ρ=2300) 40mm＋水泥砂浆 20mm＋挤塑聚苯板 40mm＋防水珍珠岩板(ρ=150-200) 30mm＋钢筋混凝土 120mm＋水泥砂浆 20mm

**2. 外墙构造：**外墙构造一：（由外到内）

 抗裂砂浆（网格布） 5mm＋玻化微珠保温浆料 30mm＋节能型烧结空心砌块（孔排数≥9排，孔洞率≥50%）砌体（ρ=801~900） 200mm＋无机保温砂浆(ρ≤400) 20mm＋抗裂砂浆（网格布） 5mm

**3. 挑空楼板构造：**挑空楼板构造一：（由上到下）

 水泥砂浆 20mm＋钢筋混凝土 120mm＋水泥砂浆 20mm＋挤塑聚苯板 45mm＋水泥砂浆 20mm

**4. 幕墙：**6中透光Low-E+12氩气+6透明-多腔塑料窗框：

 传热系数1.600W/m^2.K，太阳得热系数0.326

**5. 外窗：**6中透光Low-E+12氩气+6透明-多腔塑料窗框：

 传热系数1.600W/m^2.K，太阳得热系数0.326

**6. 天窗：**6中透光热反射+12A+6透明-多腔塑料窗框：

 传热系数2.300W/m^2.K，太阳得热系数0.222

## 体形系数

|  |  |
| --- | --- |
| 外表面积 | 15308.09 |
| 建筑体积 | 50804.42 |
| 体形系数 | 0.30 |

## 窗墙比

### 窗墙比

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 朝向 | 立面 | 窗面积(㎡) | 墙面积(㎡) | 窗墙比 |
| 南向 | 南-默认立面 | 954.82 | 2284.67 | 0.42 |
| 北向 | 北-默认立面 | 573.46 | 2195.44 | 0.26 |
| 东向 | 东-默认立面 | 367.24 | 1455.90 | 0.25 |
| 西向 | 西-默认立面 | 195.63 | 1503.58 | 0.13 |

### 外窗表

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 编号 | 尺寸 | 楼层 | 数量 | 单个面积（㎡） | 合计面积（㎡） |
| 南向 | 南-默认立面954.82 |  | 1.35×4.20 | 1 | 1 | 5.67 | 5.67 |
|  | 1.60×2.10 | 1 | 6 | 3.36 | 20.16 |
|  | 1.55×4.20 | 1 | 1 | 6.51 | 6.51 |
|  | 18.00×4.20 | 1 | 1 | 75.60 | 75.60 |
|  | 0.50×4.20 | 1 | 1 | 2.10 | 2.10 |
|  | 2.55×4.20 | 1 | 1 | 10.71 | 10.71 |
|  | 18.65×4.20 | 1 | 1 | 78.33 | 78.33 |
|  | 0.68×4.20 | 1 | 1 | 2.84 | 2.84 |
|  | 0.88×4.20 | 1 | 1 | 3.68 | 3.68 |
|  | 0.63×4.20 | 1 | 1 | 2.63 | 2.63 |
|  | 0.43×4.20 | 1 | 1 | 1.79 | 1.79 |
|  | 7.30×4.20 | 1 | 1 | 30.66 | 30.66 |
|  | 7.30×4.20 | 1 | 1 | 30.66 | 30.66 |
|  | 1.88×3.00 | 2 | 1 | 5.65 | 5.65 |
|  | 1.60×0.90 | 2 | 2 | 1.44 | 2.88 |
|  | 1.97×3.00 | 2 | 1 | 5.90 | 5.90 |
|  | 0.30×4.00 | 2 | 1 | 1.20 | 1.20 |
|  | 1.80×1.90 | 2 | 2 | 3.42 | 6.84 |
|  | 22.60×4.00 | 2 | 1 | 90.40 | 90.40 |
|  | 0.50×4.00 | 2 | 1 | 2.00 | 2.00 |
|  | 28.85×4.00 | 2 | 1 | 115.40 | 115.40 |
|  | 4.65×4.00 | 2 | 1 | 18.60 | 18.60 |
|  | 0.32×4.00 | 3 | 1 | 1.28 | 1.28 |
|  | 1.50×0.90 | 3 | 10 | 1.35 | 13.50 |
|  | 1.50×1.60 | 3 | 10 | 2.40 | 24.00 |
|  | 0.25×4.00 | 3 | 1 | 1.00 | 1.00 |
|  | 1.22×4.00 | 3 | 1 | 4.88 | 4.88 |
|  | 0.21×4.00 | 3 | 2 | 0.84 | 1.68 |
|  | 0.79×4.00 | 3 | 1 | 3.16 | 3.16 |
|  | 0.97×4.00 | 3 | 1 | 3.88 | 3.88 |
|  | 0.03×4.00 | 3 | 1 | 0.12 | 0.12 |
|  | 0.95×4.00 | 3 | 1 | 3.79 | 3.79 |
|  | 0.05×4.00 | 3 | 1 | 0.21 | 0.21 |
|  | 0.98×4.00 | 3 | 1 | 3.91 | 3.91 |
|  | 0.02×4.00 | 3 | 1 | 0.09 | 0.09 |
|  | 0.98×4.00 | 3 | 1 | 3.93 | 3.93 |
|  | 0.02×4.00 | 3 | 1 | 0.07 | 0.07 |
|  | 0.96×4.00 | 3 | 1 | 3.84 | 3.84 |
|  | 0.04×4.00 | 3 | 1 | 0.16 | 0.16 |
|  | 1.06×4.00 | 3 | 1 | 4.24 | 4.24 |
|  | 1.44×0.90 | 3 | 1 | 1.30 | 1.30 |
|  | 1.44×1.60 | 3 | 1 | 2.31 | 2.31 |
|  | 0.99×4.00 | 3 | 1 | 3.98 | 3.98 |
|  | 0.01×4.00 | 3 | 1 | 0.02 | 0.02 |
|  | 0.94×4.00 | 3 | 1 | 3.77 | 3.77 |
|  | 0.06×4.00 | 3 | 1 | 0.23 | 0.23 |
|  | 3.55×4.00 | 3 | 1 | 14.20 | 14.20 |
|  | 0.77×4.00 | 3 | 1 | 3.10 | 3.10 |
|  | 1.48×0.90 | 3 | 1 | 1.33 | 1.33 |
|  | 1.48×1.60 | 3 | 1 | 2.36 | 2.36 |
|  | 28.35×4.00 | 4 | 1 | 113.40 | 113.40 |
|  | 1.60×1.90 | 4 | 2 | 3.04 | 6.08 |
|  | 0.80×4.00 | 4 | 1 | 3.20 | 3.20 |
| C0715 | 0.66×1.50 | 1~4 | 29 | 0.99 | 28.71 |
| C0715 | 0.67×1.50 | 3 | 1 | 1.00 | 1.00 |
| C0915 | 0.90×1.50 | 2~4 | 29 | 1.35 | 39.15 |
| C1315 | 1.26×1.50 | 1~5 | 21 | 1.89 | 39.69 |
| C1515 | 1.50×1.50 | 2~4 | 23 | 2.25 | 51.75 |
| C1515 | 1.44×1.50 | 3 | 1 | 2.16 | 2.16 |
| C1515 | 1.48×1.50 | 3 | 1 | 2.21 | 2.21 |
| C1815 | 1.80×1.50 | 1 | 6 | 2.70 | 16.20 |
| C1915 | 1.86×1.50 | 1~4 | 5 | 2.79 | 13.95 |
| C2415 | 2.40×1.50 | 1 | 3 | 3.60 | 10.80 |
| 北向 | 北-默认立面573.46 |  | 7.50×4.20 | 1 | 2 | 31.50 | 63.00 |
|  | 18.00×4.20 | 1 | 1 | 75.60 | 75.60 |
|  | 8.10×4.20 | 1 | 1 | 34.02 | 34.02 |
|  | 8.70×4.20 | 1 | 1 | 36.54 | 36.54 |
|  | 12.42×4.20 | 1 | 1 | 52.17 | 52.17 |
|  | 0.45×4.20 | 1 | 1 | 1.91 | 1.91 |
|  | 1.60×2.10 | 1 | 4 | 3.36 | 13.44 |
|  | 0.26×4.20 | 1 | 1 | 1.07 | 1.07 |
|  | 1.13×4.20 | 1 | 1 | 4.73 | 4.73 |
|  | 1.12×4.20 | 1 | 1 | 4.72 | 4.72 |
|  | 0.05×4.00 | 3 | 1 | 0.20 | 0.20 |
|  | 2.50×1.90 | 3 | 8 | 4.75 | 37.98 |
|  | 0.00×1.90 | 3 | 4 | 0.00 | 0.01 |
|  | 2.50×1.90 | 3 | 4 | 4.75 | 19.00 |
|  | 0.60×4.00 | 3 | 1 | 2.40 | 2.40 |
|  | 0.58×4.00 | 3 | 1 | 2.30 | 2.30 |
|  | 0.63×4.00 | 3 | 1 | 2.50 | 2.50 |
|  | 0.20×4.00 | 3 | 1 | 0.80 | 0.80 |
|  | 2.15×4.00 | 3 | 2 | 8.60 | 17.20 |
|  | 1.60×1.90 | 3 | 2 | 3.04 | 6.08 |
| C0715 | 0.66×1.50 | 1~3 | 16 | 0.99 | 15.84 |
| C0715 | 0.66×1.50 | 1 | 1 | 0.99 | 0.99 |
| C0915 | 0.90×1.50 | 1~3 | 32 | 1.35 | 43.20 |
| C1215 | 1.20×1.50 | 3 | 3 | 1.80 | 5.40 |
| C1315 | 1.26×1.50 | 2,4~5 | 15 | 1.89 | 28.35 |
| C1515 | 1.50×1.50 | 1~3 | 21 | 2.25 | 47.25 |
| C2715 | 2.70×1.50 | 3 | 1 | 4.05 | 4.05 |
| C3615 | 3.60×1.50 | 2 | 1 | 5.40 | 5.40 |
| C4015 | 4.00×1.20 | 3 | 1 | 4.80 | 4.80 |
| C6615 | 6.64×3.20 | 2~3 | 2 | 21.25 | 42.50 |
| 东向 | 东-默认立面367.24 |  | 8.00×4.20 | 1 | 1 | 33.60 | 33.60 |
|  | 14.00×4.20 | 1 | 1 | 58.80 | 58.80 |
|  | 0.85×4.20 | 1 | 2 | 3.57 | 7.14 |
|  | 1.60×2.10 | 1 | 5 | 3.36 | 16.80 |
|  | 11.90×4.20 | 1 | 1 | 49.98 | 49.98 |
|  | 5.18×4.20 | 1 | 1 | 21.76 | 21.76 |
|  | 3.80×4.20 | 1 | 1 | 15.96 | 15.96 |
|  | 0.60×4.20 | 1 | 2 | 2.52 | 5.04 |
|  | 3.05×4.20 | 1 | 1 | 12.81 | 12.81 |
|  | 5.15×4.00 | 2,4 | 2 | 20.60 | 41.20 |
|  | 5.00×4.00 | 3 | 1 | 20.00 | 20.00 |
|  | 0.48×4.00 | 3 | 2 | 1.90 | 3.80 |
|  | 1.80×1.90 | 3 | 1 | 3.42 | 3.42 |
| C0715 | 0.66×1.50 | 3 | 1 | 0.99 | 0.99 |
| C0815 | 0.81×1.50 | 4~5 | 2 | 1.21 | 2.42 |
| C0915 | 0.90×1.50 | 1~5 | 16 | 1.35 | 21.60 |
| C1015 | 1.03×1.50 | 4~5 | 2 | 1.54 | 3.08 |
| C1315 | 1.26×1.50 | 4~5 | 16 | 1.89 | 30.24 |
| C1515 | 1.50×1.50 | 3 | 1 | 2.25 | 2.25 |
| C2415 | 2.40×1.50 | 1 | 1 | 3.60 | 3.60 |
| C4015 | 4.00×1.50 | 2 | 1 | 6.00 | 6.00 |
| C4515 | 4.50×1.50 | 2 | 1 | 6.75 | 6.75 |
| 西向 | 西-默认立面195.63 |  | 8.00×4.20 | 1 | 1 | 33.60 | 33.60 |
|  | 0.50×4.20 | 1 | 2 | 2.10 | 4.20 |
|  | 0.83×4.20 | 1 | 1 | 3.47 | 3.47 |
|  | 1.56×2.10 | 1 | 2 | 3.28 | 6.55 |
|  | 0.04×4.20 | 1 | 1 | 0.17 | 0.17 |
|  | 0.67×4.20 | 1 | 1 | 2.79 | 2.79 |
|  | 0.60×4.20 | 1 | 1 | 2.52 | 2.52 |
|  | 1.60×2.10 | 1 | 2 | 3.36 | 6.72 |
|  | 1.20×4.20 | 1 | 1 | 5.04 | 5.04 |
|  | 0.30×4.20 | 1 | 1 | 1.26 | 1.26 |
|  | 1.80×2.10 | 1 | 1 | 3.78 | 3.78 |
|  | 8.65×4.00 | 2 | 1 | 34.60 | 34.60 |
| C0415 | 0.38×1.50 | 1 | 1 | 0.57 | 0.57 |
| C0715 | 0.66×1.50 | 1~4 | 9 | 0.99 | 8.91 |
| C0915 | 0.90×1.50 | 1~5 | 22 | 1.35 | 29.70 |
| C1215 | 1.20×1.50 | 1 | 1 | 1.80 | 1.80 |
| C1315 | 1.26×1.50 | 2,4~5 | 9 | 1.89 | 17.01 |
| C1415 | 1.38×1.50 | 1~3 | 7 | 2.07 | 14.49 |
| C1515 | 1.50×1.50 | 1~3 | 7 | 2.25 | 15.75 |
| C1815 | 1.80×1.50 | 1 | 1 | 2.70 | 2.70 |

## 可见光透射比

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 窗墙比 | 最不利窗编号 | 最不利透射比 | 透射比限值 |
| 南向 | 南-默认立面 | 0.42 | C1315 | 0.62 | 0.40 |
| 北向 | 北-默认立面 | 0.26 | C1315 | 0.62 | 0.60 |
| 东向 | 东-默认立面 | 0.25 | C1015 | 0.62 | 0.60 |
| 西向 | 西-默认立面 | 0.13 | C0915 | 0.62 | 0.60 |

## 天窗

### 天窗屋顶比

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 房间 | 天窗编号 | 天窗面积（㎡） | 屋顶面积（㎡） | 面积比 |
| 3001 |  | 58.53 | 808.27 | 0.07 |
| 整栋建筑 | 58.53 | 5917.91 | 0.01 |

### 天窗类型

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 综合太阳得热系数 | 备注 |
| 1 | 6中透光热反射+12A+6透明-多腔塑料窗框 | 66 | 2.30 | 0.22 | 可见光透射比=0.280 |
| 平均 |  | 2.30 | 0.22 |  |

## 屋顶构造

### 屋顶构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 碎石、卵石混凝土(ρ=2300) | 40 | 1.510 | 15.360 | 1.00 | 0.026 | 0.407 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯板 | 40 | 0.033 | 0.347 | 1.00 | 1.212 | 0.421 |
| 防水珍珠岩板(ρ=150-200) | 30 | 0.060 | 1.060 | 1.00 | 0.500 | 0.530 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 各层之和∑ | 270 | － | － | － | 1.851 | 3.033 |
| 外表面太阳辐射吸收系数 | 0.75[默认] |
| 传热系数K=1/(0.16+∑R) | 0.50 |

## 外墙构造

### 外墙相关构造

#### 外墙构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 抗裂砂浆（网格布） | 5 | 0.930 | 11.306 | 1.00 | 0.005 | 0.061 |
| 玻化微珠保温浆料 | 30 | 0.080 | 1.462 | 1.15 | 0.326 | 0.548 |
| 节能型烧结空心砌块（孔排数≥9排，孔洞率≥50%）砌体（ρ=801~900） | 200 | 0.250 | 4.130 | 1.00 | 0.800 | 3.304 |
| 无机保温砂浆(ρ≤400) | 20 | 0.085 | 1.610 | 1.00 | 0.235 | 0.379 |
| 抗裂砂浆（网格布） | 5 | 0.930 | 11.306 | 1.00 | 0.005 | 0.061 |
| 各层之和∑ | 260 | － | － | － | 1.372 | 4.353 |
| 外表面太阳辐射吸收系数 | 0.75[默认] |
| 传热系数K=1/(0.16+∑R) | 0.65 |

#### 热桥柱构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由外到内） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 玻化微珠保温浆料 | 30 | 0.080 | 1.462 | 1.15 | 0.326 | 0.548 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 200 | 1.740 | 17.200 | 1.00 | 0.115 | 1.977 |
| 石灰砂浆 | 20 | 0.810 | 10.070 | 1.00 | 0.025 | 0.249 |
| 各层之和∑ | 290 | － | － | － | 0.509 | 3.263 |
| 外表面太阳辐射吸收系数 | 0.75[默认] |
| 传热系数K=1/(0.16+∑R) | 1.50 |

### 外墙主断面传热系数的修正系数ψ

### 外墙平均热工特性

1.　南向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(㎡) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 外墙构造一 | 主墙体 | 1284.28 | 1.000 | 0.65 | 4.35 | 0.75 |
| 考虑线性热桥后K | 0.65 × 1.10 = 0.72 |

2.　北向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(㎡) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 外墙构造一 | 主墙体 | 1506.06 | 1.000 | 0.65 | 4.35 | 0.75 |
| 考虑线性热桥后K | 0.65 × 1.10 = 0.72 |

3.　东向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(㎡) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 外墙构造一 | 主墙体 | 1007.81 | 1.000 | 0.65 | 4.35 | 0.75 |
| 考虑线性热桥后K | 0.65 × 1.10 = 0.72 |

4.　西向

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(㎡) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 外墙构造一 | 主墙体 | 1279.14 | 1.000 | 0.65 | 4.35 | 0.75 |
| 考虑线性热桥后K | 0.65 × 1.10 = 0.72 |

5.　总体

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 构造名称 | 构件类型 | 面积(㎡) | 面积所占比例 | 传热系数KW / (㎡K) | 热惰性指标D | 太阳辐射吸收系数 |
| 外墙构造一 | 主墙体 | 5077.30 | 1.000 | 0.65 | 4.35 | 0.75 |
| 考虑线性热桥后K | 0.65 × 1.10 = 0.72 |

## 挑空楼板构造

### 挑空楼板构造一

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 材料名称（由上到下） | 厚度δ | 导热系数λ | 蓄热系数S | 修正系数 | 热阻R | 热惰性指标 |
| (mm) | W/(m.K) | W/(㎡.K) | α | (㎡K)/W | D=R\*S |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 钢筋混凝土 | 120 | 1.740 | 17.200 | 1.00 | 0.069 | 1.186 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 挤塑聚苯板 | 45 | 0.033 | 0.347 | 1.00 | 1.364 | 0.473 |
| 水泥砂浆 | 20 | 0.930 | 11.370 | 1.00 | 0.022 | 0.245 |
| 各层之和∑ | 225 | － | － | － | 1.497 | 2.393 |
| 传热系数K=1/(0.16+∑R) | 0.60 |

## 外窗热工

### 外窗构造

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 序号 | 构造名称 | 构造编号 | 传热系数 | 太阳得热系数 | 可见光透射比 | 备注 |
| 1 | 6中透光Low-E+12氩气+6透明-多腔塑料窗框 | 65 | 1.60 | 0.33 | 0.620 | 可见光透射比=0.620 |
| 2 | 6中透光Low-E+12氩气+6透明-多腔塑料窗框 | 18 | 1.60 | 0.33 | 0.620 | 可见光透射比=0.620 |

### 外遮阳类型

已启用环境遮阳

### 平均传热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 5.670 | 5.670 | 65 | 1.600 |
| 2 |  | 1 | 6 | 3.360 | 20.160 | 65 | 1.600 |
| 3 |  | 1 | 1 | 6.510 | 6.510 | 65 | 1.600 |
| 4 |  | 1 | 1 | 75.600 | 75.600 | 65 | 1.600 |
| 5 |  | 1 | 1 | 2.100 | 2.100 | 65 | 1.600 |
| 6 |  | 1 | 1 | 10.710 | 10.710 | 65 | 1.600 |
| 7 |  | 1 | 1 | 78.330 | 78.330 | 65 | 1.600 |
| 8 |  | 1 | 1 | 2.835 | 2.835 | 65 | 1.600 |
| 9 |  | 1 | 1 | 3.675 | 3.675 | 65 | 1.600 |
| 10 |  | 1 | 1 | 2.625 | 2.625 | 65 | 1.600 |
| 11 |  | 1 | 1 | 1.785 | 1.785 | 65 | 1.600 |
| 12 |  | 1 | 1 | 30.660 | 30.660 | 65 | 1.600 |
| 13 |  | 1 | 1 | 30.660 | 30.660 | 65 | 1.600 |
| 14 |  | 2 | 1 | 5.649 | 5.649 | 65 | 1.600 |
| 15 |  | 2 | 2 | 1.440 | 2.880 | 65 | 1.600 |
| 16 |  | 2 | 1 | 5.901 | 5.901 | 65 | 1.600 |
| 17 |  | 2 | 1 | 1.200 | 1.200 | 65 | 1.600 |
| 18 |  | 2 | 2 | 3.420 | 6.840 | 65 | 1.600 |
| 19 |  | 2 | 1 | 90.400 | 90.400 | 65 | 1.600 |
| 20 |  | 2 | 1 | 2.000 | 2.000 | 65 | 1.600 |
| 21 |  | 2 | 1 | 115.400 | 115.400 | 65 | 1.600 |
| 22 |  | 2 | 1 | 18.600 | 18.600 | 65 | 1.600 |
| 23 |  | 3 | 1 | 1.280 | 1.280 | 65 | 1.600 |
| 24 |  | 3 | 10 | 1.350 | 13.500 | 65 | 1.600 |
| 25 |  | 3 | 10 | 2.400 | 24.000 | 65 | 1.600 |
| 26 |  | 3 | 1 | 1.000 | 1.000 | 65 | 1.600 |
| 27 |  | 3 | 1 | 4.880 | 4.880 | 65 | 1.600 |
| 28 |  | 3 | 2 | 0.840 | 1.680 | 65 | 1.600 |
| 29 |  | 3 | 1 | 3.160 | 3.160 | 65 | 1.600 |
| 30 |  | 3 | 1 | 3.876 | 3.876 | 65 | 1.600 |
| 31 |  | 3 | 1 | 0.124 | 0.124 | 65 | 1.600 |
| 32 |  | 3 | 1 | 3.788 | 3.788 | 65 | 1.600 |
| 33 |  | 3 | 1 | 0.212 | 0.212 | 65 | 1.600 |
| 34 |  | 3 | 1 | 3.912 | 3.912 | 65 | 1.600 |
| 35 |  | 3 | 1 | 0.088 | 0.088 | 65 | 1.600 |
| 36 |  | 3 | 1 | 3.928 | 3.928 | 65 | 1.600 |
| 37 |  | 3 | 1 | 0.072 | 0.072 | 65 | 1.600 |
| 38 |  | 3 | 1 | 3.836 | 3.836 | 65 | 1.600 |
| 39 |  | 3 | 1 | 0.164 | 0.164 | 65 | 1.600 |
| 40 |  | 3 | 1 | 4.236 | 4.236 | 65 | 1.600 |
| 41 |  | 3 | 1 | 1.297 | 1.297 | 65 | 1.600 |
| 42 |  | 3 | 1 | 2.306 | 2.306 | 65 | 1.600 |
| 43 |  | 3 | 1 | 3.976 | 3.976 | 65 | 1.600 |
| 44 |  | 3 | 1 | 0.024 | 0.024 | 65 | 1.600 |
| 45 |  | 3 | 1 | 3.772 | 3.772 | 65 | 1.600 |
| 46 |  | 3 | 1 | 0.228 | 0.228 | 65 | 1.600 |
| 47 |  | 3 | 1 | 14.200 | 14.200 | 65 | 1.600 |
| 48 |  | 3 | 1 | 3.096 | 3.096 | 65 | 1.600 |
| 49 |  | 3 | 1 | 1.328 | 1.328 | 65 | 1.600 |
| 50 |  | 3 | 1 | 2.362 | 2.362 | 65 | 1.600 |
| 51 |  | 4 | 1 | 113.400 | 113.400 | 65 | 1.600 |
| 52 |  | 4 | 2 | 3.040 | 6.080 | 65 | 1.600 |
| 53 |  | 4 | 1 | 3.200 | 3.200 | 65 | 1.600 |
| 54 | C0715 | 1~4 | 29 | 0.990 | 28.710 | 18 | 1.600 |
| 55 | C0715 | 3 | 1 | 0.998 | 0.998 | 18 | 1.600 |
| 56 | C0915 | 2~4 | 29 | 1.350 | 39.150 | 18 | 1.600 |
| 57 | C1315 | 1~5 | 21 | 1.890 | 39.690 | 18 | 1.600 |
| 58 | C1515 | 2~4 | 23 | 2.250 | 51.750 | 18 | 1.600 |
| 59 | C1515 | 3 | 1 | 2.162 | 2.162 | 18 | 1.600 |
| 60 | C1515 | 3 | 1 | 2.214 | 2.214 | 18 | 1.600 |
| 61 | C1815 | 1 | 6 | 2.700 | 16.200 | 18 | 1.600 |
| 62 | C1915 | 1~4 | 5 | 2.790 | 13.950 | 18 | 1.600 |
| 63 | C2415 | 1 | 3 | 3.600 | 10.800 | 18 | 1.600 |
| 立面总面积(㎡) | 954.817 | 立面平均传热系数 | 1.600 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 2 | 31.500 | 63.000 | 65 | 1.600 |
| 2 |  | 1 | 1 | 75.600 | 75.600 | 65 | 1.600 |
| 3 |  | 1 | 1 | 34.020 | 34.020 | 65 | 1.600 |
| 4 |  | 1 | 1 | 36.540 | 36.540 | 65 | 1.600 |
| 5 |  | 1 | 1 | 52.172 | 52.172 | 65 | 1.600 |
| 6 |  | 1 | 1 | 1.907 | 1.907 | 65 | 1.600 |
| 7 |  | 1 | 4 | 3.360 | 13.440 | 65 | 1.600 |
| 8 |  | 1 | 1 | 1.071 | 1.071 | 65 | 1.600 |
| 9 |  | 1 | 1 | 4.729 | 4.729 | 65 | 1.600 |
| 10 |  | 1 | 1 | 4.721 | 4.721 | 65 | 1.600 |
| 11 |  | 3 | 1 | 0.204 | 0.204 | 65 | 1.600 |
| 12 |  | 3 | 8 | 4.748 | 37.985 | 65 | 1.600 |
| 13 |  | 3 | 4 | 0.002 | 0.008 | 65 | 1.600 |
| 14 |  | 3 | 4 | 4.750 | 19.000 | 65 | 1.600 |
| 15 |  | 3 | 1 | 2.404 | 2.404 | 65 | 1.600 |
| 16 |  | 3 | 1 | 2.304 | 2.304 | 65 | 1.600 |
| 17 |  | 3 | 1 | 2.504 | 2.504 | 65 | 1.600 |
| 18 |  | 3 | 1 | 0.800 | 0.800 | 65 | 1.600 |
| 19 |  | 3 | 2 | 8.600 | 17.200 | 65 | 1.600 |
| 20 |  | 3 | 2 | 3.040 | 6.080 | 65 | 1.600 |
| 21 | C0715 | 1~3 | 16 | 0.990 | 15.840 | 18 | 1.600 |
| 22 | C0715 | 1 | 1 | 0.990 | 0.990 | 18 | 1.600 |
| 23 | C0915 | 1~3 | 32 | 1.350 | 43.200 | 18 | 1.600 |
| 24 | C1215 | 3 | 3 | 1.800 | 5.400 | 18 | 1.600 |
| 25 | C1315 | 2,4~5 | 15 | 1.890 | 28.350 | 18 | 1.600 |
| 26 | C1515 | 1~3 | 21 | 2.250 | 47.250 | 18 | 1.600 |
| 27 | C2715 | 3 | 1 | 4.050 | 4.050 | 18 | 1.600 |
| 28 | C3615 | 2 | 1 | 5.400 | 5.400 | 18 | 1.600 |
| 29 | C4015 | 3 | 1 | 4.800 | 4.800 | 18 | 1.600 |
| 30 | C6615 | 2~3 | 2 | 21.248 | 42.496 | 18 | 1.600 |
| 立面总面积(㎡) | 573.464 | 立面平均传热系数 | 1.600 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 33.600 | 33.600 | 65 | 1.600 |
| 2 |  | 1 | 1 | 58.800 | 58.800 | 65 | 1.600 |
| 3 |  | 1 | 2 | 3.570 | 7.140 | 65 | 1.600 |
| 4 |  | 1 | 5 | 3.360 | 16.800 | 65 | 1.600 |
| 5 |  | 1 | 1 | 49.980 | 49.980 | 65 | 1.600 |
| 6 |  | 1 | 1 | 21.756 | 21.756 | 65 | 1.600 |
| 7 |  | 1 | 1 | 15.960 | 15.960 | 65 | 1.600 |
| 8 |  | 1 | 2 | 2.520 | 5.040 | 65 | 1.600 |
| 9 |  | 1 | 1 | 12.810 | 12.810 | 65 | 1.600 |
| 10 |  | 2,4 | 2 | 20.600 | 41.200 | 65 | 1.600 |
| 11 |  | 3 | 1 | 20.000 | 20.000 | 65 | 1.600 |
| 12 |  | 3 | 2 | 1.900 | 3.800 | 65 | 1.600 |
| 13 |  | 3 | 1 | 3.420 | 3.420 | 65 | 1.600 |
| 14 | C0715 | 3 | 1 | 0.990 | 0.990 | 18 | 1.600 |
| 15 | C0815 | 4~5 | 2 | 1.211 | 2.421 | 18 | 1.600 |
| 16 | C0915 | 1~5 | 16 | 1.350 | 21.600 | 18 | 1.600 |
| 17 | C1015 | 4~5 | 2 | 1.539 | 3.078 | 18 | 1.600 |
| 18 | C1315 | 4~5 | 16 | 1.890 | 30.240 | 18 | 1.600 |
| 19 | C1515 | 3 | 1 | 2.250 | 2.250 | 18 | 1.600 |
| 20 | C2415 | 1 | 1 | 3.600 | 3.600 | 18 | 1.600 |
| 21 | C4015 | 2 | 1 | 6.000 | 6.000 | 18 | 1.600 |
| 22 | C4515 | 2 | 1 | 6.750 | 6.750 | 18 | 1.600 |
| 立面总面积(㎡) | 367.235 | 立面平均传热系数 | 1.600 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 传热系数 |
| 1 |  | 1 | 1 | 33.600 | 33.600 | 65 | 1.600 |
| 2 |  | 1 | 2 | 2.100 | 4.200 | 65 | 1.600 |
| 3 |  | 1 | 1 | 3.465 | 3.465 | 65 | 1.600 |
| 4 |  | 1 | 2 | 3.276 | 6.552 | 65 | 1.600 |
| 5 |  | 1 | 1 | 0.168 | 0.168 | 65 | 1.600 |
| 6 |  | 1 | 1 | 2.793 | 2.793 | 65 | 1.600 |
| 7 |  | 1 | 1 | 2.520 | 2.520 | 65 | 1.600 |
| 8 |  | 1 | 2 | 3.360 | 6.720 | 65 | 1.600 |
| 9 |  | 1 | 1 | 5.040 | 5.040 | 65 | 1.600 |
| 10 |  | 1 | 1 | 1.260 | 1.260 | 65 | 1.600 |
| 11 |  | 1 | 1 | 3.780 | 3.780 | 65 | 1.600 |
| 12 |  | 2 | 1 | 34.600 | 34.600 | 65 | 1.600 |
| 13 | C0415 | 1 | 1 | 0.570 | 0.570 | 18 | 1.600 |
| 14 | C0715 | 1~4 | 9 | 0.990 | 8.910 | 18 | 1.600 |
| 15 | C0915 | 1~5 | 22 | 1.350 | 29.700 | 18 | 1.600 |
| 16 | C1215 | 1 | 1 | 1.800 | 1.800 | 18 | 1.600 |
| 17 | C1315 | 2,4~5 | 9 | 1.890 | 17.010 | 18 | 1.600 |
| 18 | C1415 | 1~3 | 7 | 2.070 | 14.490 | 18 | 1.600 |
| 19 | C1515 | 1~3 | 7 | 2.250 | 15.750 | 18 | 1.600 |
| 20 | C1815 | 1 | 1 | 2.700 | 2.700 | 18 | 1.600 |
| 立面总面积(㎡) | 195.628 | 立面平均传热系数 | 1.600 |

### 综合太阳得热系数

1. 南向：

南-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数(含环境遮阳) | 综合太阳得热系数 |
| 1 |  | 1 | 1 | 5.670 | 5.670 | 65 | 0.326 |  | 1.000 | 0.326 |
| 2 |  | 1 | 6 | 3.360 | 20.160 | 65 | 0.326 |  | 1.000 | 0.326 |
| 3 |  | 1 | 1 | 6.510 | 6.510 | 65 | 0.326 |  | 1.000 | 0.326 |
| 4 |  | 1 | 1 | 75.600 | 75.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 5 |  | 1 | 1 | 2.100 | 2.100 | 65 | 0.326 |  | 1.000 | 0.326 |
| 6 |  | 1 | 1 | 10.710 | 10.710 | 65 | 0.326 |  | 1.000 | 0.326 |
| 7 |  | 1 | 1 | 78.330 | 78.330 | 65 | 0.326 |  | 1.000 | 0.326 |
| 8 |  | 1 | 1 | 2.835 | 2.835 | 65 | 0.326 |  | 1.000 | 0.326 |
| 9 |  | 1 | 1 | 3.675 | 3.675 | 65 | 0.326 |  | 1.000 | 0.326 |
| 10 |  | 1 | 1 | 2.625 | 2.625 | 65 | 0.326 |  | 1.000 | 0.326 |
| 11 |  | 1 | 1 | 1.785 | 1.785 | 65 | 0.326 |  | 1.000 | 0.326 |
| 12 |  | 1 | 1 | 30.660 | 30.660 | 65 | 0.326 |  | 1.000 | 0.326 |
| 13 |  | 1 | 1 | 30.660 | 30.660 | 65 | 0.326 |  | 1.000 | 0.326 |
| 14 |  | 2 | 1 | 5.649 | 5.649 | 65 | 0.326 |  | 1.000 | 0.326 |
| 15 |  | 2 | 2 | 1.440 | 2.880 | 65 | 0.326 |  | 1.000 | 0.326 |
| 16 |  | 2 | 1 | 5.901 | 5.901 | 65 | 0.326 |  | 1.000 | 0.326 |
| 17 |  | 2 | 1 | 1.200 | 1.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 18 |  | 2 | 2 | 3.420 | 6.840 | 65 | 0.326 |  | 1.000 | 0.326 |
| 19 |  | 2 | 1 | 90.400 | 90.400 | 65 | 0.326 |  | 1.000 | 0.326 |
| 20 |  | 2 | 1 | 2.000 | 2.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 21 |  | 2 | 1 | 115.400 | 115.400 | 65 | 0.326 |  | 1.000 | 0.326 |
| 22 |  | 2 | 1 | 18.600 | 18.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 23 |  | 3 | 1 | 1.280 | 1.280 | 65 | 0.326 |  | 1.000 | 0.326 |
| 24 |  | 3 | 10 | 1.350 | 13.500 | 65 | 0.326 |  | 1.000 | 0.326 |
| 25 |  | 3 | 10 | 2.400 | 24.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 26 |  | 3 | 1 | 1.000 | 1.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 27 |  | 3 | 1 | 4.880 | 4.880 | 65 | 0.326 |  | 1.000 | 0.326 |
| 28 |  | 3 | 2 | 0.840 | 1.680 | 65 | 0.326 |  | 1.000 | 0.326 |
| 29 |  | 3 | 1 | 3.160 | 3.160 | 65 | 0.326 |  | 1.000 | 0.326 |
| 30 |  | 3 | 1 | 3.876 | 3.876 | 65 | 0.326 |  | 1.000 | 0.326 |
| 31 |  | 3 | 1 | 0.124 | 0.124 | 65 | 0.326 |  | 1.000 | 0.326 |
| 32 |  | 3 | 1 | 3.788 | 3.788 | 65 | 0.326 |  | 1.000 | 0.326 |
| 33 |  | 3 | 1 | 0.212 | 0.212 | 65 | 0.326 |  | 1.000 | 0.326 |
| 34 |  | 3 | 1 | 3.912 | 3.912 | 65 | 0.326 |  | 1.000 | 0.326 |
| 35 |  | 3 | 1 | 0.088 | 0.088 | 65 | 0.326 |  | 1.000 | 0.326 |
| 36 |  | 3 | 1 | 3.928 | 3.928 | 65 | 0.326 |  | 1.000 | 0.326 |
| 37 |  | 3 | 1 | 0.072 | 0.072 | 65 | 0.326 |  | 1.000 | 0.326 |
| 38 |  | 3 | 1 | 3.836 | 3.836 | 65 | 0.326 |  | 1.000 | 0.326 |
| 39 |  | 3 | 1 | 0.164 | 0.164 | 65 | 0.326 |  | 1.000 | 0.326 |
| 40 |  | 3 | 1 | 4.236 | 4.236 | 65 | 0.326 |  | 1.000 | 0.326 |
| 41 |  | 3 | 1 | 1.297 | 1.297 | 65 | 0.326 |  | 1.000 | 0.326 |
| 42 |  | 3 | 1 | 2.306 | 2.306 | 65 | 0.326 |  | 1.000 | 0.326 |
| 43 |  | 3 | 1 | 3.976 | 3.976 | 65 | 0.326 |  | 1.000 | 0.326 |
| 44 |  | 3 | 1 | 0.024 | 0.024 | 65 | 0.326 |  | 1.000 | 0.326 |
| 45 |  | 3 | 1 | 3.772 | 3.772 | 65 | 0.326 |  | 1.000 | 0.326 |
| 46 |  | 3 | 1 | 0.228 | 0.228 | 65 | 0.326 |  | 1.000 | 0.326 |
| 47 |  | 3 | 1 | 14.200 | 14.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 48 |  | 3 | 1 | 3.096 | 3.096 | 65 | 0.326 |  | 1.000 | 0.326 |
| 49 |  | 3 | 1 | 1.328 | 1.328 | 65 | 0.326 |  | 1.000 | 0.326 |
| 50 |  | 3 | 1 | 2.362 | 2.362 | 65 | 0.326 |  | 1.000 | 0.326 |
| 51 |  | 4 | 1 | 113.400 | 113.400 | 65 | 0.326 |  | 1.000 | 0.326 |
| 52 |  | 4 | 2 | 3.040 | 6.080 | 65 | 0.326 |  | 1.000 | 0.326 |
| 53 |  | 4 | 1 | 3.200 | 3.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 54 | C0715 | 1~4 | 29 | 0.990 | 28.710 | 18 | 0.326 |  | 1.000 | 0.326 |
| 55 | C0715 | 3 | 1 | 0.998 | 0.998 | 18 | 0.326 |  | 1.000 | 0.326 |
| 56 | C0915 | 2~4 | 29 | 1.350 | 39.150 | 18 | 0.326 |  | 1.000 | 0.326 |
| 57 | C1315 | 1~5 | 21 | 1.890 | 39.690 | 18 | 0.326 |  | 1.000 | 0.326 |
| 58 | C1515 | 2~4 | 23 | 2.250 | 51.750 | 18 | 0.326 |  | 1.000 | 0.326 |
| 59 | C1515 | 3 | 1 | 2.162 | 2.162 | 18 | 0.326 |  | 1.000 | 0.326 |
| 60 | C1515 | 3 | 1 | 2.214 | 2.214 | 18 | 0.326 |  | 1.000 | 0.326 |
| 61 | C1815 | 1 | 6 | 2.700 | 16.200 | 18 | 0.326 |  | 1.000 | 0.326 |
| 62 | C1915 | 1~4 | 5 | 2.790 | 13.950 | 18 | 0.326 |  | 1.000 | 0.326 |
| 63 | C2415 | 1 | 3 | 3.600 | 10.800 | 18 | 0.326 |  | 1.000 | 0.326 |
| 立面总面积(㎡) | 954.817 | 综合太阳得热系数 | 1.000 | 0.326 |

2. 北向：

北-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数(含环境遮阳) | 综合太阳得热系数 |
| 1 |  | 1 | 2 | 31.500 | 63.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 2 |  | 1 | 1 | 75.600 | 75.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 3 |  | 1 | 1 | 34.020 | 34.020 | 65 | 0.326 |  | 1.000 | 0.326 |
| 4 |  | 1 | 1 | 36.540 | 36.540 | 65 | 0.326 |  | 1.000 | 0.326 |
| 5 |  | 1 | 1 | 52.172 | 52.172 | 65 | 0.326 |  | 1.000 | 0.326 |
| 6 |  | 1 | 1 | 1.907 | 1.907 | 65 | 0.326 |  | 1.000 | 0.326 |
| 7 |  | 1 | 4 | 3.360 | 13.440 | 65 | 0.326 |  | 1.000 | 0.326 |
| 8 |  | 1 | 1 | 1.071 | 1.071 | 65 | 0.326 |  | 1.000 | 0.326 |
| 9 |  | 1 | 1 | 4.729 | 4.729 | 65 | 0.326 |  | 1.000 | 0.326 |
| 10 |  | 1 | 1 | 4.721 | 4.721 | 65 | 0.326 |  | 1.000 | 0.326 |
| 11 |  | 3 | 1 | 0.204 | 0.204 | 65 | 0.326 |  | 1.000 | 0.326 |
| 12 |  | 3 | 8 | 4.748 | 37.985 | 65 | 0.326 |  | 1.000 | 0.326 |
| 13 |  | 3 | 4 | 0.002 | 0.008 | 65 | 0.326 |  | 1.000 | 0.326 |
| 14 |  | 3 | 4 | 4.750 | 19.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 15 |  | 3 | 1 | 2.404 | 2.404 | 65 | 0.326 |  | 1.000 | 0.326 |
| 16 |  | 3 | 1 | 2.304 | 2.304 | 65 | 0.326 |  | 1.000 | 0.326 |
| 17 |  | 3 | 1 | 2.504 | 2.504 | 65 | 0.326 |  | 1.000 | 0.326 |
| 18 |  | 3 | 1 | 0.800 | 0.800 | 65 | 0.326 |  | 1.000 | 0.326 |
| 19 |  | 3 | 2 | 8.600 | 17.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 20 |  | 3 | 2 | 3.040 | 6.080 | 65 | 0.326 |  | 1.000 | 0.326 |
| 21 | C0715 | 1~3 | 16 | 0.990 | 15.840 | 18 | 0.326 |  | 1.000 | 0.326 |
| 22 | C0715 | 1 | 1 | 0.990 | 0.990 | 18 | 0.326 |  | 1.000 | 0.326 |
| 23 | C0915 | 1~3 | 32 | 1.350 | 43.200 | 18 | 0.326 |  | 1.000 | 0.326 |
| 24 | C1215 | 3 | 3 | 1.800 | 5.400 | 18 | 0.326 |  | 1.000 | 0.326 |
| 25 | C1315 | 2,4~5 | 15 | 1.890 | 28.350 | 18 | 0.326 |  | 1.000 | 0.326 |
| 26 | C1515 | 1~3 | 21 | 2.250 | 47.250 | 18 | 0.326 |  | 1.000 | 0.326 |
| 27 | C2715 | 3 | 1 | 4.050 | 4.050 | 18 | 0.326 |  | 1.000 | 0.326 |
| 28 | C3615 | 2 | 1 | 5.400 | 5.400 | 18 | 0.326 |  | 1.000 | 0.326 |
| 29 | C4015 | 3 | 1 | 4.800 | 4.800 | 18 | 0.326 |  | 1.000 | 0.326 |
| 30 | C6615 | 2~3 | 2 | 21.248 | 42.496 | 18 | 0.326 |  | 1.000 | 0.326 |
| 立面总面积(㎡) | 573.464 | 综合太阳得热系数 | 1.000 | 0.326 |

3. 东向：

东-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数(含环境遮阳) | 综合太阳得热系数 |
| 1 |  | 1 | 1 | 33.600 | 33.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 2 |  | 1 | 1 | 58.800 | 58.800 | 65 | 0.326 |  | 1.000 | 0.326 |
| 3 |  | 1 | 2 | 3.570 | 7.140 | 65 | 0.326 |  | 1.000 | 0.326 |
| 4 |  | 1 | 5 | 3.360 | 16.800 | 65 | 0.326 |  | 1.000 | 0.326 |
| 5 |  | 1 | 1 | 49.980 | 49.980 | 65 | 0.326 |  | 1.000 | 0.326 |
| 6 |  | 1 | 1 | 21.756 | 21.756 | 65 | 0.326 |  | 1.000 | 0.326 |
| 7 |  | 1 | 1 | 15.960 | 15.960 | 65 | 0.326 |  | 1.000 | 0.326 |
| 8 |  | 1 | 2 | 2.520 | 5.040 | 65 | 0.326 |  | 1.000 | 0.326 |
| 9 |  | 1 | 1 | 12.810 | 12.810 | 65 | 0.326 |  | 1.000 | 0.326 |
| 10 |  | 2,4 | 2 | 20.600 | 41.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 11 |  | 3 | 1 | 20.000 | 20.000 | 65 | 0.326 |  | 1.000 | 0.326 |
| 12 |  | 3 | 2 | 1.900 | 3.800 | 65 | 0.326 |  | 1.000 | 0.326 |
| 13 |  | 3 | 1 | 3.420 | 3.420 | 65 | 0.326 |  | 1.000 | 0.326 |
| 14 | C0715 | 3 | 1 | 0.990 | 0.990 | 18 | 0.326 |  | 1.000 | 0.326 |
| 15 | C0815 | 4~5 | 2 | 1.211 | 2.421 | 18 | 0.326 |  | 1.000 | 0.326 |
| 16 | C0915 | 1~5 | 16 | 1.350 | 21.600 | 18 | 0.326 |  | 1.000 | 0.326 |
| 17 | C1015 | 4~5 | 2 | 1.539 | 3.078 | 18 | 0.326 |  | 1.000 | 0.326 |
| 18 | C1315 | 4~5 | 16 | 1.890 | 30.240 | 18 | 0.326 |  | 1.000 | 0.326 |
| 19 | C1515 | 3 | 1 | 2.250 | 2.250 | 18 | 0.326 |  | 1.000 | 0.326 |
| 20 | C2415 | 1 | 1 | 3.600 | 3.600 | 18 | 0.326 |  | 1.000 | 0.326 |
| 21 | C4015 | 2 | 1 | 6.000 | 6.000 | 18 | 0.326 |  | 1.000 | 0.326 |
| 22 | C4515 | 2 | 1 | 6.750 | 6.750 | 18 | 0.326 |  | 1.000 | 0.326 |
| 立面总面积(㎡) | 367.235 | 综合太阳得热系数 | 1.000 | 0.326 |

4. 西向：

西-默认立面

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 门窗编号 | 楼层 | 数量 | 单个面积（㎡） | 总面积（㎡） | 构造编号 | 窗太阳得热系数 | 外遮阳编号 | 外遮阳系数(含环境遮阳) | 综合太阳得热系数 |
| 1 |  | 1 | 1 | 33.600 | 33.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 2 |  | 1 | 2 | 2.100 | 4.200 | 65 | 0.326 |  | 1.000 | 0.326 |
| 3 |  | 1 | 1 | 3.465 | 3.465 | 65 | 0.326 |  | 1.000 | 0.326 |
| 4 |  | 1 | 2 | 3.276 | 6.552 | 65 | 0.326 |  | 1.000 | 0.326 |
| 5 |  | 1 | 1 | 0.168 | 0.168 | 65 | 0.326 |  | 1.000 | 0.326 |
| 6 |  | 1 | 1 | 2.793 | 2.793 | 65 | 0.326 |  | 1.000 | 0.326 |
| 7 |  | 1 | 1 | 2.520 | 2.520 | 65 | 0.326 |  | 1.000 | 0.326 |
| 8 |  | 1 | 2 | 3.360 | 6.720 | 65 | 0.326 |  | 1.000 | 0.326 |
| 9 |  | 1 | 1 | 5.040 | 5.040 | 65 | 0.326 |  | 1.000 | 0.326 |
| 10 |  | 1 | 1 | 1.260 | 1.260 | 65 | 0.326 |  | 1.000 | 0.326 |
| 11 |  | 1 | 1 | 3.780 | 3.780 | 65 | 0.326 |  | 1.000 | 0.326 |
| 12 |  | 2 | 1 | 34.600 | 34.600 | 65 | 0.326 |  | 1.000 | 0.326 |
| 13 | C0415 | 1 | 1 | 0.570 | 0.570 | 18 | 0.326 |  | 1.000 | 0.326 |
| 14 | C0715 | 1~4 | 9 | 0.990 | 8.910 | 18 | 0.326 |  | 1.000 | 0.326 |
| 15 | C0915 | 1~5 | 22 | 1.350 | 29.700 | 18 | 0.326 |  | 1.000 | 0.326 |
| 16 | C1215 | 1 | 1 | 1.800 | 1.800 | 18 | 0.326 |  | 1.000 | 0.326 |
| 17 | C1315 | 2,4~5 | 9 | 1.890 | 17.010 | 18 | 0.326 |  | 1.000 | 0.326 |
| 18 | C1415 | 1~3 | 7 | 2.070 | 14.490 | 18 | 0.326 |  | 1.000 | 0.326 |
| 19 | C1515 | 1~3 | 7 | 2.250 | 15.750 | 18 | 0.326 |  | 1.000 | 0.326 |
| 20 | C1815 | 1 | 1 | 2.700 | 2.700 | 18 | 0.326 |  | 1.000 | 0.326 |
| 立面总面积(㎡) | 195.628 | 综合太阳得热系数 | 1.000 | 0.326 |

### 总体热工性能

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 朝向 | 立面 | 面积 | 传热系数 | 综合太阳得热系数 | 窗墙比 |
| 南向 | 南-默认立面 | 954.82 | 1.60 | 0.33 | 0.42 |
| 北向 | 北-默认立面 | 573.46 | 1.60 | 0.33 | 0.26 |
| 东向 | 东-默认立面 | 367.24 | 1.60 | 0.33 | 0.25 |
| 西向 | 西-默认立面 | 195.63 | 1.60 | 0.33 | 0.13 |
| 综合平均 |  | 2091.14 | 1.60 | 0.33 | 0.28 |

注：本表所统计的外窗包含凸窗。

# 围护结构概况

|  |  |  |
| --- | --- | --- |
|  | 设计建筑 | 参照建筑 |
| 屋顶传热系数K [W/(m2·K)] | 0.50(D:3.03) | 0.50 |
| 外墙（包括非透明幕墙）传热系数K [W/(m2·K)] | 0.72(D:4.35) | 0.80 |
| 屋顶透明部分传热系数K [W/(m2·K)] | 2.30 | 2.60 |
| 屋顶透明部分太阳得热系数 | 0.22 | 0.30 |
| 底面接触室外的架空或外挑楼板传热系数K [W/(m2·K)] | 0.60 | 0.70 |
| 外窗（包括透明幕墙） | 朝向 | 立面 | 窗墙比 | 传热系数 | 太阳得热系数 | 窗墙比 | 传热系数 | 太阳得热系数 |
| 南向 | 南-默认立面 | 0.42 | 1.60 | 0.33 | 0.42 | 2.40 | 0.35 |
| 北向 | 北-默认立面 | 0.26 | 1.60 | 0.33 | 0.26 | 3.00 | 0.48 |
| 东向 | 东-默认立面 | 0.25 | 1.60 | 0.33 | 0.25 | 3.00 | 0.44 |
| 西向 | 西-默认立面 | 0.13 | 1.60 | 0.33 | 0.13 | 3.50 | －－ |

备注：1. — 代表本工程无对应项; 2. ——代表参照建筑不要求，取值同设计建筑。

# 设计建筑

## 房间类型

### 房间表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 空调温度℃ | 供暖温度℃ | 新风量 | 人员密度 | 照明功率密度 | 电器设备功率 |
| 办公-会议室 | 26 | 18 | 14(m3/h.人) | 2.5(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 办公-其它 | 26 | 20 | 30(m3/h.人) | 20(㎡/人) | 11(W/㎡) | 5(W/㎡) |
| 办公-普通办公室 | 26 | 20 | 30(m3/h.人) | 8(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 办公-走廊 | 26 | 16 | 20(m3/h.人) | 50(㎡/人) | 5(W/㎡) | 15(W/㎡) |
| 宾馆-4星级客房 | 25 | 22 | 40(m3/h.人) | 30(㎡/人) | 15(W/㎡) | 13(W/㎡) |
| 空房间 | － | － | 20(m3/h.人) | 50(㎡/人) | 0(W/㎡) | 0(W/㎡) |

### 作息时间表

详见附录

## 系统类型

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 系统编号 | 系统类型 | 供冷能效比 | 供热能效比 | 面积(㎡) | 包含的房间 |
| 默认 | 双管制风机盘管 | － | － | 10713.66 | 所有房间 |

## 制冷系统

### 冷水机组

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 名称 | 类型 | 额定耗电量(kW) | 额定制冷量(kW) | 额定性能系数(COP) | 台数 |
| 水冷-螺杆式冷水机组 | 水冷-螺杆式冷水机组 | 100 | 500 | 5.00 | 1 |

### 水泵系统

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 类型 | 轴功率(kW) | 扬程(m) | 供回水温差(°C) | 设计工作点效率(%) | 台数 |
| 冷却水泵 | 10 | 25 | 5 | 80 | 1 |
| 冷冻水泵 | 8 | 30 | 5 | 80 | 1 |

### 运行工况

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 负荷率(%) | 机组制冷量(kW) | 机组功率(kW) | 性能系数(COP) | 冷却水泵功率(kW) | 冷冻水泵功率(kW) | 冷却塔功率(kW) |
| 25 | 125 | 30 | 4.17 | 10 | 8 | 0 |
| 50 | 250 | 55 | 4.55 | 10 | 8 | 0 |
| 75 | 375 | 75 | 5.00 | 10 | 8 | 0 |
| 100 | 500 | 100 | 5.00 | 10 | 8 | 0 |

### 制冷能耗

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 负荷区间(%) | 区间负荷(kWh) | 运行时长(h) | 性能系数(COP) | 制冷机组(kWh) | 冷却水泵(kWh) | 冷冻水泵(kWh) | 冷却塔(kWh) |
| 0~25 | 12465 | 465 | 4.17 | 2992 | 4650 | 3720 | 0 |
| 25~50 | 25824 | 136 | 4.55 | 5681 | 1360 | 1088 | 0 |
| 50~75 | 47208 | 150 | 5.00 | 9442 | 1500 | 1200 | 0 |
| 75~100 | 78037 | 177 | 5.00 | 15607 | 1770 | 1416 | 0 |
| >100 | 298617 | 457 | － | 45700 | 4570 | 3656 | 0 |
| 合计 | 462151 | 1385 |  | 79422 | 13850 | 11080 | 0 |

## 供暖系统

### 热泵系统

#### 热泵机组

|  |  |  |  |
| --- | --- | --- | --- |
| 名称 | 额定制热量(kW) | 额定性能系数 COP | 台数 |
| 风冷-螺杆式 | 500 | 4.00 | 1 |

#### 热水循环泵

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 类型 | 轴功率(kW) | 扬程(m) | 供回水温差(°C) | 设计工作点效率(%) | 台数 |
| 单速 | 8 | 30 | 15 | 80 | 1 |

#### 运行工况

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 负荷率(%) | 机组制热量(kW) | 机组功率(kW) | 性能系数(COP) | 供暖水泵功率(kW) |
| 25 | 125 | 31.25 | 4.00 | 8 |
| 50 | 250 | 62.5 | 4.00 | 8 |
| 75 | 375 | 93.75 | 4.00 | 8 |
| 100 | 500 | 125 | 4.00 | 8 |

#### 制热能耗

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 负荷区间(%) | 区间负荷(kWh) | 运行时长(h) | 性能系数(COP) | 热泵机组(kWh) | 供暖水泵(kWh) |
| 0~25 | 22612 | 607 | 4.00 | 5653 | 4856 |
| 25~50 | 41669 | 221 | 4.00 | 10417 | 1768 |
| 50~75 | 94080 | 298 | 4.00 | 23520 | 2384 |
| 75~100 | 81087 | 190 | 4.00 | 20272 | 1520 |
| >100 | 162455 | 227 | － | 28375 | 1816 |
| 合计 | 401902 | 1543 |  | 88237 | 12344 |

## 空调风机

### 独立新排风

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 系统编号 | 新风量(m3/h) | 单位风量耗功率W/(m3/h) | 风机功率(W) | 运行时长(h) | 新风电耗(kWh) |
| 默认 | 35191 | 0.24 | 8446 | 8760 | 73985 |
| 合计 | 73985 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 系统编号 | 排风量(m3/h) | 排风比 | 单位风量耗功率W/(m3/h) | 风机功率(W) | 运行时长(h) | 排风电耗(kWh) |
| 默认 | 28153 | 0.8 | 0.24 | 6757 | 8760 | 59188 |
| 合计 | 59188 |

### 风机盘管

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 系统编号 | 总功率(W) | 同时使用系数 | 运行时长(h) | 风机盘管电耗(kWh) |
| 默认 | 400 | 1 | 2926 | 1170 |
| 合计 | 1170 |

## 照明

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 房间类型 | 单位面积电耗(kWh/㎡) | 房间个数 | 房间合计面积(㎡) | 合计电耗(kWh) |
| 办公-会议室 | 15.12 | 2 | 179 | 2707 |
| 办公-其它 | 25.99 | 9 | 142 | 3683 |
| 办公-普通办公室 | 15.12 | 81 | 8728 | 131969 |
| 办公-走廊 | 11.81 | 12 | 1786 | 21098 |
| 宾馆-4星级客房 | 50.37 | 18 | 398 | 20056 |
| 空房间 | 0.00 | 52 | 1083 | 0 |
| 总计 | 179513 |

# 参照建筑

## 房间类型

### 房间表

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 空调温度℃ | 供暖温度℃ | 新风量 | 人员密度 | 照明功率密度 | 电器设备功率 |
| 办公-会议室 | 26 | 18 | 14(m3/h.人) | 2.5(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 办公-其它 | 26 | 20 | 30(m3/h.人) | 20(㎡/人) | 11(W/㎡) | 5(W/㎡) |
| 办公-普通办公室 | 26 | 20 | 30(m3/h.人) | 8(㎡/人) | 9(W/㎡) | 15(W/㎡) |
| 办公-走廊 | 26 | 16 | 20(m3/h.人) | 50(㎡/人) | 5(W/㎡) | 15(W/㎡) |
| 宾馆-4星级客房 | 25 | 22 | 40(m3/h.人) | 30(㎡/人) | 15(W/㎡) | 13(W/㎡) |
| 空房间 | － | － | 20(m3/h.人) | 50(㎡/人) | 0(W/㎡) | 0(W/㎡) |

### 作息时间表

同设计建筑

## 系统类型

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 系统编号 | 系统类型 | 供冷能效比 | 供热能效比 | 面积(㎡) | 包含的房间 |
| 默认 | 双管制风机盘管 | － | － | 同设计建筑 | 同设计建筑 |

## 制冷系统

### 冷水机组

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 名称 | 类型 | 额定耗电量(kW) | 额定制冷量(kW) | 额定性能系数(COP) | 台数 | 全年供冷量(kWh) | 综合部分负荷性能系数(IPLV) | 电耗(kWh) |
| 水冷-螺杆式冷水机组 | 水冷-螺杆式冷水机组 | 170 | 882 | 5.20 | 1 | 463048 | 5.90 | 78483 |
| 合计 | 78483 |

### 冷却水泵

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 机组名称 | 冷水机组制冷量(kW) | 机组性能系数(COP) | 冷凝负荷(kW) | 输送能效比 | 运行时长(h) | 水泵电耗(kWh) |
| 水冷-螺杆式冷水机组 | 882 | 4.80 | 1066 | 0.0214 | 1360 | 31030 |
| 合计 | 882 |  | 1066 |  |  | 31030 |

### 冷冻水泵

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 机组名称 | 机组制冷量(kW) | 输送能效比 | 运行时长(h) | 水泵电耗(kWh) |
| 水冷-螺杆式冷水机组 | 882 | 0.0241 | 1360 | 28920 |
| 合计 | 882 |  |  | 28920 |

### 冷却塔

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 类型 | 机组制冷量(kW) | 冷却塔风机单位电耗制冷量(kW/kW) | 冷却塔风机功率(kW) | 运行时长(h) | 冷却塔电耗(kWh) |
| 冷却塔 | 882 | 170 | 5.19 | 1360 | 7059 |

## 供暖系统

### 热水锅炉能耗

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 燃料类型 | 容量/峰值负荷(MW) | 台数 | 锅炉热效率 | 外网热输送效率 | 累计热负荷(kWh) | 热/电系数(kWh/kWh) | 折合电耗(kWh) |
| 烟煤II | 0.50 | 1 | 0.73 | 0.92 | 446741 | 2.93 | 226996 |

### 热水循环水泵能耗

|  |  |  |  |
| --- | --- | --- | --- |
| 锅炉制热量(kW) | 输送能效比 | 运间时长(h) | 供暖水泵电耗(kWh) |
| 503 | 0.00433 | 1597 | 3478 |

## 空调风机

### 独立新排风

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 系统编号 | 新风量(m3/h) | 单位风量耗功率W/(m3/h) | 风机功率(W) | 运行时长(h) | 新风电耗(kWh) |
| 默认 | 35191 | 0.24 | 8446 | 8760 | 73985 |
| 合计 | 73985 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 系统编号 | 排风量(m3/h) | 排风比 | 单位风量耗功率W/(m3/h) | 风机功率(W) | 运行时长(h) | 排风电耗(kWh) |
| 默认 | 28153 | 0.8 | 0.24 | 6757 | 8760 | 59188 |
| 合计 | 59188 |

### 风机盘管

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 系统编号 | 总功率(W) | 同时使用系数 | 运行时长(h) | 风机盘管电耗(kWh) |
| 默认 | 424.721 | 1 | 2954 | 1255 |
| 合计 | 1255 |

## 照明

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 房间类型 | 单位面积电耗(kWh/㎡) | 房间个数 | 房间合计面积(㎡) | 合计电耗(kWh) |
| 办公-会议室 | 15.12 | 2 | 179 | 2707 |
| 办公-其它 | 25.99 | 9 | 142 | 3683 |
| 办公-普通办公室 | 15.12 | 81 | 8728 | 131969 |
| 办公-走廊 | 11.81 | 12 | 1786 | 21098 |
| 宾馆-4星级客房 | 50.37 | 18 | 398 | 20056 |
| 空房间 | 0.00 | 52 | 1083 | 0 |
| 总计 | 179513 |

# 计算结果

注:负荷和电耗均为考虑热回收后的值

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 能耗分类 | 能耗子类 | 设计建筑(kWh/㎡) | 参照建筑(kWh/㎡) | 节能率（%） |
| 建筑负荷 | 耗冷量 | 39.60 | 39.68 | 0.19% |
| 耗热量 | 34.44 | 38.28 | 10.04% |
| 冷热合计 | 74.04 | 77.96 | 5.03% |
| 热回收负荷 | 供冷 | 0.00 | － |  |
| 供暖 | 0.00 | － |  |
| 冷热合计 | 0.00 | － |  |
| 供冷电耗 | 中央冷源 | 6.81 | 6.73 | 28.28% |
| 冷却水泵 | 1.19 | 2.66 |
| 冷冻水泵 | 0.95 | 2.48 |
| 冷却塔 | 0.00 | 0.60 |
| 多联机/单元式空调 | 0.00 | 0.00 |
| 供冷合计 | 8.94 | 12.47 |
| 供暖电耗 | 中央热源 | 7.56 | 19.45 | 56.36% |
| 供暖水泵 | 1.06 | 0.30 |
| 多联机/单元式热泵 | 0.00 | 0.00 |
| 供暖合计 | 8.62 | 19.75 |
| 风机电耗 | 独立新排风 | 11.41 | 11.41 | 0.06% |
| 风机盘管 | 0.10 | 0.11 |
| 多联机室内机 | 0.00 | 0.00 |
| 全空气系统 | 0.00 | 0.00 |
| 风机合计 | 11.51 | 11.52 |
| 照明电耗 | 15.38 | 15.38 | 0.00% |
| 建筑电耗 | 44.46 | 59.12 | 24.80% |





# 附录

## 工作日/节假日人员逐时在室率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-会议室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 30 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 30 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 宾馆-4星级客房 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 70 | 70 | 70 | 70 | 70 | 70 |
| 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 70 | 70 | 70 | 70 | 70 | 70 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

## 工作日/节假日照明开关时间表(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-会议室 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 36 | 62 | 56 | 54 | 43 | 53 | 55 | 58 | 67 | 40 | 18 | 10 | 10 | 10 | 10 | 10 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 36 | 62 | 56 | 54 | 43 | 53 | 55 | 58 | 67 | 40 | 18 | 10 | 10 | 10 | 10 | 10 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 80 | 80 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 宾馆-4星级客房 | 10 | 10 | 10 | 10 | 10 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 50 | 50 | 60 | 90 | 90 | 90 | 90 | 80 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 50 | 50 | 60 | 90 | 90 | 90 | 90 | 80 | 10 | 10 |
| 空房间 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 80 | 90 | 100 | 100 | 100 | 10 | 10 | 10 |

注：上行：工作日；下行：节假日

## 工作日/节假日设备逐时使用率(%)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 房间类型 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 办公-会议室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-其它 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 50 | 50 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-普通办公室 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 20 | 10 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 办公-走廊 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 50 | 95 | 95 | 95 | 50 | 50 | 95 | 95 | 95 | 95 | 30 | 30 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 宾馆-4星级客房 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 80 | 80 | 80 | 80 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 80 | 80 | 80 | 80 | 0 | 0 |
| 空房间 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 | 50 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日

## 工作日/节假日空调系统运行时间表(1:开,0:关)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 系统编号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 默认 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

注：上行：工作日；下行：节假日