

ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

FAKULTA STAVEBNÍ

KATEDRA TECHNICKÝCH ZAŘÍZENÍ BUDOV



TECHNICKÁ ZPRÁVA

VYTÁPĚNÍ/CHLAZENÍ

Vypracoval: Bc. Daniel Kocour

Vedoucí DP: Ing. Arch. Vojtěch Mazanec Ph. D

2023/2024

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1. Technická zpráva

1.1 Úvod

Projekt se věnuje návrhu vzduchotechnického systému pro administrativní budovu C-Energy II v Plané nad Lužnicí. Tato budova má pět nadzemních pater a jedno podzemní podlaží a je situována ve svahu. Podzemní podlaží je zapuštěno do terénu v severovýchodní části a otevřeno do venkovního prostoru v jihozápadní části.

V prvním podzemním patře (1.PP) budou umístěny prostory pro řízení výroby elektřiny a tepla (MaR), serverovna, rozvodny a sklady. V prvním nadzemním patře (1.NP) bude recepce s aulou, zatímco v ostatních patrech budou umístěny kanceláře, zasedací místnosti, sociální zázemí a kuchyňky. V pátém nadzemním patře (5.NP) se nachází technické podlaží se strojovnou vzduchotechniky. Všechna patra budou propojena schodištěm a výtahem.

1.1.1 Umístění objektu

Objekt se nachází v Jihočeském kraji, ve městě Plané nad Lužnicí.

1.1.2 Popis objektu

Administrativní budova vzniká v reakci na rostoucí potřeby spojené s modernizací a rozšiřováním funkcí stávajícího areálu. Kromě kancelářských prostor zahrnuje také vstupní aulu s recepcí na 1.NP a dílny MaR na 1.PP. Provozně je budova rozdělena na čistý a špinavý provoz, přičemž dílny spadají do špinavé kategorie. Pro tuto část je navržen samostatný vchod v 1.PP. Další vstup do budovy je umístěn na 1.NP, kde kromě vstupní auly, recepce a kuchyňky najdeme také přístup do kancelářské části.

Prostor 1.NP je propojen se stávající administrativní budovou přes vyrovnávací schodišťové rameno. 2. nadzemní podlaží slouží jako hlavní komunikační propojení mezi stávajícími a nově budovanými kancelářskými prostory. V ostatních podlažích jsou umístěny kancelářské prostory, zatímco v nejvyšším, 5. podlaží, jsou prostory pro technologické zázemí budovy.

Výškový rozdíl terénu hlavní vnitroareálové komunikace a ostatních zpevněných ploch areálu, které přiléhají ke stavební parcele, činí 3,28 metru. Proto má budova jedno částečně podzemní podlaží a pět nadzemních podlaží. Poslední nadzemní podlaží má plochou střechu s nejvyšším bodem atiky ve výšce +21,25 m nad úrovní podlahy 1.NP. Střecha nese konstrukce a plochy pro umístění log společnosti mediálních, laserových a světelných systémů vysoké přibližně 7,5 m. Při plném využití těchto střešních systémů se budova v noci stává mezi-areálovou lokální světelnou dominantou.

Tvar budovy je půdorysně redukován na základní čtvercový prostor vnitřně definovaný sloupy skeletového systému s komunikačním jádrem – schodištěm a výtahem. Půdorysně má tvar přístavby čtvercový. Estetiku jednoduchosti podporuje i zvolené materiálové řešení, kde fasáda celého objektu je provedena z kontaktního zateplovacího systému s exteriérovou omítkou.

1.1.3 Základní údaje nového projektovaného zařízení

Otopné plochy: Stropní vytápění – podhledy

Otopná soustava: Dvoutrubková teplovodní otopná soustava

Materiál potrubí: Trubka RAUTITAN STABIL, tyč, (PE-Xa/Al/PE) vícevrstvá trubka s hliníkovou vložkou.

VZT jednotky: Anemostaty VVPM

Chladicí soustava: Stropní chlazení – podhledy

1.2 Základní technické údaje

1.2.1 Klimatické údaje

Administrativní budova se nachází v Plané nad Lužnicí, kde je venkovní výpočtová teplota pro otopné období stanovena normou na -15°C . V jednotlivých místnostech se výpočtová teplota liší. Relativní vlhkost vzduch v exteriéru je 80 %, pro interiér je dána vlhkost 50 %.

1.2.2 Tepelné ztráty a zisky

Pro návrh výkonu otopných a chladících ploch byl proveden výpočet tepelných ztrát a zisků objektu pomocí programu PROTECH. Viz příloha č.1

1.3 Technická místnost

Není v tomto projektu řešen.

1.4 Přenos tepla

Přenos tepla je řešen pomocí teplovodního systému, kde je ohřev vody zajištěn výměníkovou stanicí. Tato stanice slouží k přenosu tepla z primárního zdroje (teplovod) na vodu, která je poté potrubím rozvedena do místností.

1.4.2 Vedení rozvodů

Potrubí je vedeno od rozdělovače/sběrače volně na stěně a pod stropem ke svislému rozvodu. Svislý rozvod je umístěn do předstěny na chodbě, svislé rozvody jsou volně umístěny. K jednotlivým otopným plochám je pak potrubí vedeno nad podhledem.

1.5 Otopné plochy

Jako otopné plochy je využito stropní vytápění/chlazení, typem stropního vytápění/chlazení jsou podhledy, ve kterých jsou zabudované trubky, do kterých je vedeno vodní médium. Podhledy umožňují rovnoměrnou distribuci tepla nebo chladu do celé místnosti.

1.6 Armatury, regulace

Není v tomto projektu řešen.

1.7 Závěr

System vytápění a chlazení administrativní budovy, využívající teplovodního systému a stropní vytápění/chlazení, byl navržen s cílem poskytnout optimální komfortní podmínky pro uživatele a zároveň minimalizovat energetickou spotřebu. Pravidelná údržba a průběžné monitorování systému jsou klíčové pro udržení jeho dlouhodobé efektivity.

1.8. Předpisy a normy

ČSN EN 12 831 – Výpočet tepelného výkonu

ČSN 06 0310 – Tepelné soustavy v budovách – projektování a montáž

ČSN 06 0320 – Tepelné soustavy v budovách – příprava teplé vody – navrhování a projektování

ČSN 06 0830 - Tepelné soustavy v budovách – zabezpečovací zařízení

ČSN 73 0540-2:2011 - Tepelná ochrana budov – funkční požadavky

Vyhláška 193/2007 Sb. - Stanovení účinnosti užití energie při rozvodu tepelné energie

ČSN EN 1057+A1 – Měď a slitiny mědi – Trubky bezešvé kruhové z mědi pro vodu a plyn pro sanitární instalace a vytápěcí zařízení

ČSN 73 0818 - Požární bezpečnost staveb. Obsazení objektů osobami Vyhláška 78/2013 Sb. - O energetické náročnosti

ČSN EN 13914-2 Navrhování, příprava a provádění vnějších a vnitřních omítek – Část 2: Příprava návrhu a základní postupy pro vnitřní omítky

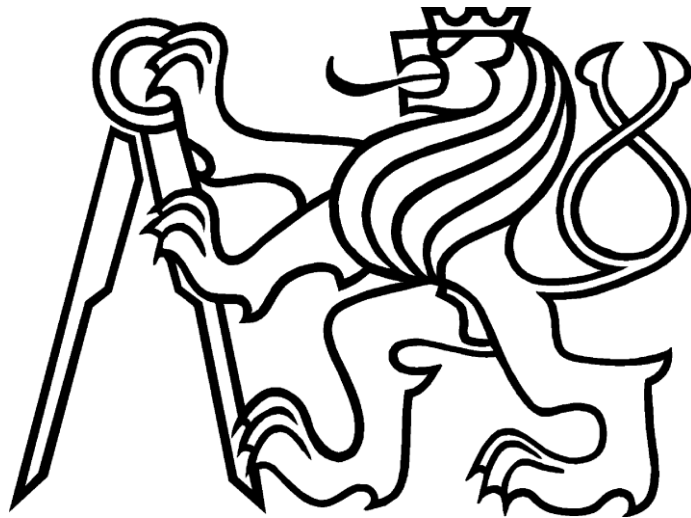
2. Seznam příloh technické zprávy

- Příloha č. 1 - Tepelné ztráty a zisky objektu
- Příloha č. 2 - Technický list otopných/chladících podhledů

3. Seznam výkresové dokumentace

- | | |
|------------------------------|-------|
| • Výkres č. 1 - Půdorys 1.PP | 1:100 |
| • Výkres č. 2 - Půdorys 1.NP | 1:100 |
| • Výkres č. 3 - Půdorys 2.NP | 1:100 |
| • Výkres č. 4 - Půdorys 3.NP | 1:100 |
| • Výkres č. 5 - Půdorys 4.NP | 1:100 |
| • Výkres č. 6 - Půdorys 5.NP | 1:100 |

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PŘÍLOHY TECHNICKÉ ZPRÁVY
VYTÁPĚNÍ/CHLAZENÍ

Vypracoval: Bc. Daniel Kocour

Vedoucí DP: Ing. Arch. Vojtěch Mazanec Ph. D

2023/2024

PŘÍLOHA Č.1

TEPELNÉ ZTRÁTY A ZISKY OBJEKTU

TV22

960121 - ČVUT FS katedra TZB

DP - Kocour.TV22

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Datum tisku: 15.12.2023

1 Souhrnné údaje

Stavba: AB

Místo: Planá

Zadavatel: Kocour

Zpracovatel:

Zakázka: DP - Kocour.TV22

Archiv:

Projektant: Kocour

Datum: 06.11.2023

E-mail:

Telefon:

Poznámka k zakázce:

2 Výpočet budovy $t_e = -15\text{ °C}$ $t_{ib} = 18,7\text{ °C}$ $n_{50} = 2,0\text{ 1/h}$

Systém rozměrů: I vnitřní

2.1 Úsek-1

| podl. | č.m. | účel | úsek | t_i °C | n_p 1/h | V_{mi} m ³ | A_{pi} m ² | Φ_{Vm} W | Φ_{Tm} W | Φ_{HLm} W | Q_{cm} W | q_{cm} W.m ⁻² |
|-------|------|----------------------|------|-------------|--------------|----------------------------|----------------------------|------------------|------------------|-------------------|---------------|-------------------------------|
| 0 | 0.10 | WC | 1 | 15 | 0,5 | 32,6 | 8,7 | 0 | 97 | 97 | 97 | 11,1 |
| 0 | 0.01 | Zádveří | 1 | 15 | 0,5 | 30,9 | 8,3 | 0 | 245 | 245 | 245 | 29,7 |
| 0 | 0.11 | Technická místnost | 1 | 15 | 0,5 | 87,1 | 23,2 | 0 | 94 | 94 | 94 | 4,1 |
| 0 | 0.02 | Úklidová místnost | 1 | 15 | 0,5 | 16,3 | 4,3 | 0 | 33 | 33 | 33 | 7,6 |
| 0 | 0.12 | Rozvodna | 1 | 19 | 0,5 | 53,8 | 14,3 | 0 | 44 | 44 | 44 | 3,1 |
| 0 | 0.03 | Výdej ze skladu | 1 | 15 | 0,5 | 25,0 | 6,7 | 0 | 48 | 48 | 48 | 7,3 |
| 0 | 0.13 | Dílna MaR | 1 | 20 | 1,0 | 265,9 | 83,6 | 0 | 1 708 | 1 708 | 1 708 | 20,4 |
| 0 | 0.04 | Chodba | 1 | 18 | 0,5 | 42,2 | 11,3 | 0 | 53 | 53 | 53 | 4,7 |
| 0 | 0.05 | Sklad | 1 | 15 | 0,5 | 82,2 | 21,9 | 0 | 14 | 14 | 14 | 0,6 |
| 0 | 0.06 | Sklad | 1 | 15 | 0,5 | 80,3 | 21,4 | 0 | 364 | 364 | 364 | 17,0 |
| 0 | 0.07 | Rozvod | 1 | 15 | 0,5 | 32,8 | 8,8 | 0 | 123 | 123 | 123 | 14,0 |
| 0 | 0.08 | Serverovna | 1 | 15 | 0,5 | 18,4 | 4,9 | 0 | 116 | 116 | 116 | 23,7 |
| 0 | 0.09 | Chodba + výtah | 1 | 15 | 0,5 | 89,4 | 23,8 | 0 | 152 | 152 | 152 | 6,4 |
| 1 | 1.10 | Posluchárna + pódium | 1 | 20 | 1,0 | 322,0 | 85,9 | 0 | 1 750 | 1 750 | 1 750 | 20,4 |
| 1 | 1.01 | Zádveří | 1 | 15 | 0,5 | 20,0 | 5,3 | 0 | 79 | 79 | 79 | 14,9 |
| 1 | 1.02 | Recepce | 1 | 20 | 0,5 | 96,2 | 25,6 | 0 | 283 | 283 | 283 | 11,0 |
| 1 | 1.12 | Kuchyňka | 1 | 20 | 1,0 | 68,5 | 16,0 | 0 | 436 | 436 | 436 | 27,2 |
| 1 | 1.03 | Aula | 1 | 20 | 1,0 | 142,9 | 38,1 | 0 | 347 | 347 | 347 | 9,1 |
| 1 | 1.04 | Výtah + schodiště | 1 | 15 | 0,5 | 106,9 | 25,8 | 0 | 358 | 358 | 358 | 13,9 |
| 1 | 1.06 | WC muži | 1 | 15 | 0,5 | 39,4 | 10,5 | 0 | 573 | 573 | 573 | 54,6 |
| 1 | 1.07 | Chodba | 1 | 17 | 0,5 | 28,1 | 7,5 | 0 | 9 | 9 | 9 | 1,3 |
| 1 | 1.08 | Kuchyňka | 1 | 20 | 0,5 | 23,6 | 6,3 | 0 | 150 | 150 | 150 | 23,9 |
| 1 | 1.09 | Jednačka | 1 | 20 | 1,0 | 33,1 | 8,8 | 0 | 265 | 265 | 265 | 30,0 |
| 2 | 2.10 | Kancelář | 1 | 20 | 1,0 | 61,9 | 16,5 | 0 | 694 | 694 | 694 | 42,1 |
| 2 | 2.01 | Výtah + schodiště | 1 | 17 | 0,5 | 96,6 | 25,8 | 0 | 71 | 71 | 71 | 2,8 |
| 2 | 2.02 | Kancelář | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 743 | 743 | 743 | 42,5 |
| 2 | 2.03 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 277 | 277 | 277 | 24,3 |
| 2 | 2.04 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 277 | 277 | 277 | 24,3 |
| 2 | 2.05 | Kancelář | 1 | 20 | 1,0 | 84,0 | 22,4 | 0 | 604 | 604 | 604 | 27,0 |
| 2 | 2.06 | Kancelář | 1 | 20 | 1,0 | 85,0 | 22,7 | 0 | 412 | 412 | 412 | 18,2 |
| 2 | 2.07 | Kancelář | 1 | 20 | 1,0 | 65,7 | 17,5 | 0 | 280 | 280 | 280 | 16,0 |
| 2 | 2.08 | Zasedačka | 1 | 20 | 1,0 | 70,8 | 18,9 | 0 | 482 | 482 | 482 | 25,5 |
| 2 | 2.09 | Hala | 1 | 20 | 1,0 | 269,1 | 71,8 | 0 | 507 | 507 | 507 | 7,1 |
| 3 | 3.10 | Kuchyňka | 1 | 20 | 1,0 | 59,9 | 16,0 | 0 | 378 | 378 | 378 | 23,7 |
| 3 | 3.01 | Výtah + schodiště | 1 | 15 | 0,5 | 96,6 | 25,8 | 0 | 119 | 119 | 119 | 4,6 |
| 3 | 3.11 | Zasedačka | 1 | 20 | 1,0 | 66,8 | 17,8 | 0 | 694 | 694 | 694 | 39,0 |
| 3 | 3.02 | Kancelář | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 754 | 754 | 754 | 43,1 |
| 3 | 3.12 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 390 | 390 | 390 | 34,3 |
| 3 | 3.03 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 390 | 390 | 390 | 34,3 |
| 3 | 3.13 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 390 | 390 | 390 | 34,3 |

TV22

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Datum tisku: 15.12.2023

| podl. | č.m. | účel | úsek | t_i °C | n_p 1/h | V_{mi} m ³ | A_{pi} m ² | Φ_{Vm} W | Φ_{Tm} W | Φ_{HLm} W | Q_{cm} W | q_{cm} W.m ⁻² |
|-------------|------|--------------------|------|-------------|--------------|----------------------------|----------------------------|------------------|------------------|-------------------|---------------|-------------------------------|
| 3 | 3.04 | Kancelář | 1 | 20 | 1,0 | 42,7 | 11,4 | 0 | 390 | 390 | 390 | 34,3 |
| 3 | 3.14 | Kancelář | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 754 | 754 | 754 | 43,1 |
| 3 | 3.05 | Kancelář | 1 | 20 | 1,0 | 94,6 | 25,2 | 0 | 888 | 888 | 888 | 35,2 |
| 3 | 3.06 | Kancelář | 1 | 20 | 1,0 | 74,7 | 19,9 | 0 | 520 | 520 | 520 | 26,1 |
| 3 | 3.07 | Chodba | 1 | 20 | 0,5 | 100,4 | 26,8 | 0 | 0 | 0 | 0 | 0,0 |
| 3 | 3.08 | WC muži | 1 | 20 | 0,5 | 34,7 | 9,3 | 0 | 0 | 0 | 0 | 0,0 |
| 3 | 3.09 | WC ženy | 1 | 20 | 0,5 | 26,0 | 6,9 | 0 | 0 | 0 | 0 | 0,0 |
| 4 | 4.10 | Zasedačka | 1 | 20 | 1,0 | 61,9 | 16,5 | 0 | 1 766 | 1 766 | 1 766 | 107,0 |
| 4 | 4.01 | Výtah + schodiště | 1 | 15 | 0,5 | 96,6 | 25,8 | 0 | 119 | 119 | 119 | 4,6 |
| 4 | 4.11 | Kuchyňka | 1 | 20 | 1,0 | 35,7 | 9,5 | 0 | 375 | 375 | 375 | 39,4 |
| 4 | 4.02 | Kancelář | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 1 060 | 1 060 | 1 060 | 60,6 |
| 4 | 4.12 | Kancelář | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 1 060 | 1 060 | 1 060 | 60,6 |
| 4 | 4.03 | Kancelář | 1 | 20 | 1,0 | 84,1 | 22,4 | 0 | 1 184 | 1 184 | 1 184 | 52,8 |
| 4 | 4.04 | Kancelář | 1 | 20 | 1,0 | 26,8 | 7,1 | 0 | 275 | 275 | 275 | 38,6 |
| 4 | 4.05 | Kancelář | 1 | 20 | 1,0 | 37,6 | 10,0 | 0 | 723 | 723 | 723 | 72,1 |
| 4 | 4.06 | Chodba | 1 | 20 | 0,5 | 100,4 | 26,8 | 0 | 0 | 0 | 0 | 0,0 |
| 4 | 4.07 | WC muži | 1 | 20 | 0,5 | 34,7 | 9,3 | 0 | 0 | 0 | 0 | 0,0 |
| 4 | 4.08 | WC ženy | 1 | 20 | 0,5 | 26,0 | 6,9 | 0 | 0 | 0 | 0 | 0,0 |
| 4 | 4.09 | Open office | 1 | 20 | 1,0 | 65,6 | 17,5 | 0 | 2 010 | 2 010 | 2 010 | 114,8 |
| 5 | 5.01 | Výtah + schodiště | 1 | 15 | 0,5 | 96,6 | 25,8 | 0 | 505 | 505 | 505 | 19,6 |
| 5 | 5.02 | Technická místnost | 1 | 15 | 0,5 | 65,6 | 17,5 | 0 | 1 121 | 1 121 | 1 121 | 64,0 |
| úsek celkem | | | | | | 4 340,2 | 1 165,1 | 0 | 27 556 | 27 556 | 27 556 | |

Legenda

 Φ_{Vm} - tepelná ztráta místnosti větráním Φ_{Tm} = tepelná ztráta místnosti prostupem tepla Φ_{HLm} - celkový návrhový tepelný výkon místnosti $Q_{cm} = \Phi_{HLm} + Q_z$

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Datum tisku: 15.12.2023

1 Souhrnné údaje

Stavba: AB

Místo: Planá

Zadavatel: Kocour

Zpracovatel:

Zakázka: DP - Kocour.TV22

Archiv:

Projektant: Kocour

Datum: 06.11.2023

E-mail:

Telefon:

Poznámka k zakázce:

2 Výpočet tepelné zátěže podle ČSN 73 05 48**2.1 Výpočet pro vybraný měsíc**

měsíc: červenec

 $t_{\text{max}} = 30,0^{\circ}\text{C}$ opravný činitel $c_0 = 1,00$

| č.m. | účel | t_i, C $^{\circ}\text{C}$ | Δt K | τ_{max} h | k_{Mm} % | Q_{osl} W | $Q_{\text{lidé}}$ W | $Q_{\text{osv.}}$ W | Δt_v K | Q_v W | Q_{tech} W | Q_{jine} W | Q_{citelne} W | kx | Q_{celkem} W |
|------|----------------------|---------------------------------------|-----------------|--------------------------|----------------------|-----------------------|------------------------|------------------------|-------------------|------------|------------------------|------------------------|---------------------------|------|--------------------------|
| 0.10 | WC | 26,0 | 2 | 7 | 0,0 | -106,2 | 186,0 | 34,8 | 2,0 | 0,0 | 0,0 | 0,0 | 114,6 | 1,00 | 114,6 |
| 0.01 | Zádveří | 26,0 | 2 | 12 | 0,0 | 605,4 | 124,0 | 32,8 | 2,0 | 0,0 | 0,0 | 0,0 | 762,2 | 1,00 | 762,2 |
| 0.11 | Technická místnost | 26,0 | 2 | 7 | 0,0 | -492,5 | 62,0 | 92,8 | 2,0 | 0,0 | 0,0 | 2 000,0 | 1 662,3 | 1,00 | 1 662,3 |
| 0.02 | Úklidová místnost | 26,0 | 2 | 7 | 0,0 | -41,7 | 0,0 | 17,2 | 2,0 | 0,0 | 0,0 | 0,0 | -24,5 | 1,00 | -24,5 |
| 0.12 | Rozvodna | 26,0 | 2 | 7 | 0,0 | -406,2 | 62,0 | 57,2 | 2,0 | 0,0 | 0,0 | 1 000,0 | 713,0 | 1,00 | 713,0 |
| 0.03 | Výdej ze skladu | 26,0 | 2 | 7 | 0,0 | -4,8 | 62,0 | 26,8 | 2,0 | 0,0 | 0,0 | 250,0 | 334,0 | 1,00 | 334,0 |
| 0.13 | Dílna MaR | 26,0 | 2 | 12 | 0,0 | 88,0 | 434,0 | 334,4 | 2,0 | 0,0 | 0,0 | 600,0 | 1 456,4 | 1,00 | 1 456,4 |
| 0.04 | Chodba | 26,0 | 2 | 12 | 0,0 | -5,9 | 0,0 | 45,2 | 2,0 | 0,0 | 0,0 | 0,0 | 39,3 | 1,00 | 39,3 |
| 0.05 | Sklad | 26,0 | 2 | 7 | 0,0 | -287,3 | 62,0 | 87,6 | 2,0 | 0,0 | 0,0 | 0,0 | -137,7 | 1,00 | -137,7 |
| 0.06 | Sklad | 26,0 | 2 | 7 | 0,0 | -121,3 | 62,0 | 85,6 | 2,0 | 0,0 | 0,0 | 0,0 | 26,3 | 1,00 | 26,3 |
| 0.07 | Rozvod | 26,0 | 2 | 7 | 0,0 | -47,0 | 62,0 | 35,2 | 2,0 | 0,0 | 0,0 | 1 000,0 | 1 050,2 | 1,00 | 1 050,2 |
| 0.08 | Serverovna | 26,0 | 2 | 7 | 0,0 | -31,0 | 62,0 | 19,6 | 2,0 | 0,0 | 1 500,0 | 0,0 | 1 550,6 | 1,00 | 1 550,6 |
| 0.09 | Chodba + výtah | 26,0 | 2 | 12 | 0,0 | 18,3 | 124,0 | 95,2 | 2,0 | 0,0 | 0,0 | 0,0 | 237,5 | 1,00 | 237,5 |
| 1.10 | Posluchárna + pódium | 26,0 | 2 | 12 | 0,0 | 7 230,2 | 1 240,0 | 343,6 | 2,0 | 0,0 | 1 200,0 | 0,0 | 10 013,8 | 1,00 | 10 013,8 |
| 1.01 | Zádveří | 26,0 | 2 | 12 | 0,0 | 277,7 | 124,0 | 21,2 | 2,0 | 0,0 | 0,0 | 0,0 | 422,9 | 1,00 | 422,9 |
| 1.02 | Recepce | 26,0 | 2 | 13 | 0,0 | -107,1 | 52,7 | 102,4 | 2,0 | 0,0 | 0,0 | 0,0 | 48,0 | 1,00 | 48,0 |
| 1.12 | Kuchyňka | 26,0 | 2 | 12 | 0,0 | 1 401,4 | 124,0 | 64,0 | 2,0 | 0,0 | 200,0 | 0,0 | 1 789,4 | 1,00 | 1 789,4 |
| 1.03 | Aula | 26,0 | 2 | 7 | 0,0 | -763,2 | 248,0 | 152,4 | 2,0 | 0,0 | 0,0 | 0,0 | -362,8 | 1,00 | -362,8 |

TV22

960121 - ČVUT FS katedra TZB

DP - Kocour.TV22

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Datum tisku: 15.12.2023

| č.m. | účel | ti, C °C | Δt K | τ _{max} h | k _{Mm} % | Q _{osl} W | Q _{lidé} W | Q _{osv.} W | Δtv K | Q _v W | Q _{tech} W | Q _{jine} W | Q _{citelne} W | kx | Q _{celkem} W |
|------|-------------------|-------------|---------|-----------------------|----------------------|-----------------------|------------------------|------------------------|----------|---------------------|------------------------|------------------------|---------------------------|------|--------------------------|
| 1.04 | Výtah + schodiště | 26,0 | 2 | 12 | 0,0 | 1 601,3 | 124,0 | 103,2 | 2,0 | 0,0 | 0,0 | 0,0 | 1 828,5 | 1,00 | 1 828,5 |
| 1.06 | WC muži | 26,0 | 2 | 12 | 0,0 | 2 553,0 | 186,0 | 42,0 | 2,0 | 0,0 | 0,0 | 0,0 | 2 781,0 | 1,00 | 2 781,0 |
| 1.07 | Chodba | 26,0 | 2 | 12 | 0,0 | 290,1 | 124,0 | 30,0 | 2,0 | 0,0 | 0,0 | 0,0 | 444,1 | 1,00 | 444,1 |
| 1.08 | Kuchyňka | 26,0 | 2 | 12 | 0,0 | 516,0 | 114,7 | 25,2 | 2,0 | 0,0 | 200,0 | 0,0 | 855,9 | 1,00 | 855,9 |
| 1.09 | Jednačka | 26,0 | 2 | 12 | 0,0 | 1 035,1 | 353,4 | 35,2 | 2,0 | 0,0 | 0,0 | 500,0 | 1 923,7 | 1,00 | 1 923,7 |
| 2.10 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 585,0 | 124,0 | 66,0 | 2,0 | 0,0 | 0,0 | 400,0 | 3 175,0 | 1,00 | 3 175,0 |
| 2.01 | Výtah + schodiště | 26,0 | 2 | 12 | 0,0 | 928,4 | 124,0 | 103,2 | 2,0 | 0,0 | 0,0 | 0,0 | 1 155,6 | 1,00 | 1 155,6 |
| 2.02 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 488,3 | 124,0 | 70,0 | 2,0 | 0,0 | 0,0 | 400,0 | 3 082,3 | 1,00 | 3 082,3 |
| 2.03 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 034,0 | 62,0 | 45,6 | 2,0 | 0,0 | 0,0 | 250,0 | 1 391,6 | 1,00 | 1 391,6 |
| 2.04 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 034,0 | 62,0 | 45,6 | 2,0 | 0,0 | 0,0 | 250,0 | 1 391,6 | 1,00 | 1 391,6 |
| 2.05 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 063,8 | 124,0 | 89,6 | 2,0 | 0,0 | 0,0 | 400,0 | 2 677,4 | 1,00 | 2 677,4 |
| 2.06 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 551,4 | 124,0 | 90,8 | 2,0 | 0,0 | 0,0 | 400,0 | 2 166,2 | 1,00 | 2 166,2 |
| 2.07 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 033,8 | 62,0 | 70,0 | 2,0 | 0,0 | 0,0 | 250,0 | 1 415,8 | 1,00 | 1 415,8 |
| 2.08 | Zasedačka | 26,0 | 2 | 12 | 0,0 | 1 323,0 | 362,7 | 75,6 | 2,0 | 0,0 | 0,0 | 500,0 | 2 261,3 | 1,00 | 2 261,3 |
| 2.09 | Hala | 26,0 | 2 | 12 | 0,0 | 321,4 | 300,7 | 287,2 | 2,0 | 0,0 | 0,0 | 300,0 | 1 209,3 | 1,00 | 1 209,3 |
| 3.10 | Kuchyňka | 26,0 | 2 | 12 | 0,0 | 800,2 | 124,0 | 64,0 | 2,0 | 0,0 | 200,0 | 0,0 | 1 188,2 | 1,00 | 1 188,2 |
| 3.01 | Výtah + schodiště | 26,0 | 2 | 12 | 0,0 | 1 262,8 | 124,0 | 103,2 | 2,0 | 0,0 | 0,0 | 0,0 | 1 490,0 | 1,00 | 1 490,0 |
| 3.11 | Zasedačka | 26,0 | 2 | 12 | 0,0 | 2 585,1 | 362,7 | 71,2 | 2,0 | 0,0 | 0,0 | 500,0 | 3 519,0 | 1,00 | 3 519,0 |
| 3.02 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 465,3 | 124,0 | 70,0 | 2,0 | 0,0 | 0,0 | 400,0 | 3 059,3 | 1,00 | 3 059,3 |
| 3.12 | Kancelář | 26,0 | 2 | 12 | 0,0 | 784,9 | 124,0 | 45,6 | 2,0 | 0,0 | 400,0 | 0,0 | 1 354,5 | 1,00 | 1 354,5 |
| 3.03 | Kancelář | 26,0 | 2 | 12 | 0,0 | 784,9 | 124,0 | 45,6 | 2,0 | 0,0 | 0,0 | 300,0 | 1 254,5 | 1,00 | 1 254,5 |
| 3.13 | Kancelář | 26,0 | 2 | 12 | 0,0 | 784,9 | 124,0 | 45,6 | 2,0 | 0,0 | 0,0 | 300,0 | 1 254,5 | 1,00 | 1 254,5 |
| 3.04 | Kancelář | 26,0 | 2 | 12 | 0,0 | 784,9 | 124,0 | 45,6 | 2,0 | 0,0 | 0,0 | 300,0 | 1 254,5 | 1,00 | 1 254,5 |
| 3.14 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 465,3 | 124,0 | 70,0 | 2,0 | 0,0 | 0,0 | 300,0 | 2 959,3 | 1,00 | 2 959,3 |
| 3.05 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 986,2 | 248,0 | 100,8 | 2,0 | 0,0 | 0,0 | 700,0 | 4 035,0 | 1,00 | 4 035,0 |
| 3.06 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 262,0 | 124,0 | 79,6 | 2,0 | 0,0 | 0,0 | 400,0 | 1 865,6 | 1,00 | 1 865,6 |
| 3.07 | Chodba | 26,0 | 2 | 7 | 0,0 | -1 053,2 | 0,0 | 107,2 | 2,0 | 0,0 | 0,0 | 0,0 | -946,0 | 1,00 | -946,0 |
| 3.08 | WC muži | 26,0 | 2 | 7 | 0,0 | -208,8 | 186,0 | 37,2 | 2,0 | 0,0 | 0,0 | 0,0 | 14,4 | 1,00 | 14,4 |
| 3.09 | WC ženy | 26,0 | 2 | 7 | 0,0 | -269,6 | 186,0 | 27,6 | 2,0 | 0,0 | 0,0 | 0,0 | -56,0 | 1,00 | -56,0 |
| 4.10 | Zasedačka | 26,0 | 2 | 12 | 0,0 | -663,9 | 362,7 | 66,0 | 2,0 | 0,0 | 0,0 | 500,0 | 264,8 | 1,00 | 264,8 |
| 4.01 | Výtah + schodiště | 26,0 | 2 | 12 | 0,0 | 1 262,8 | 124,0 | 103,2 | 2,0 | 0,0 | 0,0 | 0,0 | 1 490,0 | 1,00 | 1 490,0 |
| 4.11 | Kuchyňka | 26,0 | 2 | 12 | 0,0 | 179,7 | 114,7 | 38,0 | 2,0 | 0,0 | 200,0 | 0,0 | 532,4 | 1,00 | 532,4 |
| 4.02 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 106,5 | 124,0 | 70,0 | 2,0 | 0,0 | 0,0 | 400,0 | 2 700,5 | 1,00 | 2 700,5 |
| 4.12 | Kancelář | 26,0 | 2 | 12 | 0,0 | 2 106,5 | 124,0 | 70,0 | 2,0 | 0,0 | 0,0 | 500,0 | 2 800,5 | 1,00 | 2 800,5 |
| 4.03 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 098,5 | 248,0 | 89,6 | 2,0 | 0,0 | 0,0 | 700,0 | 2 136,1 | 1,00 | 2 136,1 |

TV22

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Datum tisku: 15.12.2023

| č.m. | účel | t_i, C °C | Δt K | τ_{\max} h | k_{Mm} % | Q_{osl} W | $Q_{lidé}$ W | $Q_{osv.}$ W | Δt_v K | Q_v W | Q_{tech} W | Q_{jine} W | $Q_{citelne}$ W | kx | Q_{celkem} W |
|---------------------|--------------------|-----------------------|-----------------|--------------------|---------------|----------------|-----------------|-----------------|-------------------|------------|-----------------|-----------------|--------------------|------|-------------------|
| 4.04 | Kancelář | 26,0 | 2 | 12 | 0,0 | 369,6 | 52,7 | 28,4 | 2,0 | 0,0 | 0,0 | 250,0 | 700,7 | 1,00 | 700,7 |
| 4.05 | Kancelář | 26,0 | 2 | 12 | 0,0 | 1 863,0 | 229,4 | 40,0 | 2,0 | 0,0 | 0,0 | 700,0 | 2 832,4 | 1,00 | 2 832,4 |
| 4.06 | Chodba | 26,0 | 2 | 7 | 0,0 | -1 053,2 | 0,0 | 107,2 | 2,0 | 0,0 | 0,0 | 0,0 | -946,0 | 1,00 | -946,0 |
| 4.07 | WC muži | 26,0 | 2 | 7 | 0,0 | -208,8 | 186,0 | 37,2 | 2,0 | 0,0 | 0,0 | 0,0 | 14,4 | 1,00 | 14,4 |
| 4.08 | WC ženy | 26,0 | 2 | 7 | 0,0 | -269,6 | 186,0 | 27,6 | 2,0 | 0,0 | 0,0 | 0,0 | -56,0 | 1,00 | -56,0 |
| 4.09 | Open office | 26,0 | 2 | 12 | 0,0 | 4 163,0 | 830,8 | 70,0 | 2,0 | 0,0 | 2 900,0 | 0,0 | 7 963,8 | 1,00 | 7 963,8 |
| 5.01 | Výtah + schodiště | 26,0 | 2 | 12 | 0,0 | 734,8 | 124,0 | 103,2 | 2,0 | 0,0 | 0,0 | 0,0 | 962,0 | 1,00 | 962,0 |
| 5.02 | Technická místnost | 26,0 | 2 | 12 | 0,0 | 2 199,9 | 62,0 | 70,0 | 2,0 | 0,0 | 0,0 | 2 000,0 | 4 331,9 | 1,00 | 4 331,9 |
| ΣQ_{celkem} | | | | | | | | | | | | | | | 95 429,2 |

Výpočet hodnoty Q_v je proveden pro hodnotu Δt_v Nejvyšší potřebný výkon zdroje chladu pro vybrané místnosti je v **12 hodin 95,4kW**

TV22

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Datum tisku: 15.12.2023

2.2 Roční maximum

Roční maxima pro vybrané místnosti opravný činitel $c_0 = 1,00$

| č.m. | účel | měsíc | t_{emax} °C | t_i , °C | Δt K | τ_{max} h | k_{Mm} % | Q_{osl} W | Δt_v K | Q_v W | Q_{oz} W | $Q_{\text{citelné}}$ W | kx | Q_{celkem} W |
|------|----------------------|----------|-------------------------|---------------|-----------------|--------------------------|---------------|-----------------------|-------------------|------------|----------------------|---------------------------|------|--------------------------|
| 0.10 | WC | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -106,2 | 2,0 | 0,0 | 220,8 | 114,6 | 1,00 | 114,6 |
| 0.01 | Zádveř | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 612,5 | 2,0 | 0,0 | 156,8 | 769,3 | 1,00 | 769,3 |
| 0.11 | Technická místnost | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -492,5 | 2,0 | 0,0 | 2 154,8 | 1 662,3 | 1,00 | 1 662,3 |
| 0.02 | Úklidová místnost | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -41,7 | 2,0 | 0,0 | 17,2 | -24,5 | 1,00 | -24,5 |
| 0.12 | Rozvodna | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -406,2 | 2,0 | 0,0 | 1 119,2 | 713,0 | 1,00 | 713,0 |
| 0.03 | Výdej ze skladu | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -4,8 | 2,0 | 0,0 | 338,8 | 334,0 | 1,00 | 334,0 |
| 0.13 | Dílna MaR | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 111,2 | 2,0 | 0,0 | 1 368,4 | 1 479,6 | 1,00 | 1 479,6 |
| 0.04 | Chodba | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | -1,1 | 2,0 | 0,0 | 45,2 | 44,1 | 1,00 | 44,1 |
| 0.05 | Sklad | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -287,3 | 2,0 | 0,0 | 149,6 | -137,7 | 1,00 | -137,7 |
| 0.06 | Sklad | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -121,3 | 2,0 | 0,0 | 147,6 | 26,3 | 1,00 | 26,3 |
| 0.07 | Rozvod | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -47,0 | 2,0 | 0,0 | 1 097,2 | 1 050,2 | 1,00 | 1 050,2 |
| 0.08 | Serverovna | červenec | 30,0 | 26,0 | 2 | 7 | 0,0 | -31,0 | 2,0 | 0,0 | 1 581,6 | 1 550,6 | 1,00 | 1 550,6 |
| 0.09 | Chodba + výtah | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 22,3 | 2,0 | 0,0 | 219,2 | 241,5 | 1,00 | 241,5 |
| 1.10 | Posluchárna + pódium | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 7 346,2 | 2,0 | 0,0 | 2 783,6 | 10 129,8 | 1,00 | 10 129,8 |
| 1.01 | Zádveř | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 280,7 | 2,0 | 0,0 | 145,2 | 425,9 | 1,00 | 425,9 |
| 1.02 | Recepce | červenec | 30,0 | 26,0 | 2 | 13 | 0,0 | -107,1 | 2,0 | 0,0 | 155,1 | 48,0 | 1,00 | 48,0 |
| 1.12 | Kuchyňka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 426,3 | 2,0 | 0,0 | 388,0 | 1 814,3 | 1,00 | 1 814,3 |
| 1.03 | Aula | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -763,2 | 2,0 | 0,0 | 400,4 | -362,8 | 1,00 | -362,8 |
| 1.04 | Výtah + schodiště | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 625,6 | 2,0 | 0,0 | 227,2 | 1 852,8 | 1,00 | 1 852,8 |
| 1.06 | WC muži | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 595,7 | 2,0 | 0,0 | 228,0 | 2 823,7 | 1,00 | 2 823,7 |
| 1.07 | Chodba | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 298,8 | 2,0 | 0,0 | 154,0 | 452,8 | 1,00 | 452,8 |
| 1.08 | Kuchyňka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 524,1 | 2,0 | 0,0 | 339,9 | 864,0 | 1,00 | 864,0 |
| 1.09 | Jednačka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 052,7 | 2,0 | 0,0 | 888,6 | 1 941,3 | 1,00 | 1 941,3 |
| 2.10 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 627,8 | 2,0 | 0,0 | 590,0 | 3 217,8 | 1,00 | 3 217,8 |
| 2.01 | Výtah + schodiště | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 954,1 | 2,0 | 0,0 | 227,2 | 1 181,3 | 1,00 | 1 181,3 |
| 2.02 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 530,9 | 2,0 | 0,0 | 594,0 | 3 124,9 | 1,00 | 3 124,9 |
| 2.03 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 051,2 | 2,0 | 0,0 | 357,6 | 1 408,8 | 1,00 | 1 408,8 |
| 2.04 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 051,2 | 2,0 | 0,0 | 357,6 | 1 408,8 | 1,00 | 1 408,8 |
| 2.05 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 096,0 | 2,0 | 0,0 | 613,6 | 2 709,6 | 1,00 | 2 709,6 |
| 2.06 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 577,3 | 2,0 | 0,0 | 614,8 | 2 192,1 | 1,00 | 2 192,1 |
| 2.07 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 050,9 | 2,0 | 0,0 | 382,0 | 1 432,9 | 1,00 | 1 432,9 |
| 2.08 | Zasedačka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 339,8 | 2,0 | 0,0 | 938,3 | 2 278,1 | 1,00 | 2 278,1 |
| 2.09 | Hala | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 328,8 | 2,0 | 0,0 | 887,9 | 1 216,7 | 1,00 | 1 216,7 |

TV22

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Datum tisku: 15.12.2023

| č.m. | účel | měsíc | t _{emax} °C | t _i ,C °C | Δt K | τ _{max} h | k _{Mm} % | Q _{osl} W | Δtv K | Q _v W | Q _{oz} W | Q _{citelné} W | kx | Q _{celkem} W |
|------|--------------------|--------|-------------------------|-------------------------|---------|-----------------------|----------------------|-----------------------|----------|---------------------|----------------------|---------------------------|----------------------|--------------------------|
| 3.10 | Kuchyňka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 817,5 | 2,0 | 0,0 | 388,0 | 1 205,5 | 1,00 | 1 205,5 |
| 3.01 | Výtah + schodiště | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 288,4 | 2,0 | 0,0 | 227,2 | 1 515,6 | 1,00 | 1 515,6 |
| 3.11 | Zasedačka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 627,9 | 2,0 | 0,0 | 933,9 | 3 561,8 | 1,00 | 3 561,8 |
| 3.02 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 507,9 | 2,0 | 0,0 | 594,0 | 3 101,9 | 1,00 | 3 101,9 |
| 3.12 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 802,0 | 2,0 | 0,0 | 569,6 | 1 371,6 | 1,00 | 1 371,6 |
| 3.03 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 802,0 | 2,0 | 0,0 | 469,6 | 1 271,6 | 1,00 | 1 271,6 |
| 3.13 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 802,0 | 2,0 | 0,0 | 469,6 | 1 271,6 | 1,00 | 1 271,6 |
| 3.04 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 802,0 | 2,0 | 0,0 | 469,6 | 1 271,6 | 1,00 | 1 271,6 |
| 3.14 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 507,9 | 2,0 | 0,0 | 494,0 | 3 001,9 | 1,00 | 3 001,9 |
| 3.05 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 3 037,6 | 2,0 | 0,0 | 1 048,8 | 4 086,4 | 1,00 | 4 086,4 |
| 3.06 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 288,9 | 2,0 | 0,0 | 603,6 | 1 892,5 | 1,00 | 1 892,5 |
| 3.07 | Chodba | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -1 053,2 | 2,0 | 0,0 | 107,2 | -946,0 | 1,00 | -946,0 |
| 3.08 | WC muži | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -208,8 | 2,0 | 0,0 | 223,2 | 14,4 | 1,00 | 14,4 |
| 3.09 | WC ženy | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -269,6 | 2,0 | 0,0 | 213,6 | -56,0 | 1,00 | -56,0 |
| 4.10 | Zasedačka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | -648,5 | 2,0 | 0,0 | 928,7 | 280,2 | 1,00 | 280,2 |
| 4.01 | Výtah + schodiště | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 288,4 | 2,0 | 0,0 | 227,2 | 1 515,6 | 1,00 | 1 515,6 |
| 4.11 | Kuchyňka | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 188,1 | 2,0 | 0,0 | 352,7 | 540,8 | 1,00 | 540,8 |
| 4.02 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 149,2 | 2,0 | 0,0 | 594,0 | 2 743,2 | 1,00 | 2 743,2 |
| 4.12 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 149,2 | 2,0 | 0,0 | 694,0 | 2 843,2 | 1,00 | 2 843,2 |
| 4.03 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 132,6 | 2,0 | 0,0 | 1 037,6 | 2 170,2 | 1,00 | 2 170,2 |
| 4.04 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 377,7 | 2,0 | 0,0 | 331,1 | 708,8 | 1,00 | 708,8 |
| 4.05 | Kancelář | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 1 897,6 | 2,0 | 0,0 | 969,4 | 2 867,0 | 1,00 | 2 867,0 |
| 4.06 | Chodba | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -1 053,2 | 2,0 | 0,0 | 107,2 | -946,0 | 1,00 | -946,0 |
| 4.07 | WC muži | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -208,8 | 2,0 | 0,0 | 223,2 | 14,4 | 1,00 | 14,4 |
| 4.08 | WC ženy | březen | 19,0 | 26,0 | 2 | 7 | 0,0 | -269,6 | 2,0 | 0,0 | 213,6 | -56,0 | 1,00 | -56,0 |
| 4.09 | Open office | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 4 247,8 | 2,0 | 0,0 | 3 800,8 | 8 048,6 | 1,00 | 8 048,6 |
| 5.01 | Výtah + schodiště | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 760,4 | 2,0 | 0,0 | 227,2 | 987,6 | 1,00 | 987,6 |
| 5.02 | Technická místnost | červen | 28,5 | 26,0 | 2 | 12 | 0,0 | 2 229,6 | 2,0 | 0,0 | 2 132,0 | 4 361,6 | 1,00 | 4 361,6 |
| | | | | | | | | | | | | | ΣQ _{celkem} | 96 628,0 |

Výpočet hodnoty Q_v je proveden pro hodnotu ΔtvNejvyšší potřebný výkon zdroje chladu pro vybrané místnosti je v měsíci **červen** v 12 hodin **96,6kW**

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2.3 Místnosti - seznam konstrukcí**0.10** - WC, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -106 W, Qoz = 221 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,0 | | 12,0 | | | | | | | -7 | |
| PDL1 | 8,7 | | 8,7 | 5,0 | | | | | 0 | -51 | |
| STR1 | 8,7 | | 8,7 | 15,0 | | | | | 0 | -48 | |

0.01 - Zádveří, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 605 W, Qoz = 157 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 9,4 | | 9,4 | | | | | | | -6 | |
| SO1 | 12,4 | 4,8 | 7,6 | | | | | | | -5 | |
| DO1 | 2,4 | 2,4 | 2,4 | | | 0,900 | 0,0 | 0,00 | | 5 | 340 |
| OJ1 | 2,4 | 2,4 | 2,4 | | | 0,900 | 0,0 | 0,00 | | 4 | 340 |
| PDL1 | 8,2 | | 8,2 | 5,0 | | | | | 0 | -49 | |
| STR1 | 8,2 | | 8,2 | 20,0 | | | | | 0 | -25 | |

0.11 - Technická místnost, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -492 W, Qoz = 2 155 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 33,8 | | 33,8 | | | | | | | -20 | |
| PDL1 | 23,2 | | 23,2 | 5,0 | | | | | 0 | -137 | |
| STR1 | 23,2 | | 23,2 | 15,0 | | | | | 0 | -128 | |
| SN1 | 19,2 | | 19,2 | 20,0 | | | | | 0 | -208 | |

0.02 - Úklidová místnost, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -42 W, Qoz = 17 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 5,2 | | 5,2 | | | | | | | -3 | |
| PDL1 | 4,3 | | 4,3 | 5,0 | | | | | 0 | -26 | |
| STR1 | 4,3 | | 4,3 | 20,0 | | | | | 0 | -13 | |

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0.12 - Rozvodna, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -406 W, Qoz = 1 119 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| PDL1 | 14,3 | | 14,3 | 5,0 | | | | | 0 | -84 | |
| STR1 | 14,3 | | 14,3 | 15,0 | | | | | 0 | -79 | |
| SN1 | 22,5 | | 22,5 | 20,0 | | | | | 0 | -243 | |

0.03 - Výdej ze skladu, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -5 W, Qoz = 339 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 8,1 | | 8,1 | | | | | | | -5 | |

0.13 - Dílna MaR, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 88 W, Qoz = 1 368 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 33,9 | 14,5 | 19,4 | | | | | | | -12 | |
| OJ1 | 2,4 | 14,5 | 14,5 | | | 0,900 | 0,0 | 0,00 | | 27 | 2 039 |
| SO1 | 27,3 | | 27,3 | | | | | | | -16 | |
| SN1 | 60,7 | 2,1 | 58,7 | 15,0 | | | | | 0 | -1 162 | |
| DN1 | 2,1 | 2,1 | 2,1 | 15,0 | | | | | | -46 | |
| PDL1 | 83,6 | | 83,6 | 5,0 | | | | | 0 | -492 | |
| STR1 | 83,6 | | 83,6 | 20,0 | | | | | 0 | -251 | |

0.04 - Chodba, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = -6 W, Qoz = 45 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 7,0 | 2,4 | 4,6 | | | | | | | -3 | |
| OJ1 | 2,4 | 2,4 | 2,4 | | | 0,900 | 0,0 | 0,00 | | 4 | 340 |
| PDL1 | 11,3 | | 11,3 | 5,0 | | | | | 0 | -66 | |
| STR1 | 11,3 | | 11,3 | 20,0 | | | | | 0 | -34 | |
| SN1 | 22,7 | 2,1 | 20,6 | 20,0 | | | | | 0 | -223 | |
| DN1 | 2,1 | 2,1 | 2,1 | 20,0 | | | | | | -25 | |

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0.05 - Sklad, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -287 W, Qoz = 150 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 13,0 | | 13,0 | | | | | | | -8 | |
| PDL1 | 21,9 | | 21,9 | 5,0 | | | | | 0 | -129 | |
| STR1 | 21,9 | | 21,9 | 20,0 | | | | | 0 | -66 | |
| SN1 | 7,9 | | 7,9 | 20,0 | | | | | 0 | -85 | |

0.06 - Sklad, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -121 W, Qoz = 148 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 23,9 | | 23,9 | | | | | | | -14 | |
| SO1 | 9,6 | | 9,6 | | | | | | | -6 | |
| PDL1 | 21,4 | | 21,4 | 5,0 | | | | | 0 | -126 | |
| SCH1 | 21,4 | | 21,4 | | H | | | | | 25 | |

0.07 - Rozvod, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -47 W, Qoz = 1 097 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 9,4 | | 9,4 | | | | | | | -6 | |
| PDL1 | 8,8 | | 8,8 | 5,0 | | | | | 0 | -51 | |
| SCH1 | 8,8 | | 8,8 | | H | | | | | 10 | |

0.08 - Serverovna, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -31 W, Qoz = 1 582 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 13,1 | | 13,1 | | | | | | | -8 | |
| PDL1 | 4,9 | | 4,9 | 5,0 | | | | | 0 | -29 | |
| SCH1 | 4,9 | | 4,9 | | H | | | | | 6 | |

0.09 - Chodba + výtah, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 18 W, Qoz = 219 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 6,0 | 2,0 | 4,0 | | | | | | | -2 | |
| DO1 | 2,0 | 2,0 | 2,0 | | | 0,900 | 0,0 | 0,00 | | 4 | 288 |
| PDL1 | 23,8 | | 23,8 | 5,0 | | | | | 0 | -140 | |

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| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------------------|---------------------------|---------|---------------------|---------------------|
| STR1 | 23,8 | | 23,8 | 15,0 | | | | | 0 | -131 | |

1.10 - Posluchárna + pódium, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 7 230 W, Q_{oz} = 2 784 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 59,6 | 32,7 | 27,0 | | | | | | | -16 | |
| OJ1 | 3,6 | 32,7 | 32,7 | | | 0,900 | 0,0 | 0,00 | | 61 | 4 606 |
| SO1 | 20,2 | 10,9 | 9,4 | | | | | | | -6 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 20,2 | 7,3 | 13,0 | | | | | | | -8 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

1.01 - Zádveří, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 278 W, Q_{oz} = 145 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 13,8 | 3,1 | 10,6 | | | | | | | -6 | |
| DO1 | 3,1 | 3,1 | 3,1 | | | 0,900 | 0,0 | 0,00 | | 6 | 444 |
| SO1 | 5,4 | | 5,4 | | | | | | | -3 | |
| STR1 | 5,3 | | 5,3 | 15,0 | | | | | 0 | -29 | |
| SN1 | 13,8 | 3,1 | 10,6 | 20,0 | | | | | 0 | -115 | |
| DO1 | 3,1 | 3,1 | 3,1 | 20,0 | | | | | | -19 | |

1.02 - Recepce, tiC = 26 °C, měsíc: červenec, hod: 13, Q_{osl} = -107 W, Q_{oz} = 155 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 19,3 | 2,9 | 16,4 | | | | | | | -10 | |
| DN1 | 2,9 | 2,9 | 2,9 | | | 0,900 | 0,0 | 0,00 | | 18 | 407 |
| SN1 | 18,7 | 5,0 | 13,7 | 15,0 | | | | | 0 | -271 | |
| DN1 | 2,9 | 2,9 | 2,9 | 15,0 | | | | | | -65 | |
| DN1 | 2,0 | 2,0 | 2,0 | 15,0 | | | | | | -45 | |
| STR1 | 25,6 | | 25,6 | 15,0 | | | | | 0 | -141 | |

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1.12 - Kuchyňka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 401 W, Qoz = 388 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 21,4 | 10,9 | 10,5 | | | | | | | -6 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 13,7 | | 13,7 | 20,0 | | | | | 0 | -148 | |

1.03 - Aula, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -763 W, Qoz = 400 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 27,8 | 1,9 | 25,9 | 15,0 | | | | | 0 | -512 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |
| STR1 | 38,1 | | 38,1 | 15,0 | | | | | 0 | -210 | |

1.04 - Výtah + schodiště, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 601 W, Qoz = 227 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 21,0 | 10,9 | 10,1 | | | | | | | -6 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 21,2 | 2,0 | 19,1 | | | | | | | -11 | |
| DO1 | 2,0 | 2,0 | 2,0 | | | 0,900 | 0,0 | 0,00 | | 4 | 286 |
| SN1 | 21,0 | | 21,0 | 20,0 | | | | | 0 | -226 | |

1.06 - WC muži, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 553 W, Qoz = 228 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| STR1 | 10,5 | | 10,5 | 20,0 | | | | | 0 | -32 | |

1.07 - Chodba, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 290 W, Qoz = 154 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SO1 | 5,6 | 3,6 | 2,0 | | | | | | | -1 | |

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| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| OJ1 | 3,6 | 3,6 | 3,6 | | | 0,900 | 0,0 | 0,00 | | 7 | 512 |
| STR1 | 7,5 | | 7,5 | 20,0 | | | | | 0 | -22 | |
| SN1 | 18,8 | 1,9 | 16,9 | 20,0 | | | | | 0 | -182 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

1.08 - Kuchyňka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 516 W, Qoz = 340 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 7,9 | 3,6 | 4,2 | | | | | | | -3 | |
| OJ1 | 3,6 | 3,6 | 3,6 | | | 0,900 | 0,0 | 0,00 | | 7 | 512 |

1.09 - Jednačka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 035 W, Qoz = 889 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 10,7 | 7,3 | 3,4 | | | | | | | -2 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

2.10 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 585 W, Qoz = 590 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

2.01 - Výtah + schodiště, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 928 W, Qoz = 227 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,9 | 10,9 | 8,0 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 18,9 | 1,9 | 17,0 | 20,0 | | | | | 0 | -184 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |
| SN1 | 18,9 | 1,9 | 17,0 | 20,0 | | | | | 0 | -184 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

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| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 19,1 | 1,9 | 17,2 | 20,0 | | | | | 0 | -186 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

2.02 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 488 W, Qoz = 594 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| STR1 | 17,5 | | 17,5 | 15,0 | | | | | 0 | -96 | |

2.03 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 034 W, Qoz = 358 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

2.04 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 034 W, Qoz = 358 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

2.05 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 064 W, Qoz = 614 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 19,3 | 7,3 | 12,1 | | | | | | | -7 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SO1 | 12,6 | 7,3 | 5,3 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

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2.06 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 551 W, Qoz = 615 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,0 | 10,9 | 7,1 | | | | | | | -4 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |

2.07 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 034 W, Qoz = 382 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,8 | 7,3 | 5,5 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

2.08 - Zasedačka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 323 W, Qoz = 938 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 13,3 | 7,3 | 6,1 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SO1 | 19,9 | 2,1 | 17,8 | | | | | | | -11 | |
| DO1 | 2,1 | 2,1 | 2,1 | | | 0,900 | 0,0 | 0,00 | | 4 | 296 |

2.09 - Hala, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 321 W, Qoz = 888 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 24,4 | 5,2 | 19,1 | | | | | | | -11 | |
| DO1 | 5,2 | 5,2 | 5,2 | | | 0,900 | 0,0 | 0,00 | | 10 | 740 |
| SN1 | 20,6 | 4,2 | 16,4 | 15,0 | | | | | 0 | -325 | |
| DN1 | 2,1 | 4,2 | 4,2 | 15,0 | | | | | | -92 | |

3.10 - Kuchyňka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 800 W, Qoz = 388 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 11,6 | 7,3 | 4,4 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 11,6 | 1,9 | 9,7 | 15,0 | | | | | 0 | -193 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

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3.01 - Výtah + schodiště, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 263 W, Qoz = 227 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,9 | 10,9 | 8,0 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

3.11 - Zasedačka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 585 W, Qoz = 934 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,6 | 7,3 | 5,4 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SO1 | 18,4 | 10,9 | 7,5 | | | | | | | -4 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |

3.02 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 465 W, Qoz = 594 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 5,8 | 1,9 | 3,9 | 15,0 | | | | | 0 | -78 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.12 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 785 W, Qoz = 570 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 12,4 | 1,9 | 10,5 | 15,0 | | | | | 0 | -208 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

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3.03 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 785 W, Qoz = 470 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 12,4 | 1,9 | 10,5 | 15,0 | | | | | 0 | -208 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.13 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 785 W, Qoz = 470 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 12,4 | 1,9 | 10,5 | 15,0 | | | | | 0 | -208 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.04 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 785 W, Qoz = 470 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,4 | 7,3 | 5,1 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 12,4 | 1,9 | 10,5 | 15,0 | | | | | 0 | -208 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.14 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 465 W, Qoz = 494 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 5,8 | 1,9 | 3,9 | 15,0 | | | | | 0 | -78 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

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3.05 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 986 W, Qoz = 1 049 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 19,3 | 10,9 | 8,4 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 18,4 | 10,9 | 7,5 | | | | | | | -4 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 5,6 | 1,9 | 3,7 | 15,0 | | | | | 0 | -74 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.06 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 262 W, Qoz = 604 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 14,5 | 10,9 | 3,6 | | | | | | | -2 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 14,5 | 1,9 | 12,6 | 15,0 | | | | | 0 | -250 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

3.07 - Chodba, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -1 053 W, Qoz = 107 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 95,6 | 17,0 | 78,6 | 20,0 | | | | | 0 | -849 | |
| DN1 | 1,9 | 17,0 | 17,0 | 20,0 | | | | | | -204 | |

3.08 - WC muži, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -209 W, Qoz = 223 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 19,1 | 1,9 | 17,2 | 20,0 | | | | | 0 | -186 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

3.09 - WC ženy, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -270 W, Qoz = 214 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 24,8 | 1,9 | 22,9 | 20,0 | | | | | 0 | -247 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

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4.10 - Zasedačka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = -664 W, Qoz = 929 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,4 | 7,3 | 11,1 | | | | | | | -7 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 18,4 | | 18,4 | -15,0 | | | | | 0 | -1 356 | |
| STR1 | 16,5 | | 16,5 | -15,0 | | | | | 0 | -338 | |

4.01 - Výtah + schodiště, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 1 263 W, Qoz = 227 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,9 | 10,9 | 8,0 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

4.11 - Kuchyňka, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 180 W, Qoz = 353 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 6,9 | 3,6 | 3,3 | | | | | | | -2 | |
| OJ1 | 3,6 | 3,6 | 3,6 | | | 0,900 | 0,0 | 0,00 | | 7 | 512 |
| SN1 | 6,9 | 1,9 | 5,0 | 15,0 | | | | | 0 | -100 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |
| STR1 | 9,5 | | 9,5 | -15,0 | | | | | 0 | -195 | |

4.02 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 107 W, Qoz = 594 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 5,8 | 1,9 | 3,9 | 15,0 | | | | | 0 | -78 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |

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| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------------------|---------------------------|---------|---------------------|---------------------|
| STR1 | 17,5 | | 17,5 | -15,0 | | | | | 0 | -359 | |

4.12 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 2 107 W, Q_{oz} = 694 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 18,8 | 10,9 | 7,9 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 13,1 | 7,3 | 5,9 | | | | | | | -4 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| SN1 | 5,8 | 1,9 | 3,9 | 15,0 | | | | | 0 | -78 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |
| STR1 | 17,5 | | 17,5 | -15,0 | | | | | 0 | -359 | |

4.03 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 1 099 W, Q_{oz} = 1 038 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 25,5 | 14,5 | 11,0 | | | | | | | -7 | |
| OJ1 | 3,6 | 14,5 | 14,5 | | | 0,900 | 0,0 | 0,00 | | 27 | 2 047 |
| SN1 | 25,5 | 1,9 | 23,6 | 15,0 | | | | | 0 | -467 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |
| STR1 | 22,4 | | 22,4 | -15,0 | | | | | 0 | -460 | |

4.04 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 370 W, Q_{oz} = 331 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 7,9 | 3,6 | 4,2 | | | | | | | -3 | |
| OJ1 | 3,6 | 3,6 | 3,6 | | | 0,900 | 0,0 | 0,00 | | 7 | 512 |
| STR1 | 7,1 | | 7,1 | -15,0 | | | | | 0 | -146 | |

4.05 - Kancelář, tiC = 26 °C, měsíc: červenec, hod: 12, Q_{osl} = 1 863 W, Q_{oz} = 969 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | A _{osl} m ² | lokna W/m ² | dQ W | Q _p W | Q _r W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------------------|---------------------------|---------|---------------------|---------------------|
| SO1 | 11,1 | 7,3 | 3,8 | | | | | | | -2 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |

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Datum tisku: 15.12.2023

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 12,8 | 7,3 | 5,5 | | | | | | | -3 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| STR1 | 10,0 | | 10,0 | -15,0 | | | | | 0 | -206 | |

4.06 - Chodba, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -1 053 W, Qoz = 107 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 95,6 | 17,0 | 78,6 | 20,0 | | | | | 0 | -849 | |
| DN1 | 1,9 | 17,0 | 17,0 | 20,0 | | | | | | -204 | |

4.07 - WC muži, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -209 W, Qoz = 223 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 19,1 | 1,9 | 17,2 | 20,0 | | | | | 0 | -186 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

4.08 - WC ženy, tiC = 26 °C, měsíc: červenec, hod: 7, Qosl = -270 W, Qoz = 214 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|-----|---------------------|----------------------|----------------------|-----------------------|----|---|------------------------|---------------------------|---------|---------|---------|
| SN1 | 24,8 | 1,9 | 22,9 | 20,0 | | | | | 0 | -247 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |

4.09 - Open office, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 4 163 W, Qoz = 3 801 W

| OK | A m ² | AV m ² | AR m ² | t _{sm} °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------------------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 19,9 | 10,9 | 9,0 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 45,4 | 25,4 | 20,0 | | | | | | | -12 | |
| OJ1 | 3,6 | 25,4 | 25,4 | | | 0,900 | 0,0 | 0,00 | | 47 | 3 583 |
| SN1 | 32,4 | 1,9 | 30,5 | 15,0 | | | | | 0 | -605 | |
| DN1 | 1,9 | 1,9 | 1,9 | 15,0 | | | | | | -42 | |
| STR1 | 17,5 | | 17,5 | -15,0 | | | | | 0 | -359 | |

TV22

960121 - ČVUT FS katedra TZB

DP - Kocour.TV22

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Datum tisku: 15.12.2023

5.01 - Výtah + schodiště, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 735 W, Qoz = 227 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 18,9 | 10,9 | 8,0 | | | | | | | -5 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |
| SN1 | 13,1 | 1,9 | 11,2 | 20,0 | | | | | 0 | -121 | |
| DN1 | 1,9 | 1,9 | 1,9 | 20,0 | | | | | | -23 | |
| STR1 | 25,8 | | 25,8 | -15,0 | | | | | 0 | -528 | |

5.02 - Technická místnost, tiC = 26 °C, měsíc: červenec, hod: 12, Qosl = 2 200 W, Qoz = 2 132 W

| OK | A m ² | AV m ² | AR m ² | tsm °C | SS | T | Aosl m ² | lokna W/m ² | dQ W | Qp W | Qr W |
|------|---------------------|----------------------|----------------------|-----------|----|-------|------------------------|---------------------------|---------|---------|---------|
| SO1 | 26,2 | 10,9 | 15,4 | | | | | | | -9 | |
| OJ1 | 3,6 | 10,9 | 10,9 | | | 0,900 | 0,0 | 0,00 | | 20 | 1 535 |
| SO1 | 22,5 | 7,3 | 15,2 | | | | | | | -9 | |
| OJ1 | 3,6 | 7,3 | 7,3 | | | 0,900 | 0,0 | 0,00 | | 13 | 1 024 |
| STR1 | 17,5 | | 17,5 | -15,0 | | | | | 0 | -359 | |
| SO1 | 26,2 | | 26,2 | | | | | | | -16 | |

PŘÍLOHA Č.2

TECHNICKÝ LIST OTOPNÝCH/CHLADÍCÍCH PODHLEDŮ



HEATED AND CHILLED CEILINGS

PHYSICAL PERFECTION

ADD.VANTAGE RETHINKING SPACES

Over the years, Lindner Group has developed into a technologically leading, solution-oriented and reliable partner with a solid economic basis. Our comprehensive range of products and services for the building envelope, interior fit-out and insulation fits almost any field of application. True to the motto "Rethinking Spaces", we develop tailor-made and yet versatile solutions and concepts for your construction project. Being a completely family-owned business, we particularly care about our environment. With new concepts such as Cradle to Cradle[®], low-emission products and well-considered spatial concepts, we create Add.Vantage for the people and their environment. As a service provider and an employer, we put the people in focus. The customer is bound to notice this, too: We enjoy our work, are convinced of what we do and proud about what we are capable of.

STABILITY AND GROWTH

Since the founding of the company by Hans Lindner in 1965, our headquarters is located in Lower Bavarian Arnstorf, where we have grown enormously during the last decades. With about 7,100 employees around the world, we are proud to be the largest employer in the district of Rottal-Inn. Every day we work on 2,500 projects which revolve for the most part around our core business, the construction industry. It is complimented by our Hans Lindner Foundation, the mk | hotels, the in-house breweries and more recently a sustainable agriculture and forestry.

HEATED AND CHILLED CEILINGS PHYSICAL PERFECTION

Our proven technologies create a healthy indoor climate in every room. Plafotherm® Heated and Chilled Ceilings offer impressively high capacities and good heat transfer. Our own accredited test laboratory guarantees further development of our Ceilings, which are tested as a complete system. The sophisticated Ceiling Systems are low-maintenance, energy-efficient solutions that also contribute to sound protection. Our wide range of surfaces offers a unique choice of design options. Integrated Lindner Luminaires perfectly complete the ceiling construction.

- + innovative Plafotherm® Heated and Chilled Ceilings offer impressively high capacities and good heat transfer
- + proven technologies ensure comfort and a healthy, pleasant room climate
- + all individual components are tested as a complete system in our own accredited test laboratory
- + low-maintenance and energy-efficient solutions for many application areas
- + acoustically effective Heated und Chilled Ceilings meet sound protection requirements
- + various architecturally appealing design and layout possibilities
- + one-stop service: easy integration of Lindner Luminaires possible

HEATED AND CHILLED POST CAP CEILINGS from page 16

Plafotherm® B 100
Plafotherm® B 100 SD
Plafotherm® B 110
Plafotherm® B 147 SD

HEATED AND CHILLED HOOK-ON CEILINGS from page 26

Plafotherm® E 200
Plafotherm® E 210
Plafotherm® E 213
Plafotherm® E 214

HEATED AND CHILLED CORRIDOR CEILINGS from page 36

Plafotherm® E 312

HEATED AND CHILLED CANOPY CEILINGS from page 40

Plafotherm® DS 312
Plafotherm® DS 313
Plafotherm® DS 320
Plafotherm® DS Tabs

HEATED AND CHILLED BAFFLE CEILINGS from page 50

Plafotherm® L 608

HEATED AND CHILLED EXPANDED METAL CEILINGS from page 54

Plafotherm® St 213

CONVECTION ELEMENTS from page 58

Plafotherm® KN

HEATED AND CHILLED PLASTERBOARD CEILINGS from page 62

Plafotherm® GK HEKDA

HEATED AND CHILLED HYBRID CEILINGS from page 66

Plafotherm® DS TAS
Plafotherm® AirHybrid
Plafotherm® DS AirHybrid

PROJECT-RELATED SOLUTIONS from page 74

FIFA World Football Museum, Zurich, Switzerland
Fleet Office II, Hamburg, Germany
Hochhaus zur Bastei, Zurich, Switzerland
Allianz Suisse, Wallisellen, Switzerland

SURFACES from page 80

Powder Coating
Perforations
Expanded Metal
Design Surfaces
Plasterboard Surfaces

TECHNICAL DATA from page 110

Wall Connections
Joint Design

EXPERTISE from page 116

Climatic Regulation
Statics
Fire Protection
Acoustics
Corrosion Protection
Sustainability
Certification/Regulations
BIM

ADDITIONAL EQUIPMENT from page 154

Hydraulic Components
Ventilation Components
Integrated Luminaires and System Luminaires
Acoustic Inlays



Torre Espacio, Madrid, Spain
Photo: © Mark Bentley Photography



**LONG-STANDING
PRODUCT EXPERIENCE**

LONG-STANDING PRODUCT EXPERIENCE

In 1970, we started producing our own ceiling and partition systems at our first workshop in Arnstorf. We now manufacture products for fit-out, building envelope and insulation in various locations in Europe and China. Arnstorf is the largest production site; nearly all the products in the Lindner range are manufactured here. The headquarters also houses numerous specialised departments that assist in production, such as procurement, logistics, quality assurance, research and development – including a test workshop – and last but not least, a training centre for all the industrial occupations.

OUR PRODUCTION SITES FOR CEILINGS

ARNSTORF – GERMANY

ceiling, floor and partition systems, luminaires, facades and clean rooms are produced here as well as high-quality carpentry for fitting out interiors of buildings and ships
64,250 m² production area
200,000 m² company site

TAICANG – CHINA

production of ceiling and partition systems
14,000 m² production area
30,000 m² company site



HEATED AND CHILLED CANOPY CEILINGS BEAUTIFUL SHAPES.

These open ceiling constructions are the ideal solution for high architectural requirements, combined with high heating and cooling capacities as well as excellent sound absorption. The free-floating Canopy Ceilings allow a view of the bare ceiling and offer versatile design and arrangement possibilities. You can combine thermally active and passive areas to suit your specific needs.

- + heating/cooling by means of radiation and convection creates a pleasant room climate
- + flexibility thanks to the combination of thermally active and passive areas
- + high heating/cooling capacity and sound absorption due to the open construction
- + design freedom due to individual arrangement of canopies
- + freely floating Canopy Ceilings allow a view of the bare ceiling



PLAFOTHERM® DS 312

HEATED AND CHILLED CANOPY CEILING WITHOUT FRAME

The frameless Metal Canopy Ceiling can freely be arranged in your rooms, thus offering individual design options. Thanks to the open construction, it can easily be installed and impresses with high heating/cooling capacities and sound absorption. This Canopy Ceiling combines pleasant room climate with impressive acoustics. The ceiling panels can be removed without the need for any tools. With this economic canopy, you can flexibly combine thermally active and passive areas. The exposed concrete between the Canopy Ceilings can be used for installations.

- + heating/cooling by means of radiation and convection creates a pleasant room climate
- + flexibility thanks to the combination of thermally active and passive areas
- + high heating/cooling capacity and sound absorption due to the open construction
- + design freedom thanks to an individual arrangement of canopies and an exposed concrete
- + slim, filigree look without circumferential frame
- + easy maintenance option due to ceiling panels that can be individually operated without tools
- + independent installation of luminaires and fixtures possible between Canopy Ceilings
- + quick and easy installation
- + cost-effective Canopy Ceiling as economic solution

TECHNICAL DATA

Construction

- | | |
|-------|---|
| 1 | metal ceiling panel |
| 7/8/9 | vernier suspension |
| 18 | self-tapping screw trapezoidal head |
| 23 | Z-hook-on profile 48 |
| 24 | connector for suspension channel 60 to Z-hook-on profile 48 |
| 26 | suspension channel 60 |
| 437 | heating/cooling coil |
| 479 | connecting/connection hose |

ADDITIONAL EQUIPMENT ↘ page 154

Hydraulic Components

Lindner offers a multitude of hydraulic components and accessories for the perfect connection of Plafotherm® Heated and Chilled Ceilings.

Ventilation Components

Pleasant supply air distribution possible by ventilation components on the rear side:

AirBox S ↘ from page 163

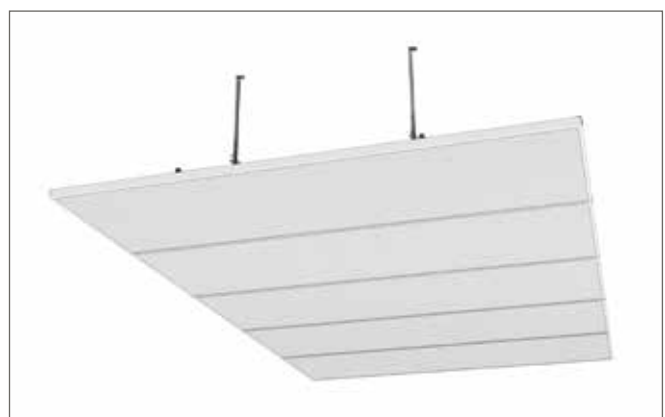
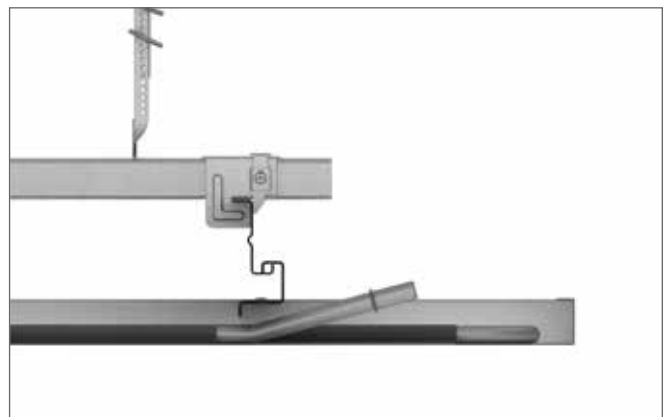
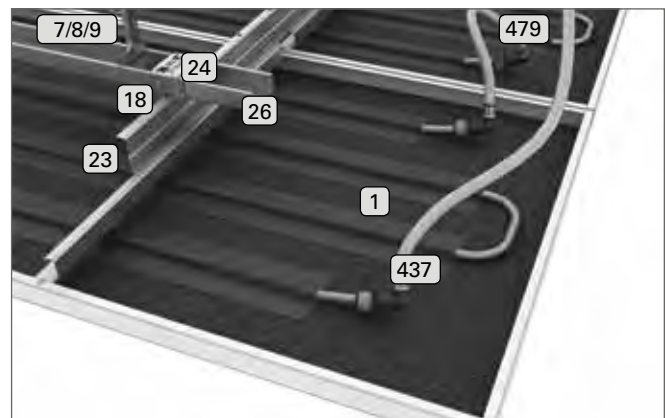
AirBox E ↘ from page 163



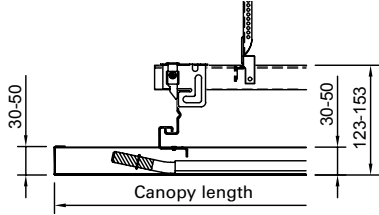






Luminaires

Perfectly integrated Lindner Lighting Solutions are available.

Acoustic Inlays

Equipped with acoustic inlays like mineral wool, this system contributes significantly to sound protection.



| <h1>PLAFOTHERM® DS 312</h1> | |  TECHNICAL DATA | |
|---|--|--|---|
| | | Ceiling Panel | Installation Detail |
| <p>Plafotherm® DS 312 Type 1 Hook-On canopy length: depending on requirements canopy width: 500 - 3,000 mm</p> |  | |  |
|  ACOUSTICS ↘ from page 139 | <p>Room Acoustics equivalent sound absorption area per canopy in acc. with EN ISO 354</p> | | |
|  FIRE PROTECTION ↘ from page 137 | <p>Building Material Class A2 - s2, d0 in acc. with EN 13501-1</p> | | |
|  CLIMATIC REGULATION ↘ from page 118 | <p>Heating and Cooling heat conducting profile with Cu-pipe: nominal cooling capacity (10 K): 139 W/m² in acc. with EN 14240, nominal heating capacity (15 K): 167 W/m² in acc. with EN 14037:2003</p> <p>heat conducting profile with V2A-pipe: nominal cooling capacity (10 K): 135 W/m² in acc. with EN 14240, nominal heating capacity (15 K): 163 W/m² in acc. with EN 14037:2003</p> <p>graphite panel with Cu-pipe: nominal cooling capacity (10 K): 162 W/m² in acc. with EN 14240, nominal heating capacity (15 K): 199 W/m² in acc. with EN 14037:2003</p> | | |
|  CORROSION PROTECTION ↘ from page 147 | <p>exposure class A (interior) in acc. with EN 13964, table 8 and 9</p> | | |
|  SUSTAINABILITY ↘ from page 148 | <p>self-declaration in acc. with ISO 14021, EPD in acc. with ISO 14025 and EN 15804</p> | | |
|  SURFACES ↘ from page 80 | <p>Powder Coatings COLOURline, MOODline, ARTline, GRAPHICline</p> <p>Perforations BASICline, REGULARline, SPREADline</p> | | |

PLAFOTHERM® DS 313

HEATED AND CHILLED CANOPY CEILING WITH FRAME

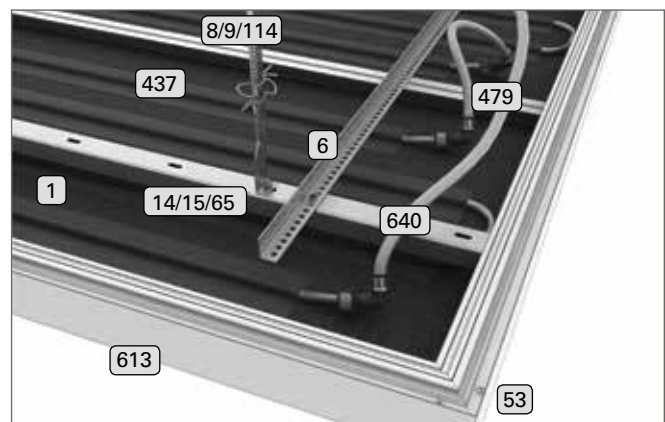
The Canopy Ceiling with circumferential frame offers variable arrangement options. Luminaires or other fixtures can be installed independently between the canopies. A pleasant room climate is created by means of radiation and convection. Moreover, perforated ceiling panels are acoustically effective. The Canopy Ceiling can be installed quickly and easily. Thanks to individually removable ceiling panels, the ceiling void is accessible for maintenance works. A combination of thermally active and passive areas is possible.

- + heating/cooling by means of radiation and convection creates a pleasant room climate
- + flexibility thanks to the combination of thermally active and passive areas
- + high heating/cooling capacity and sound absorption due to the open construction
- + design freedom thanks to an individual arrangement of canopies and an exposed concrete
- + circumferential frame as architectural element
- + easy maintenance option due to ceiling panels that can be individually operated
- + independent installation of luminaires and fixtures possible between Canopy Ceilings
- + quick and easy installation

🔧 TECHNICAL DATA

Construction

| | |
|----------|--|
| 1 | metal ceiling panel |
| 6 | L-profile 28 |
| 8/9/114 | vernier suspension |
| 14/15/65 | screw connection |
| 53 | self-tapping screw raised countersunk head |
| 437 | heating/cooling coil |
| 479 | connecting/connection hose |
| 613 | aluminium frame profile |
| 640 | C-profile 50 as cross runner |



★ ADDITIONAL EQUIPMENT ↘ page 154

Hydraulic Components

Lindner offers a multitude of hydraulic components and accessories for the perfect connection of Plafotherm® Heated and Chilled Ceilings.

Ventilation Components

Pleasant supply air distribution possible by ventilation components on the rear side:

AirBox S ↘ from page 163

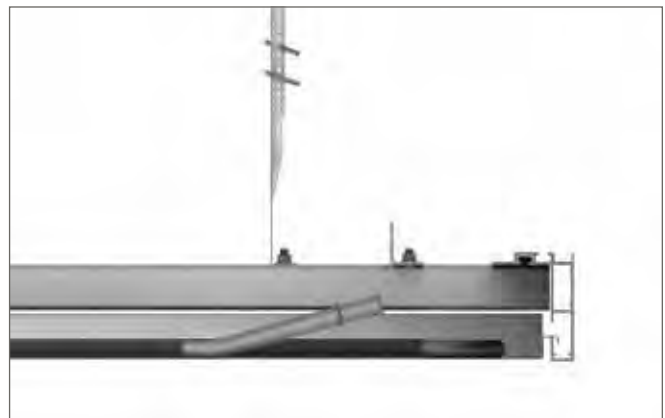
AirBox E ↘ from page 163



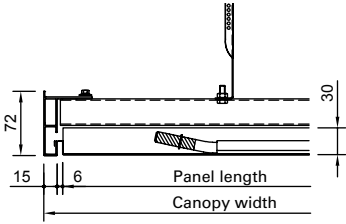

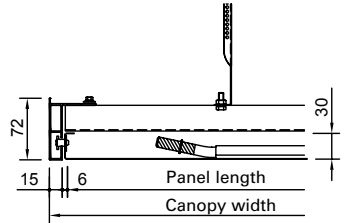






Luminaires

Perfectly integrated Lindner Lighting Solutions are available.

Acoustic Inlays

Equipped with acoustic inlays like mineral wool, this system contributes significantly to sound protection.



| PLAFOTHERM® DS 313 |  TECHNICAL DATA | |
|---|---|---|
| | Ceiling Panel | Installation Detail |
| Plafotherm® DS 313 Type 1 Hook-On canopy length: depending on requirements canopy width: 542 - 2,241 mm |  |  |
| Plafotherm® DS 313 Type 2 Hook-On/Swing-Down canopy length: depending on requirements canopy width: 542 - 2,241 mm |  |  |
|  ACOUSTICS ↘ from page 139 | Room Acoustics equivalent sound absorption area per canopy in acc. with EN ISO 354 | |
|  FIRE PROTECTION ↘ from page 137 | Building Material Class A2 - s2, d0 in acc. with EN 13501-1 | |
|  CLIMATIC REGULATION ↘ from page 118 | Heating and Cooling heat conducting profile with Cu-pipe: nominal cooling capacity (10 K): 139 W/m ² in acc. with EN 14240, nominal heating capacity (15 K): 167 W/m ² in acc. with EN 14037:2003 heat conducting profile with V2A-pipe: nominal cooling capacity (10 K): 135 W/m ² in acc. with EN 14240, nominal heating capacity (15 K): 163 W/m ² in acc. with EN 14037:2003 graphite panel with Cu-pipe: nominal cooling capacity (10 K): 162 W/m ² in acc. with EN 14240, nominal heating capacity (15 K): 199 W/m ² in acc. with EN 14037:2003 | |
|  CORROSION PROTECTION ↘ from page 147 | exposure class A (interior) in acc. with EN 13964, table 8 and 9 | |
|  SUSTAINABILITY ↘ from page 148 | self-declaration in acc. with ISO 14021, EPD in acc. with ISO 14025 and EN 15804 | |
|  SURFACES ↘ from page 80 | Powder Coatings COLOURline, ARTline, GRAPHICline Perforations BASICline, REGULARline, SPREADline | |



EXPERTISE YOUR PRODUCT IN GOOD HANDS.

The demands on your ceiling strongly depend on the application area. We offer reliable solutions and tested heated/chilled ceilings for different product requirements – you will find the perfect solution for your project for:


- + climatic regulation
- + fire protection
- + acoustics
- + sustainability
- + statics
- + corrosion protection

☀️❄️ CLIMATIC REGULATION

HEATING AND COOLING

Whether we feel comfortable in a room depends on many factors. Decisive for a pleasant room climate is the room temperature.

In everyday life, there are several influencing factors that contribute to heat generation and thus favour temperature increases.



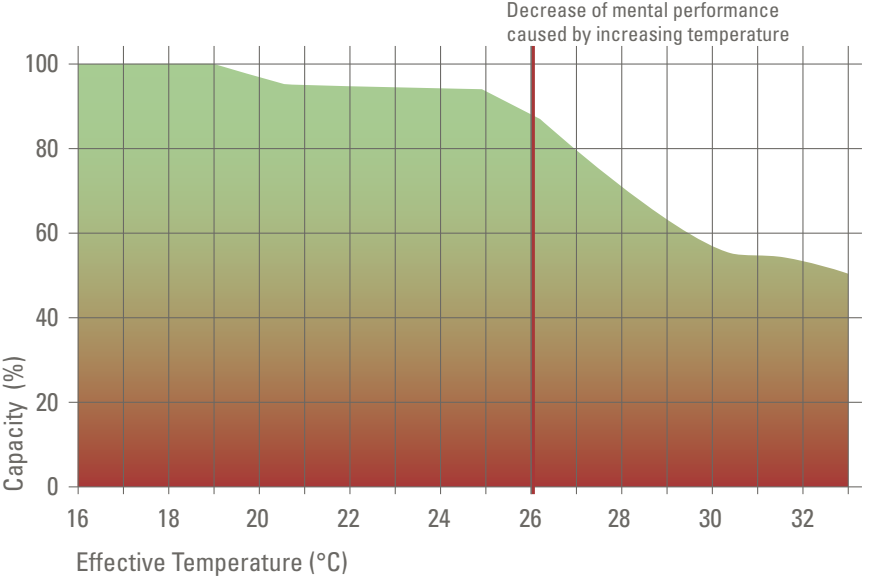
Internal Cooling Loads

- + Q_P people
- + Q_B lighting
- + Q_M equipment

External Cooling Loads

- + Q_S solar radiation
- + Q_R transmission of adjacent rooms
- + Q_W transmission of external surfaces
- + Q_{FL} joint ventilation

Rising room temperatures strongly influence the mental performance of people. Thus, measures are necessary to create a pleasant room climate.

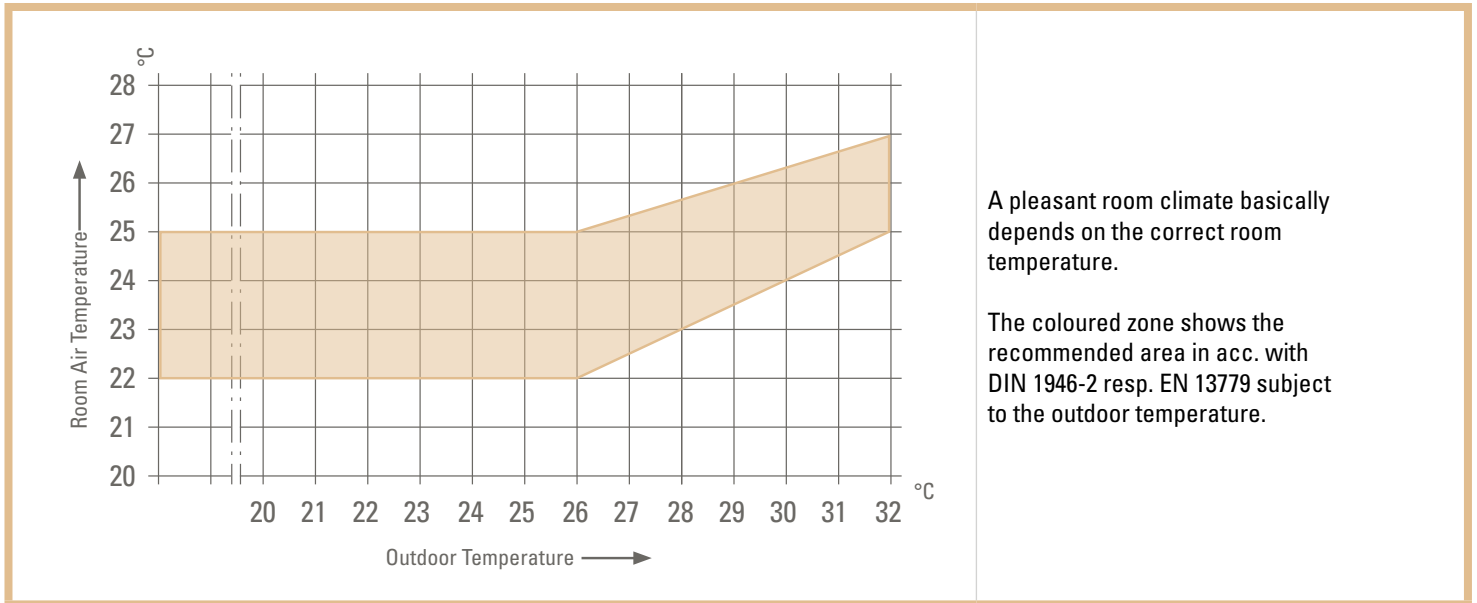


Decrease of mental performance caused by increasing temperature

Studies showed that the mental performance is about 95 % at a room temperature of 22 °C and only about 70 % at a room temperature of 28 °C.

To be able to guarantee the personal efficiency and comfort, a room temperature of maximum 26 °C should be pursued in summer months.

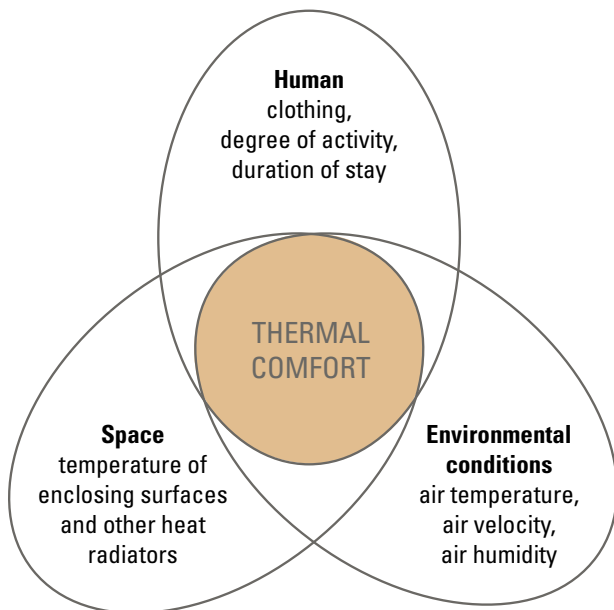
Quelle: Fr. Ing.-W. Maag



COMFORT IN A ROOM

Besides the room acoustics, the light conditions, the indoor air flow and other influencing factors, the thermal comfort plays an important role for the well-being in a room.

Thermal comfort can only be achieved by the interaction of human, space and environmental conditions.



FUNCTIONALITY OF PLAFOTHERM® HEATED AND CHILLED CEILINGS

Plafotherm® heated and chilled ceilings are water-bearing surface tempering systems whose principle is based on thermal radiation and convection. Depending on the ceiling system, the proportion of radiation or convection predominates. Heat in a room can be supplied or dissipated by means of tempered water.



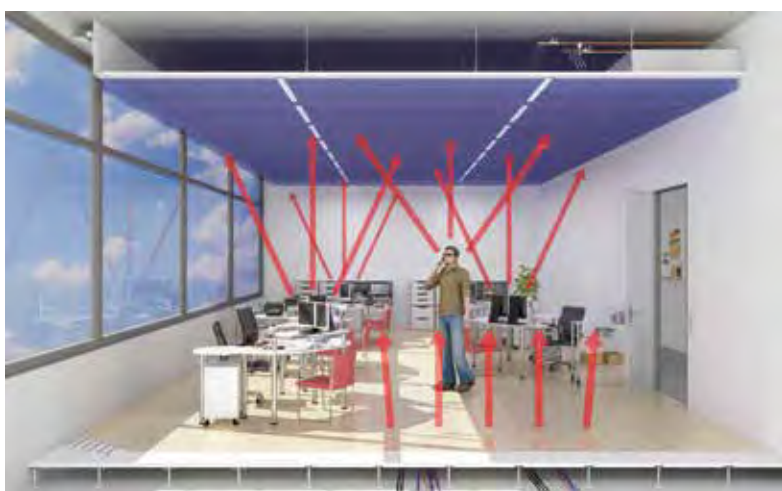
A natural exchange of radiant heat between surfaces and the subjacent room is generated as well as a gentle and completely natural convection.

Thus, heated/chilled ceilings directly temper objects in a room rather than the room air. In this way, a very pleasant atmosphere is created.



Cooling Mode

- heat is transferred about 70 % via radiation and about 30 % via convection in case of closed ceilings
- prerequisite: the temperature of the ceiling is lower than the room temperature
- the coil is streamed by approx. 15 - 17 °C cold water
- the temperature may not be chosen arbitrarily deep due to the risk of condensation



Radiation

All heat sources in a room remove their warmth to the chilled ceiling. The ceiling dissipates the cooling load by means of a cooling technology applied on the reverse side of the ceiling

- not bound to any carrier medium
- takes place at any time between differently tempered surfaces
- the higher the temperature difference, the higher the intensity of radiation exchange
- heat rays can be reflected and/or absorbed on a surface



Convection

Air warms up and rises due to the lower density, cools down on the surface of the chilled ceiling and falls down again.

- bonded to a carrier medium (water/air)
- when air is warmed up by means of a heat source, it rises and transports warmth (free convection)
- chilled ceilings dissipate the warmth by means of the cooling medium, e.g. water
- flow is imposed on the water by means of a pump (forced convection)



Heating Mode

- works almost 100 % by means of radiation
- prerequisite: the temperature of the ceiling is higher than the room temperature
- the coil is streamed by approx. 30 °C warm water



Radiation

All objects and surfaces in a room absorb the warmth of the heated ceiling.

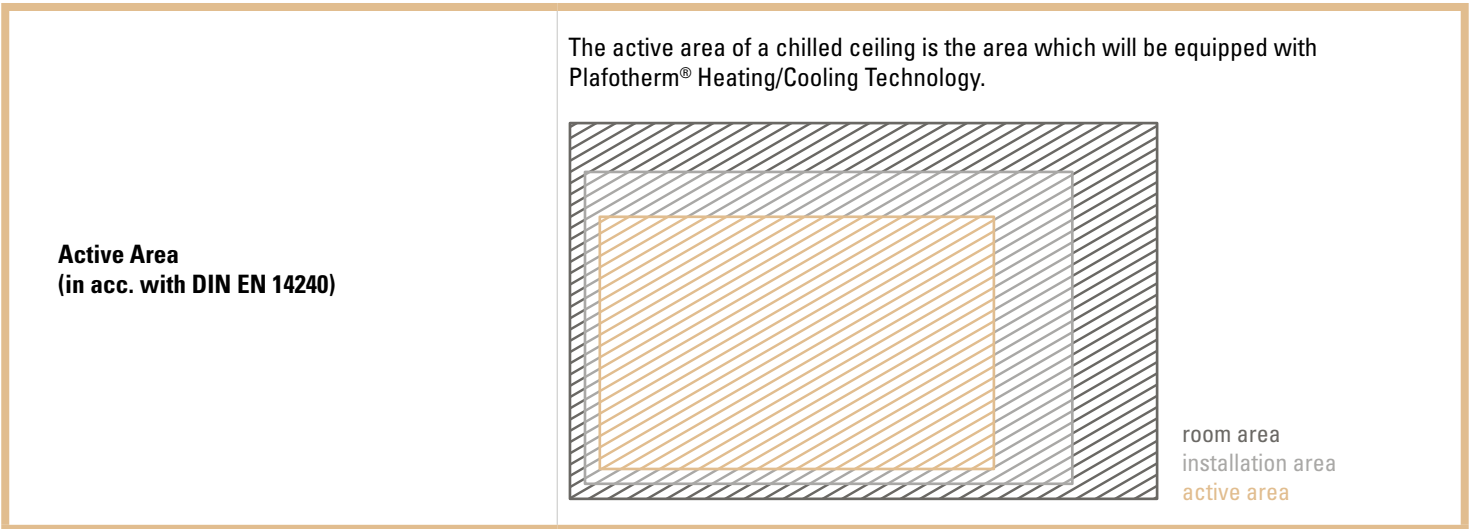
- not bound to any carrier medium
- takes place at any time between differently tempered surfaces
- the higher the temperature difference, the higher the intensity of radiation exchange
- heat rays can be reflected and/or absorbed on a surface

ADVANTAGES OVER CONVENTIONAL CLIMATE CONTROL

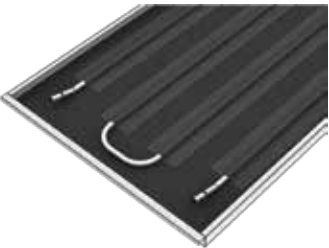

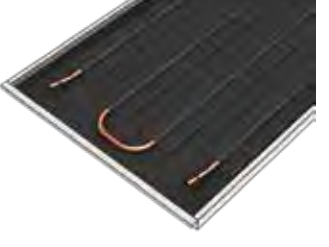
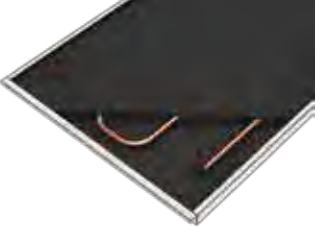
| | |
|-------------------|---|
| Comfort | <ul style="list-style-type: none"> + pleasant thanks to homogeneous temperature distribution over the whole room + appealing look thanks to concealed heating/cooling technology + no disturbing ambient noises due to silent cooling + allergy friendly and hygienic, as there is no circulation of dust + low air velocities and draught-free occupied zones |
| Efficiency | <ul style="list-style-type: none"> + energy-saving thanks to low system temperatures + space-saving installation thanks to smaller supply and drain lines + maintenance-free systems + low energy consumption of ventilation due to reduction to the required minimum air change |

RELEVANT PARAMETERS

| | | | | | | | | | | | | | |
|---------------------------------------|--|--------------------|-------|--------------------|--------------------|---------------------------|---------------------------|-------|------------------|-------|--------------------------|------|--|
| Supply Temperature [°C] | <p>The usual supply temperature in cooling mode is approx. 15 - 17 °C, considering a possible dew point temperature.</p> <p>In heating mode, a supply temperature of max. 38 °C should not be exceeded.</p> | | | | | | | | | | | | |
| Return Temperature [°C] | <p>In cooling mode, a temperature spread between supply and return temperature of 2 K to 3 K is recommended.</p> <p>In heating mode, a temperature spread of 3 K to 5 K is ideal.</p> | | | | | | | | | | | | |
| Average Water Temperature [°C] | <p>The average water temperature is the average temperature between supply and return temperature.</p> <p>Example:</p> <table style="margin-left: 20px;"> <tr> <td>supply temperature</td> <td>15 °C</td> </tr> <tr> <td>return temperature</td> <td>17 °C</td> </tr> <tr> <td>average water temperature</td> <td>16 °C</td> </tr> </table> | supply temperature | 15 °C | return temperature | 17 °C | average water temperature | 16 °C | | | | | | |
| supply temperature | 15 °C | | | | | | | | | | | | |
| return temperature | 17 °C | | | | | | | | | | | | |
| average water temperature | 16 °C | | | | | | | | | | | | |
| Room Temperature [°C] | <p>The room temperature in summer (cooling mode) should be dimensioned at approx. 24 - 26 °C and in winter (heating mode) at approx. 20 - 22 °C.</p> | | | | | | | | | | | | |
| Insufficient Temperature [K] | <p>The temperature difference between average system temperature and room temperature in cooling mode is called insufficient temperature – it is defined in Kelvin.</p> <p>Example:</p> <table style="margin-left: 20px;"> <tr> <td>supply temperature</td> <td>15 °C</td> <td rowspan="4" style="vertical-align: middle;"> </td> </tr> <tr> <td>return temperature</td> <td>17 °C</td> </tr> <tr> <td>average water temperature</td> <td>16 °C</td> </tr> <tr> <td>room temperature</td> <td>26 °C</td> </tr> <tr> <td>insufficient temperature</td> <td>10 K</td> <td></td> </tr> </table> | supply temperature | 15 °C | | return temperature | 17 °C | average water temperature | 16 °C | room temperature | 26 °C | insufficient temperature | 10 K | |
| supply temperature | 15 °C | | | | | | | | | | | | |
| return temperature | 17 °C | | | | | | | | | | | | |
| average water temperature | 16 °C | | | | | | | | | | | | |
| room temperature | 26 °C | | | | | | | | | | | | |
| insufficient temperature | 10 K | | | | | | | | | | | | |
| Excess Temperature [K] | <p>The temperature difference between average system temperature and room temperature in heating mode is called excess temperature – it is defined in Kelvin.</p> <p>Example:</p> <table style="margin-left: 20px;"> <tr> <td>supply temperature</td> <td>37 °C</td> <td rowspan="4" style="vertical-align: middle;"> </td> </tr> <tr> <td>return temperature</td> <td>33 °C</td> </tr> <tr> <td>average water temperature</td> <td>35 °C</td> </tr> <tr> <td>room temperature</td> <td>20 °C</td> </tr> <tr> <td>excess temperature</td> <td>15 K</td> <td></td> </tr> </table> | supply temperature | 37 °C | | return temperature | 33 °C | average water temperature | 35 °C | room temperature | 20 °C | excess temperature | 15 K | |
| supply temperature | 37 °C | | | | | | | | | | | | |
| return temperature | 33 °C | | | | | | | | | | | | |
| average water temperature | 35 °C | | | | | | | | | | | | |
| room temperature | 20 °C | | | | | | | | | | | | |
| excess temperature | 15 K | | | | | | | | | | | | |
| Temperature Spread ΔT [K] | <p>The difference between supply and return temperature is called temperature spread.</p> <p>Example:</p> <table style="margin-left: 20px;"> <tr> <td>supply temperature</td> <td>15 °C</td> </tr> <tr> <td>return temperature</td> <td>17 °C</td> </tr> <tr> <td>temperature spread ΔT</td> <td>2 K</td> </tr> </table> | supply temperature | 15 °C | return temperature | 17 °C | temperature spread ΔT | 2 K | | | | | | |
| supply temperature | 15 °C | | | | | | | | | | | | |
| return temperature | 17 °C | | | | | | | | | | | | |
| temperature spread ΔT | 2 K | | | | | | | | | | | | |



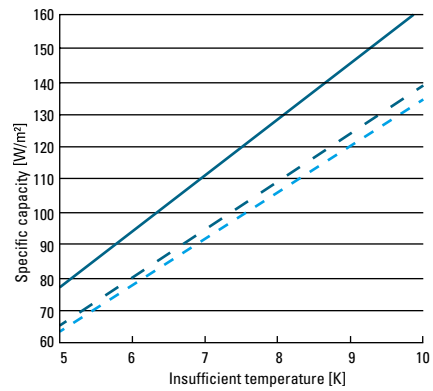
PLAFOTHERM® HEATING/COOLING TECHNOLOGY

| | |
|--|---|
| <p>Plafotherm® V2A</p>  | <p>pipe fret: stainless steel pipe 12 mm heat conducting technology: heat conducting profile width of heat conducting profile: 80 or 120 mm execution: plain centre distance: from 90 mm on retaining bulge: with</p> |
| <p>Plafotherm® Cu</p>  | <p>pipe fret: copper pipe 12 mm heat conducting technology: heat conducting profile width of heat conducting profile: 80 or 120 mm execution: plain centre distance: from 90 mm on support sleeve: with retaining bulge: with or without</p> |
| <p>Plafotherm® Cu Acoustic</p>  | <p>pipe fret: copper pipe 12 mm heat conducting technology: heat conducting profile width of heat conducting profile: 80 or 120 mm execution: acoustically transparent centre distance: from 90 mm on support sleeve: with retaining bulge: with or without</p> |
| <p>Plafotherm® Activation Board</p>  | <p>pipe fret: copper pipe 12 mm heat conducting technology: graphite panel execution: plain support sleeve: with retaining bulge: with or without</p> |

HEATED AND CHILLED CANOPY CEILINGS

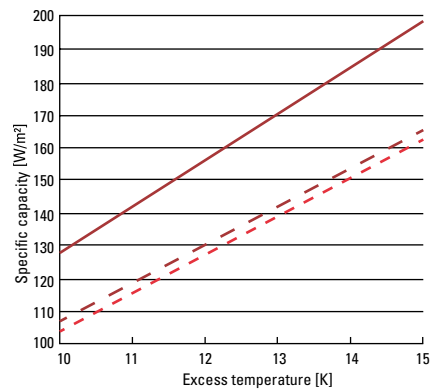
**Heating/Cooling Technology Nominal Cooling Capacity
in acc. with EN 14240 (10K)**

| | | |
|------------------------------|----------------------|-----|
| Plafotherm® V2A | 135 W/m ² | --- |
| Plafotherm® Cu | 139 W/m ² | --- |
| Plafotherm® Activation Board | 162 W/m ² | — |



**Heating/Cooling Technology Nominal Heating Capacity
in acc. with EN 14037:2003 (15K)**

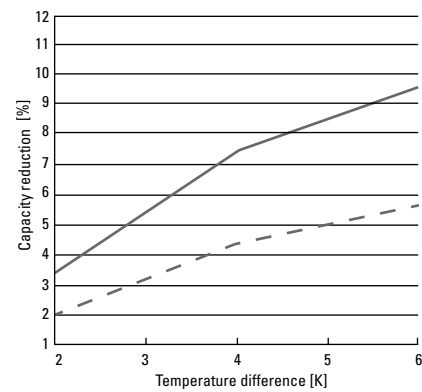
| | | |
|------------------------------|----------------------|-----|
| Plafotherm® V2A | 163 W/m ² | --- |
| Plafotherm® Cu | 167 W/m ² | --- |
| Plafotherm® Activation Board | 199 W/m ² | — |



HEATED AND CHILLED CANOPY CEILINGS: Plafotherm® DS Tabs (for concrete core activation)

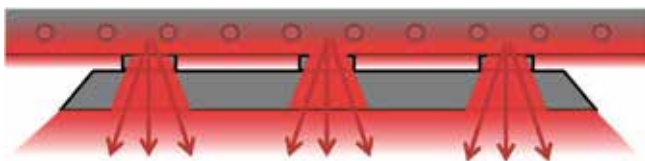
Room Occupancy

| | |
|--|-----|
| capacity reduction at 50 % room occupancy | — |
| capacity reduction at 30 % room occupancy | --- |

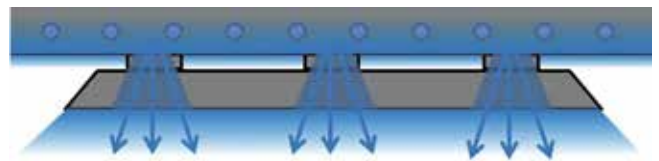


Modes of Operation

heating



cooling






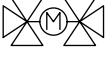



HYDRAULIC CONNECTION

Especially in modern office buildings, requirements on heating and cooling at the same time in different rooms respectively zones become increasingly necessary. This can be due to a number of reasons: external heat loads are increasing because of large glass facades or different high internal heat loads and people's different feeling of comfort.

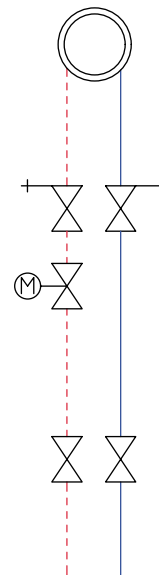
In order to meet the high requirement for simultaneous heating and cooling in different rooms, a 4-pipe-system should be realised. With a 2-pipe-system it is only possible to heat or to cool. The switchover is done centrally. The performance border can be defined project-related.

LEGEND

| | |
|--|--|
|  | supply (VL) |
|  | return (RL) |
|  | shut-off valve |
|  | shut-off valve with drain |
|  | control valve with dynamic volume flow control |
|  | 6-way-valve with dynamic volume flow control |
|  | consumer |

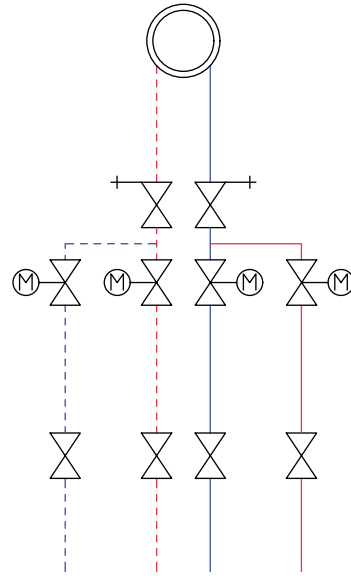
2-PIPE-SYSTEM

- + either cooling or heating mode possible (central switchover)
- + restricted comfort in transition periods (spring/autumn)
- + easy installation
- + favourable regulation technology



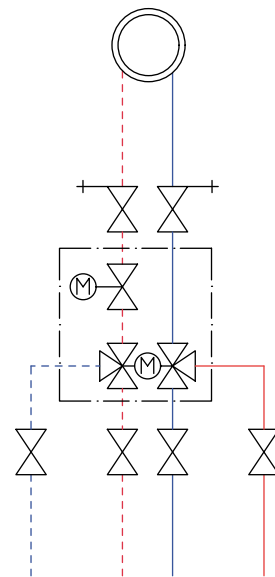
4-PIPE-SYSTEM

- + simultaneous heating and cooling in different zones possible
- + high comfort in transition periods (spring/autumn)
- + increased installation effort
- + versatile regulation technology



4-PIPE-SYSTEM WITH 6-WAY-VALVES

- + simultaneous heating and cooling in different zones possible
- + high comfort in transition periods (spring/autumn)
- + increased installation effort
- + versatile regulation technology
- + compact construction



ACCREDITED TEST LABORATORY IN ACC. WITH ISO/IEC 17025 AS A BRANCH OF HLK STUTTART

Measurements of heating/cooling capacities in acc. with DIN EN 14240 and following DIN EN 14037 are carried out in the certified test laboratory.

Thanks to an exactly monitored measuring procedure, authentic project-related values are determined.

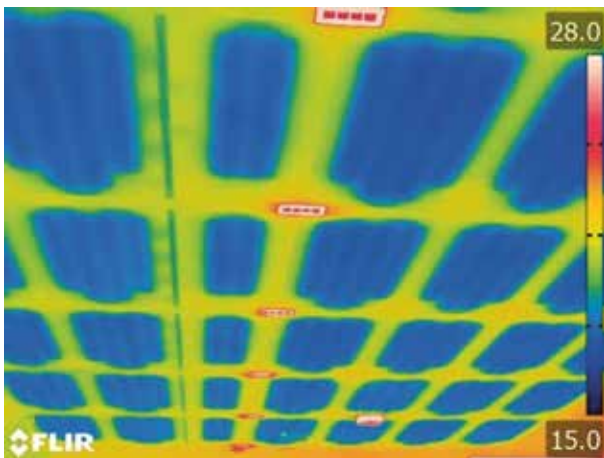
DAP-PL-3139.02

- test chamber for measurement of heating/cooling capacity
- test under laboratory conditions
- observation of measuring procedure
- accredited
- branch of HLK Stuttgart



SERVICE

In addition to our product, we provide relevant services from one source.



Thermography

We carry out thermographies to be able to test the performance of heated/chilled ceilings. In this procedure, Lindner visualises amongst others the functionality and piping of existing heating and cooling systems.

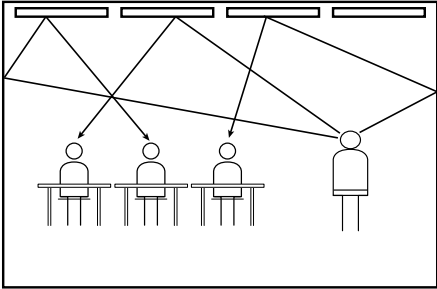
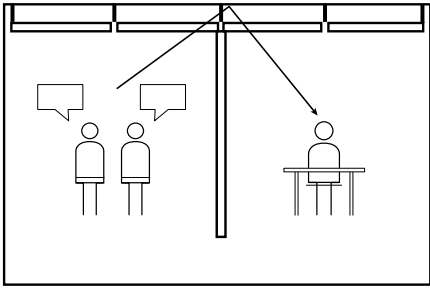
- execution by certified employees in acc. with DIN EN ISO 9712
- high-grade measurement equipment
- functional test of heating and cooling systems
- also applicable in development and quality assurance

))) ACOUSTICS

Lindner has more than 50 years of experience in enhancing acoustics for interior fit-outs. Today, acoustics and sound protection are recognised worldwide as key quality factors for new constructions and building renovations.

Project requirements are evaluated on a case-by-case basis, depending on the purpose of the building, its physical shape, and the type of construction required.

Being equipped with perforations and acoustic inlays, Lindner Ceiling Systems are the perfect solution for acoustic improvement. A multitude of tested acoustic proofs are available – both for room and building acoustics. We also offer project-related solutions, individually adapted to suit your project requirements.

| | | |
|----------------------------------|--|--|
| <p>Room Acoustics</p> |  | <ul style="list-style-type: none"> + speech intelligibility in classrooms, lecture halls and theatres + musical experience in concert halls + reduction of noise level in production facilities and workshops + sound-absorbing behaviour of installed products |
| <p>Building Acoustics</p> |  | <ul style="list-style-type: none"> + airborne and structure-borne sound transmission of/through components + restriction of external noises + insulation of technical building equipment + sound insulation properties of separating components + longitudinal sound reduction of flanking components |

ROOM ACOUSTICS

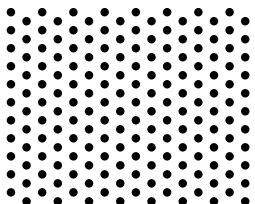
The room size, the suitable arrangement of sound-absorbing measures and the future use of the room are important characteristics to fulfil the acoustic requirements of a room. For example in classrooms, a good speech intelligibility is necessary whereas in concert halls, the musical experience is the main focus.

The most important tool in the acoustic design of rooms is the sound absorption. This means the reduction of sound on room boundary surfaces. Different room acoustic parameters play a decisive role:

| | | | | | | | | | | | | | | | | | | | |
|--|--|------------------|-----------------|------------------|-----------------|----------------|------------------|---|-------------|----------------|---|-------------|-----------|---|--------------|---------------|--------------|------------|------------|
| <p>Sound Absorption Coefficient α</p> | <p>The sound absorption coefficient α indicates the absorbed amount of incident sound: $\alpha = 0$ There is no absorption, the complete incident sound is reflected: $\alpha = 1$ The complete incident sound is absorbed, there is no reflection.</p> | | | | | | | | | | | | | | | | | | |
| <p>Rated Sound Absorption Coefficient α_w</p> | <p>The rated sound absorption coefficient α_w in accordance with EN ISO 11654 is determined for five octaves with medium frequencies from 250 to 4,000 Hz. A reference curve is shifted in steps of 0.05 – the maximum negative sum of deviations must not exceed 0.10. The value at a frequency of 500 Hz is the value of α_w.</p> | | | | | | | | | | | | | | | | | | |
| <p>Practical Sound Absorption Coefficient α_p</p> | <p>The practical sound absorption coefficient α_p is indicated with six values at 125 Hz, 250 Hz, 500 Hz, 1,000 Hz, 2,000 Hz and 4,000 Hz. Each value is determined by three one-third octave values. These are added, averaged and then rounded up or down in steps of 0.05. Example: 200 Hz: 0.65 250 Hz: 0.72 315 Hz: 0.86 The practical sound absorption coefficient α_p at 250 Hz is 0.75.</p> | | | | | | | | | | | | | | | | | | |
| <p>Sound Absorption Classes</p> | <p>In acc. with EN ISO 11654, the rated sound absorption coefficients α_w are divided into different sound absorption classes.</p> <table border="0"> <tr> <td>A</td> <td>≥ 0.9</td> <td>highly absorbent</td> </tr> <tr> <td>B</td> <td>0.8 to 0.85</td> <td>highly absorbent</td> </tr> <tr> <td>C</td> <td>0.6 to 0.75</td> <td>high absorbent</td> </tr> <tr> <td>D</td> <td>0.3 to 0.55</td> <td>absorbent</td> </tr> <tr> <td>E</td> <td>0.15 to 0.25</td> <td>low absorbent</td> </tr> <tr> <td>unclassified</td> <td>≤ 0.1</td> <td>reflective</td> </tr> </table> | A | ≥ 0.9 | highly absorbent | B | 0.8 to 0.85 | highly absorbent | C | 0.6 to 0.75 | high absorbent | D | 0.3 to 0.55 | absorbent | E | 0.15 to 0.25 | low absorbent | unclassified | ≤ 0.1 | reflective |
| A | ≥ 0.9 | highly absorbent | | | | | | | | | | | | | | | | | |
| B | 0.8 to 0.85 | highly absorbent | | | | | | | | | | | | | | | | | |
| C | 0.6 to 0.75 | high absorbent | | | | | | | | | | | | | | | | | |
| D | 0.3 to 0.55 | absorbent | | | | | | | | | | | | | | | | | |
| E | 0.15 to 0.25 | low absorbent | | | | | | | | | | | | | | | | | |
| unclassified | ≤ 0.1 | reflective | | | | | | | | | | | | | | | | | |
| <p>Reverberation Time</p> | <p>Reverberation time is the time it takes for a sound pressure to drop by 60 dB in a room. It is specified in seconds. The ideal reverberation time largely depends on the use of a room.</p> <table border="0"> <tr> <td>recording studio</td> <td>< 0.3 s</td> </tr> <tr> <td>classroom</td> <td>0.6 to 0.8 s</td> </tr> <tr> <td>concert hall</td> <td>1.5 to 3 s</td> </tr> </table> | recording studio | < 0.3 s | classroom | 0.6 to 0.8 s | concert hall | 1.5 to 3 s | | | | | | | | | | | | |
| recording studio | < 0.3 s | | | | | | | | | | | | | | | | | | |
| classroom | 0.6 to 0.8 s | | | | | | | | | | | | | | | | | | |
| concert hall | 1.5 to 3 s | | | | | | | | | | | | | | | | | | |
| <p>Frequency</p> | <p>Frequency is the number of oscillations per second – the unit is Hertz [Hz]. The frequency characterises the tone pitch.</p> <table border="0"> <tr> <td>hearing/music</td> <td>20 to 20,000 Hz</td> </tr> <tr> <td>speech/singing</td> <td>200 to 2,000 Hz</td> </tr> <tr> <td>room acoustics</td> <td>100 to 5,000 Hz</td> </tr> </table> | hearing/music | 20 to 20,000 Hz | speech/singing | 200 to 2,000 Hz | room acoustics | 100 to 5,000 Hz | | | | | | | | | | | | |
| hearing/music | 20 to 20,000 Hz | | | | | | | | | | | | | | | | | | |
| speech/singing | 200 to 2,000 Hz | | | | | | | | | | | | | | | | | | |
| room acoustics | 100 to 5,000 Hz | | | | | | | | | | | | | | | | | | |

HEATED AND CHILLED BAFFLE CEILINGS

Rv 1,8 - 20

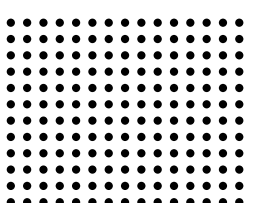


| Width | Height | Centre Distance | Execution | α_w | NRC |
|-------|--------|-----------------|--|------------|------|
| 35 mm | 200 mm | 100 mm | acoustic tissue, 20 mm Insula Basic, heat conducting profile | 0.60 (MH) | 0.65 |
| 35 mm | 200 mm | 250 mm | acoustic tissue, 20 mm Insula Basic, heat conducting profile | 0.40 (MH) | 0.45 |

| Frequency (Hz) | α_w (Red) | α_w (Black) |
|----------------|------------------|--------------------|
| 125 | 0.25 | 0.15 |
| 250 | 0.45 | 0.30 |
| 500 | 0.50 | 0.30 |
| 1000 | 0.85 | 0.65 |
| 2000 | 0.80 | 0.65 |
| 4000 | 0.75 | 0.60 |

HEATED AND CHILLED CANOPY CEILINGS: Plafotherm® DS Tabs

Rg 1,8 - 19



| Total Constructional Height | Execution | α_w | NRC |
|-----------------------------|--|------------|------|
| 73 mm | acoustic tissue, 30 mm Insula Basic, heat conducting profile | 0.90 (L) | 1.05 |
| 73 mm | acoustic tissue, 40 mm Insula Basic, heat conducting profile | 0.95 (L) | 1.05 |

| Frequency (Hz) | α_w (Red) | α_w (Black) |
|----------------|------------------|--------------------|
| 125 | 0.25 | 0.30 |
| 250 | 0.80 | 0.90 |
| 500 | 1.00 | 1.00 |
| 1000 | 1.00 | 1.00 |
| 2000 | 0.95 | 0.90 |
| 4000 | 0.70 | 0.75 |

Equivalent Sound Absorption Area

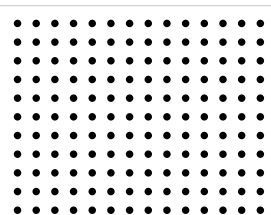
The equivalent sound absorption area is defined as the product of the sound absorption coefficient and the area.

A ceiling area of 10 m² with a sound absorption coefficient of 0.50 has an equivalent sound absorption area of 5 m². Thus, a ceiling area of 20 m² and a sound absorption coefficient of 0.25 have the same effect in a room.

Canopy Ceilings are tested as single elements that are unsystematically positioned in the reverberation room. Thus, the sound incidence on the reverse side is additionally absorbed. The sound absorption capacity of canopy ceilings is defined as equivalent sound absorption area per canopy [m²].

HEATED AND CHILLED HYBRID CEILINGS: Plafotherm® DS TAS

Rg 1,6 - 13



| Total Constructional Height | Execution | Dimension Canopy Ceiling |
|-----------------------------|---|--------------------------------------|
| 86 mm | acoustic tissue, heat conducting profile | 4,000 x 900 mm = 3.60 m ² |
| 86 mm | acoustic tissue, 30 mm Insula A2, heat conducting profile | 4,000 x 900 mm = 3.60 m ² |

| Frequency (Hz) | Red | Black |
|----------------|-----|-------|
| 125 | 0.7 | 0.9 |
| 250 | 2.1 | 2.7 |
| 500 | 3.1 | 3.7 |
| 1000 | 3.4 | 3.8 |
| 2000 | 2.3 | 2.7 |
| 4000 | 1.8 | 2.0 |

HYDRAULIC COMPONENTS




For perfect heating and cooling connections, Lindner provides a great number of hydraulic components and accessory parts. The hoses with stainless steel hose netting are oxygen impermeable in acc. with DIN 4726 and are used as connection hoses. These hoses are perfectly suited to accept a large number of fittings. The quick plug connector MultiQuickConnect does without retaining claws which could unnecessarily damage the pipe frets. Thus, an easy and user-friendly installation and removal is ensured. Visible and tactile green signal discs and a clicking sound prove that the connector is installed correctly and guarantee positive connection and a secure hold. Different combinations of distributors with up to seven connections complete the system.

- + tested system
- + one-stop solutions
- + ideal for Plafotherm® Heated/Chilled Ceilings
- + maintained independently from other building trades

CONNECTING/CONNECTION HOSE



| DESIGNATION | TECHNICAL DATA | DETAIL |
|--|---|---|
| Connecting/Connection Hose type 2.0 | braid: stainless steel (silver) inner tube: plastic corrugated pipe rated width: DN 13 hose length: 0.5 - 10 m operating temperature: 10 °C - 70 °C operating pressure: max. 20 bar oxygen diffusion tight acc. to DIN 4726 |  |
| Connecting/Connection Hose type 2.1 | braid: polyester (black) inner tube: plastic corrugated pipe rated width: DN 13 hose length: 0.5 - 10 m operating temperature: 10 °C - 70 °C operating pressure: max. 20 bar oxygen diffusion tight acc. to DIN 4726 |  |
| Hose Connection MQC type M3G | plug connector: MultiQuickConnect version: straight dimension: 12 mm material: plastic |  |
| Hose Connection MQC type M3W | plug connector: MultiQuickConnect version: 90° angled dimension: 12 mm material: plastic |  |

MQC – THE SECURE CONNECTION

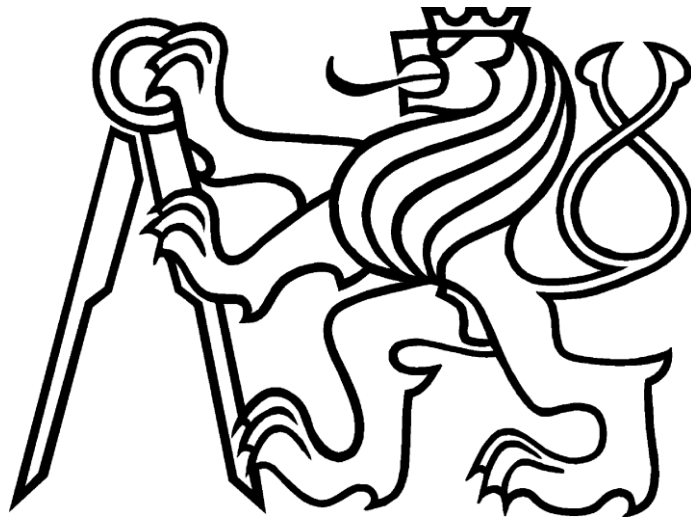
| | |
|--|--|
| Audible audible clicking sound guarantees a correct installation |  |
| Visible green visible signal discs provide optical feedback |  |
| Tactile secure installation even in badly visible ceiling voids thanks to tactile signal discs |  |

| FITTINGS | | |
|---|--|---|
| DESIGNATION |  TECHNICAL DATA | DETAIL |
| System Distributor | dimension: 1/2" external/internal thread x 3 * MQC 12 mm material: brass |  |
| System Distributor with Ball Valve | dimension: 3/4" external/internal thread x 3 * MQC 12 mm material: brass every outlet can be closed separately |  |
| Y-System Distributor | dimension: 1/2" external thread x 2 * MQC 12 mm material: brass |  |
| Y-System Distributor | dimension: 18 mm x 2 * MQC 12 mm material: brass |  |
| Screw-in Pipe End | dimension: 1/2" external thread x 1 * MQC 12 mm material: brass |  |
| Double Nipple | dimension: 2 * MQC 12 mm material: brass (alternative copper or stainless steel) |  |
| Transition Fitting | dimension: 12 mm x 1 * MQC 12 mm material: brass |  |
| Transition Fitting | dimension: 15 mm x 1 * MQC 12 mm material: brass |  |
| Transition Fitting | dimension: 12 mm x 1 * MQC 12 mm material: copper |  |
| Threaded Plug Self-Sealing | dimension: 1/2" external thread material: brass, nickel-plated |  |
| Closing Cap | dimension: 12 mm material: brass, nickel-plated |  |

APPLICATION OF FITTINGS

| DESIGNATION |  TECHNICAL DATA | DETAIL |
|----------------------------|--|--|
| Alternative 3-times | system distributor + threaded plug |  |
| Alternative 4-times | system distributor + screw-in pipe end |  |
| Alternative 5-times | system distributor + Y-system distributor |  |
| Alternative 6-times | 2 x system distributor + threaded plug |  |
| Alternative 7-times | 2 x system distributor + screw-in pipe end |  |

ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE
FAKULTA STAVEBNÍ
KATEDRA TECHNICKÝCH ZAŘÍZENÍ BUDOV



VÝKRESOVÁ DOKUMENTACE
VYTÁPĚNÍ/CHLAZENÍ









Vypracoval: Bc. Daniel Kocour

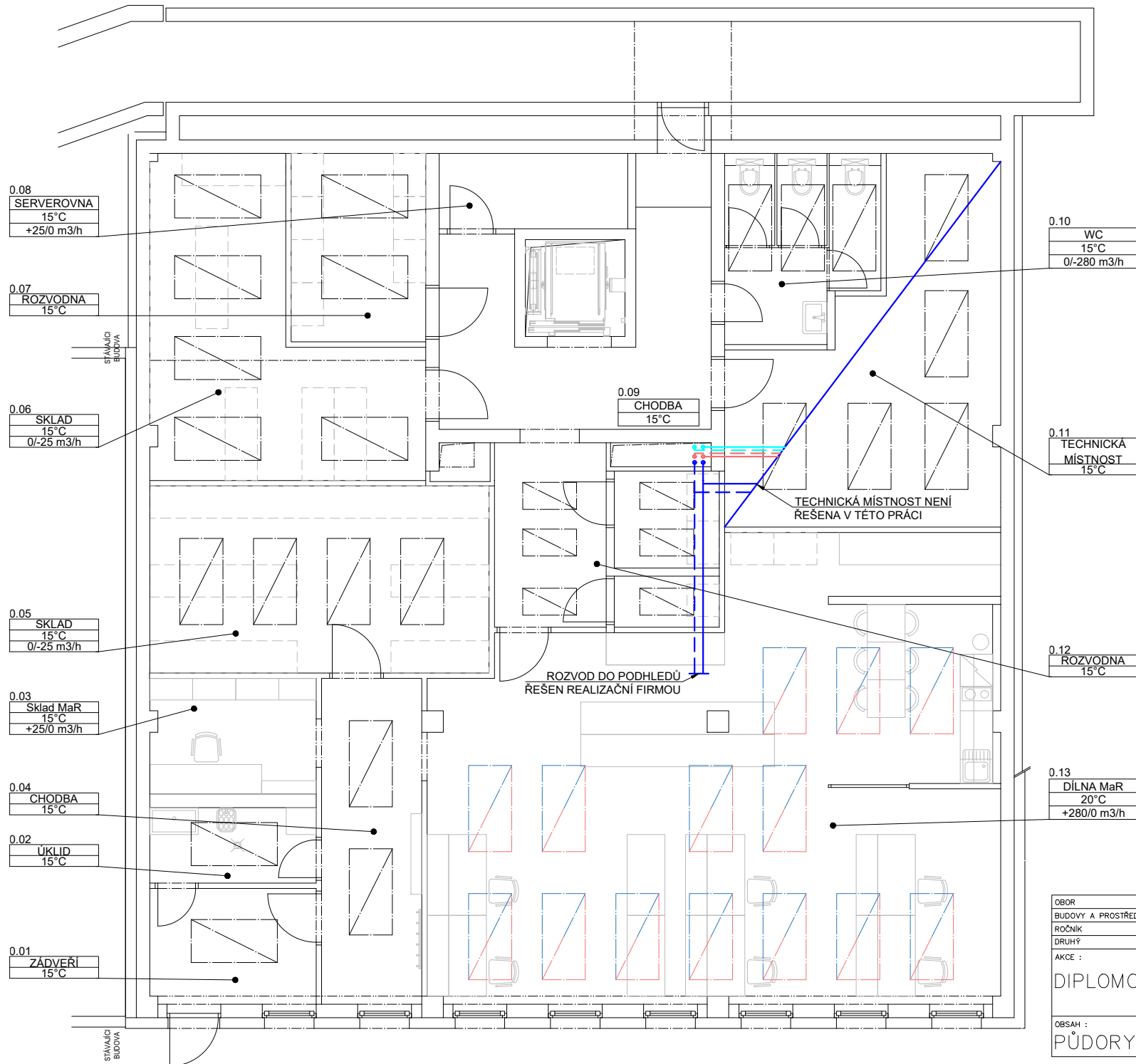
Vedoucí DP: Ing. Arch. Vojtěch Mazanec Ph. D


2023/2024

PŮDORYS 1.PP:

LEGENDA:









-  Vytápění/chlazené podhledy
-  Dekorativní podhledy
-  Přívodní potrubí média pro podhledy
-  Odvodní potrubí média pro podhledy
-  Přívodní potrubí vody 80°C
-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C

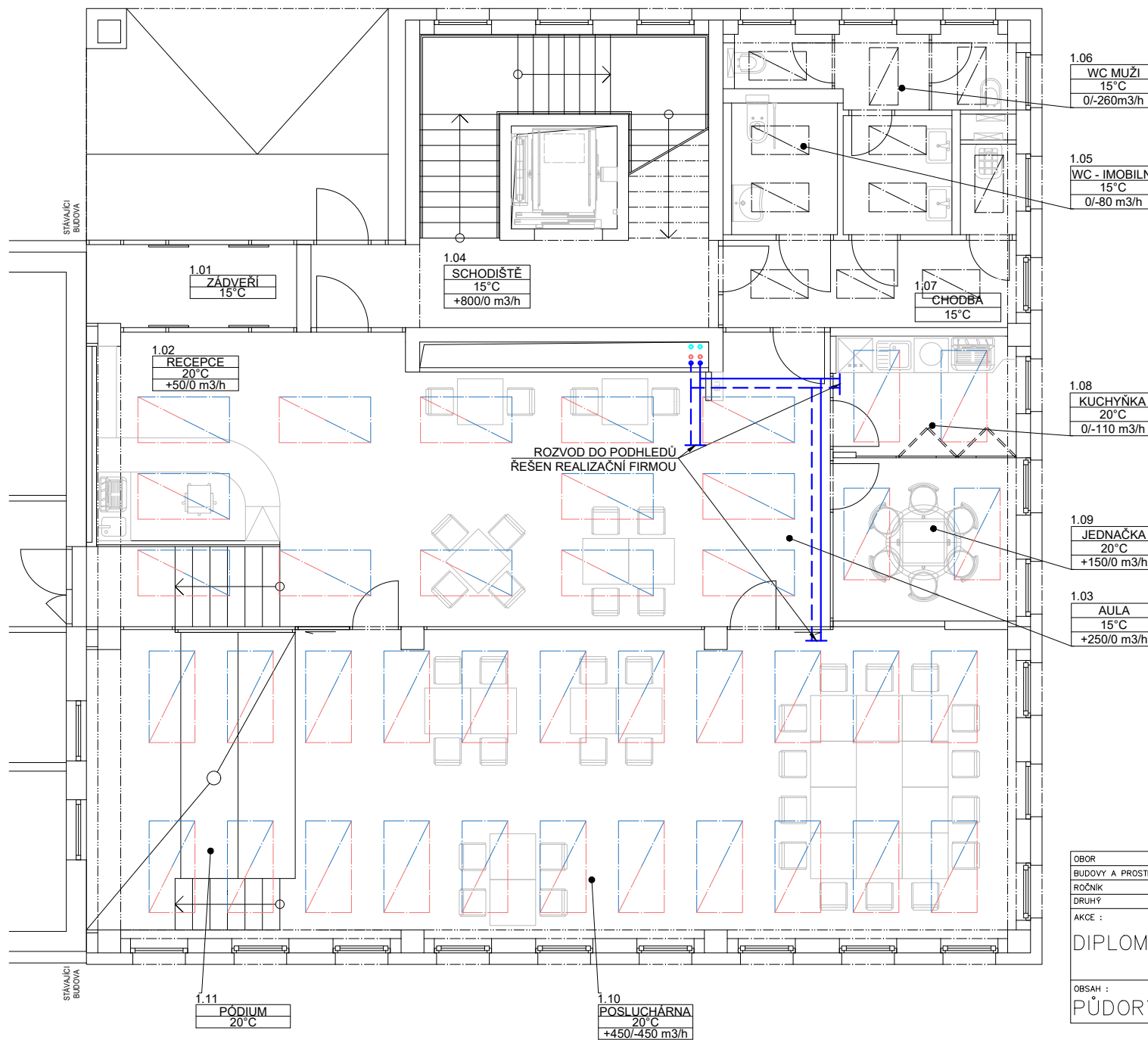


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|----------------------------|--|-------------------------------------|---|
| OBOR BUDOVY A PROSTŘEDÍ | KATEDRA K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV | JMÉNO STUDENTA BC. DANIEL KOCOUR |  |
| ROČNÍK DRUHÝ | VYUČUJÍCÍ ING. ARCH. VOJTĚCH MAZANEC, PH.D. | | |
| AKCE : | | | |
| DIPLOMOVÁ PRÁCE – AB PLANÁ | | | FORMÁT A3 |
| OBSAH : | | | MĚŘITKO 1:100 |
| PŮDORYS 1.PP | | | DATUM 8.1.2024 |
| | | | Č. VÝKR. 1 |

PŮDORYS 1.NP:

LEGENDA:

-  Vytápěné/chlazené podhledy
-  Dekorativní podhledy
-  Přívodní potrubí média pro podhledy
-  Odvodní potrubí média pro podhledy
-  Přívodní potrubí vody 80°C
-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C



1.06
WC MUŽI
15°C
0/-260m³/h

1.05
WC - IMOBILNÍ
15°C
0/-80 m³/h

1.01
ZADVĚŘÍ
15°C

1.04
SCHODIŠTĚ
15°C
+800/0 m³/h

1.07
CHODBA
15°C

1.02
RECEPCE
20°C
+50/0 m³/h

1.08
KUCHYŇKA
20°C
0/-110 m³/h

1.09
JEDNAČKA
20°C
+150/0 m³/h

1.03
AULA
15°C
+250/0 m³/h

1.11
PÓDIUM
20°C

1.10
POSLUCHÁRNA
20°C
+450/-450 m³/h









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|----------------------------|-----------------------------------|-------------------|
| OBOR | KATEDRA | JMÉNO STUDENTA |
| BUDOVY A PROSTŘEDÍ | K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV | BC. DANIEL KOCOUR |
| ROČNÍK | VYUČUJÍCÍ | |
| DRUHÝ | ING. ARCH. VOJTĚCH MAZANEC, PH.D. | |
| AKCE : | | |
| DIPLOMOVÁ PRÁCE – AB PLANÁ | | |
| OBSAH : | | |
| PŮDORYS 1.NP | | |

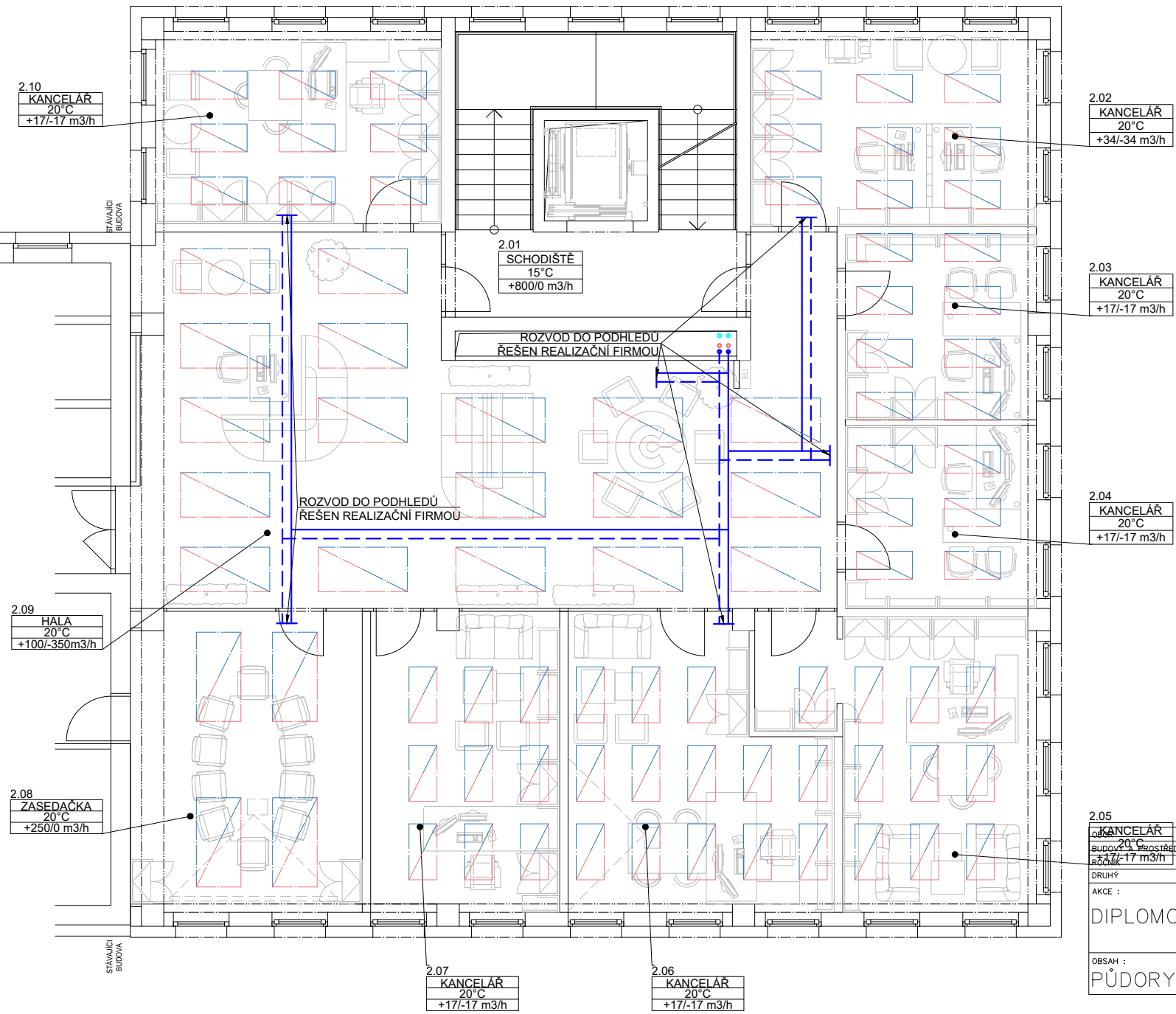



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| FORMÁT | A3 |
| MĚŘÍTKO | 1:100 |
| DATUM | 8.1.2024 |
| Č. VÝKR. | 2 |

PŮDORYS 2.NP:

LEGENDA:









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-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C

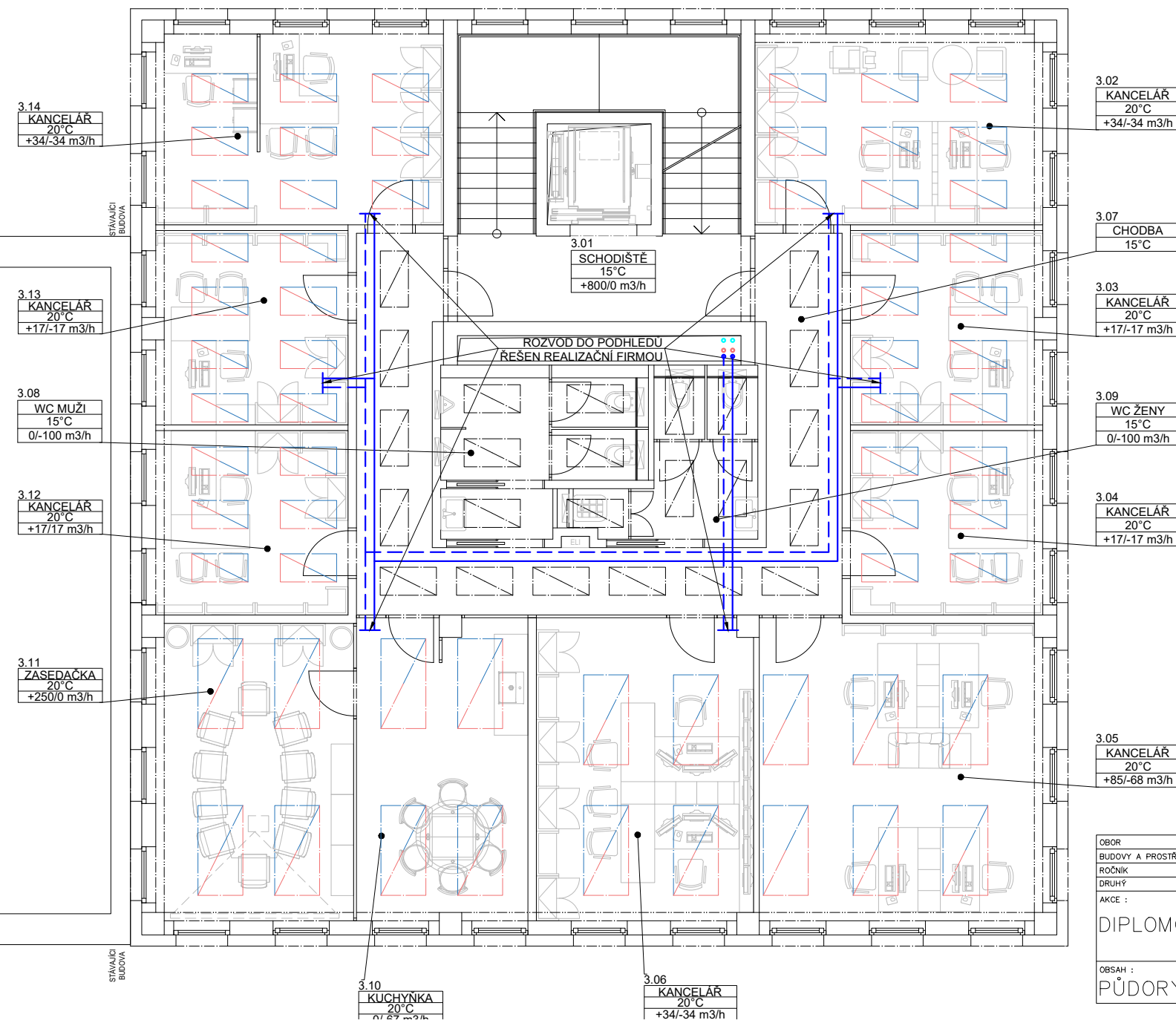



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|---|--|-------------------------------------|---|
| 2.05 KANCELÁŘ 20°C BUDOVNÍ PROSTŘEDÍ +17/-17 m3/h | KATEDRA K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV VYUČUJÍCÍ ING. ARCH. VOJTĚCH MAZANEC, PH.D. | JMÉNO STUDENTA BC. DANIEL KOCOUR |  |
| AKCE : | DIPLOMOVÁ PRÁCE – AB PLANÁ | | |
| OBSAH : | PŮDORYS 2.NP | | FORMÁT A3 |
| | | | MĚŘÍTKO 1:100 |
| | | | DATUM 8.1.2024 |
| | | | Č. VÝKR. 3 |

PŮDORYS 3.NP:

LEGENDA:









-  Vytápěné/chlazené podhledy
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-  Odvodní potrubí média pro podhledy
-  Přívodní potrubí vody 80°C
-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C

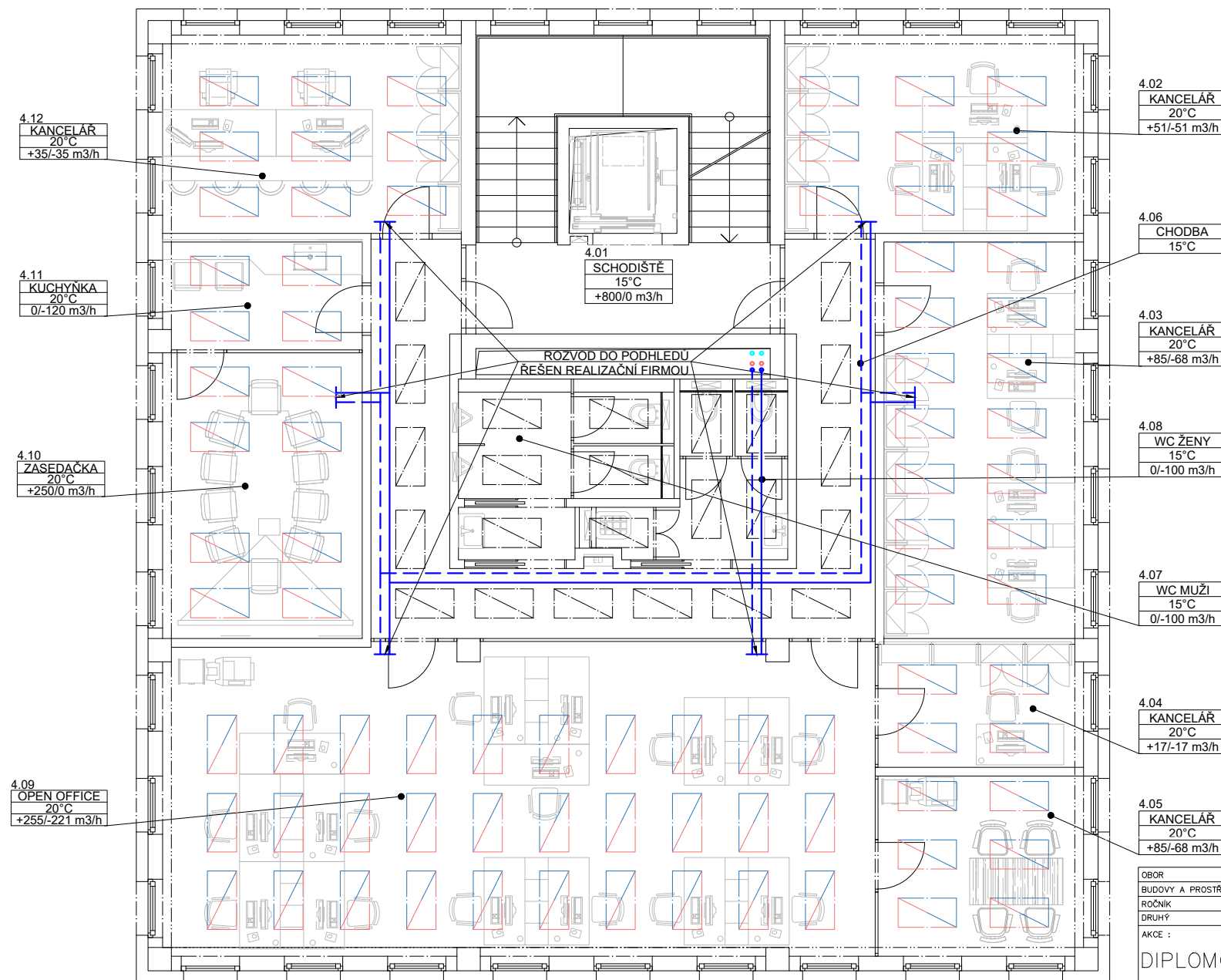


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| OBOR BUDOVY A PROSTŘEDÍ | KATEDRA K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV | JMÉNO STUDENTA BC. DANIEL KOCOUR |  |
| ROČNÍK DRUHÝ | VYUČUJÍCÍ ING. ARCH. VOJTĚCH MAZANEC, PH.D. | | |
| AKCE : | | | |
| DIPLOMOVÁ PRÁCE – AB PLANÁ | | | |
| OBSAH : | PŮDORYS 3.NP | | |
| FORMÁT | A3 | | |
| MĚŘÍTKO | 1:100 | | |
| DATUM | 8.1.2024 | | |
| Č. VÝKR. | 4 | | |

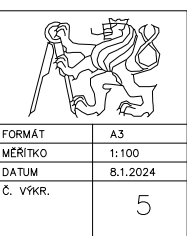
PŮDORYS 4.NP:

LEGENDA:

-  Vytápěné/chlazené podhledy
-  Dekorativní podhledy
-  Přívodní potrubí média pro podhledy
-  Odvodní potrubí média pro podhledy
-  Přívodní potrubí vody 80°C
-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C











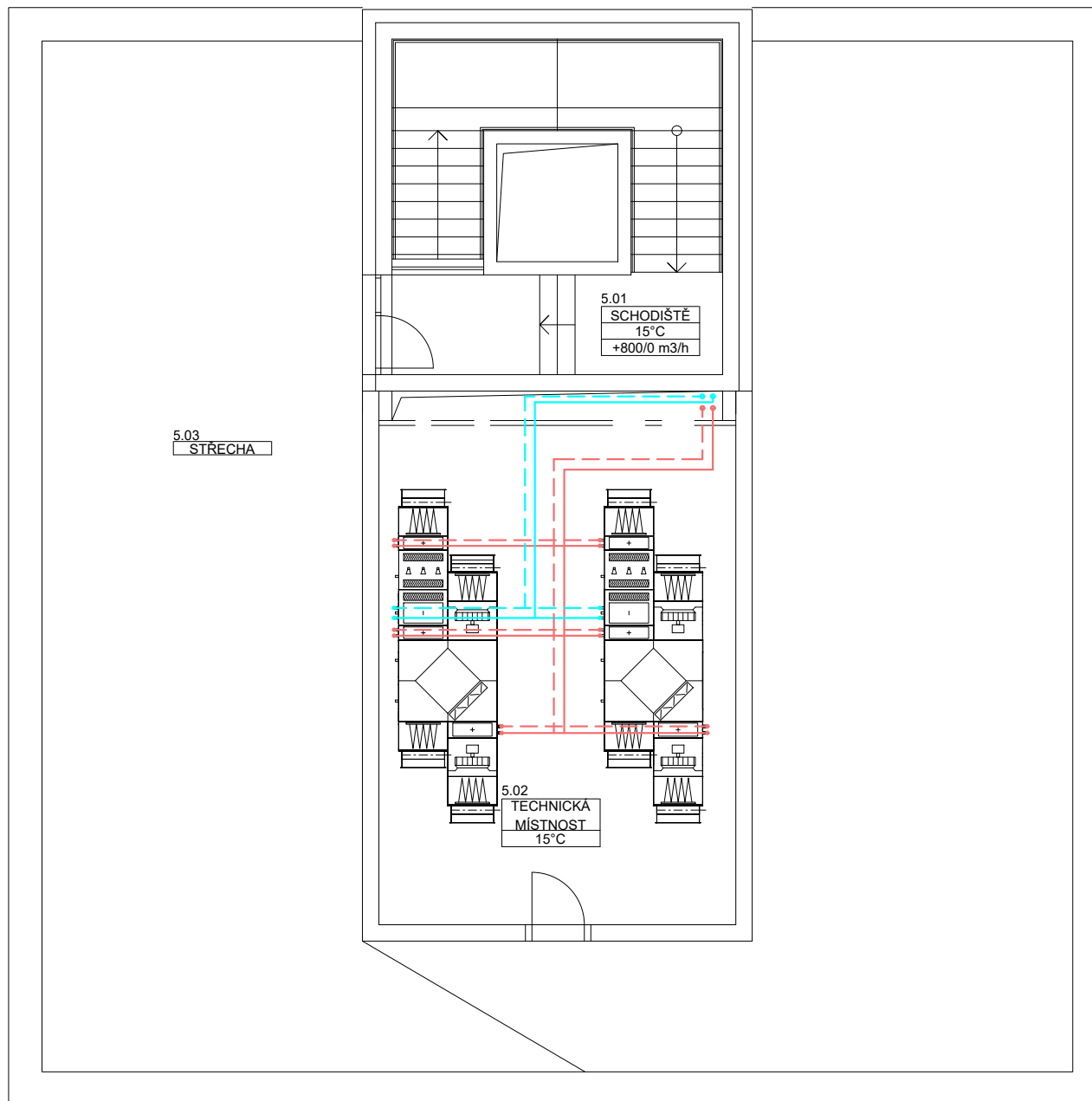
| | | |
|----------------------------|-----------------------------------|-------------------|
| OBOR | KATEDRA | JMÉNO STUDENTA |
| BUDOVY A PROSTŘEDÍ | K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV | BC. DANIEL KOCOUR |
| ROČNÍK | VYUČUJÍCÍ | |
| DRUHÝ | ING. ARCH. VOJTĚCH MAZANEC, PH.D. | |
| AKCE : | | |
| DIPLOMOVÁ PRÁCE – AB PLANÁ | | |
| OBSAH : | | |
| PŮDORYS 4.NP | FORMÁT | A3 |
| | MĚŘITKO | 1:100 |
| | DATUM | 8.1.2024 |
| | Č. VÝKR. | 5 |




PŮDORYS 5.NP:

LEGENDA:

-  Vytápění/chlazené podhledy
-  Dekorativní podhledy
-  Přívodní potrubí média pro podhledy
-  Odvodní potrubí média pro podhledy
-  Přívodní potrubí vody 80°C
-  Odvodní potrubí vody 60°C
-  Přívodní potrubí vody 6°C
-  Odvodní potrubí vody 12°C



| | | | |
|----------------------------|-----------------------------------|-------------------|---|
| OBOR | KATEDRA | JMÉNO STUDENTA |  |
| BUDOVY A PROSTŘEDÍ | K125 – TECHNICKÁ ZAŘÍZENÍ BUDOV | BC. DANIEL KOCOUR | |
| ROČNÍK | VYUČUJÍCÍ | | |
| DRUHÝ | ING. ARCH. VOJTĚCH MAZANEC, PH.D. | | |
| AKCE : | | | |
| DIPLOMOVÁ PRÁCE – AB PLANÁ | | | |
| FORMÁT | A3 | | |
| MĚŘÍTKO | 1:100 | | |
| DATUM | 8.1.2024 | | |
| OBSAH : | | | |
| PŮDORYS 5.NP | | | 6 |