

Wyniki - Ogólne

| | |
|-----------------|--------------------------------------|
| Nazwa projektu: | Przedszkole Miejskie nr 2 w Będzinie |
| Lokalizacja...: | Będzin, ul. Turniejowa 5 |
| Projektant...: | mgr inż. Grzegorz Woźniak |
| Data obliczeń : | Sobota, 10 Listopada 2012, 9:34 |

Parametry czynnika grzejnego:

| | | | |
|------------------|-------|-----------|-------|
| Tz, [°C].....: | 90.00 | Tp, [°C]: | 70.00 |
| Tprz, [°C].....: | 64.96 | | |
| Rodz. czynnika: | Woda | | |

Parametry źródła ciepła:

| | | | |
|------------------|--------|----------------|----|
| Opór hydr. [Pa]: | 272000 | Pojemność [l]: | 10 |
|------------------|--------|----------------|----|

Informacje o typach rur:

| | | | | | | | |
|--------|----------|--------|----------|--------|--|--------|--|
| Typ A: | PEAL-P10 | Typ B: | PN74200S | Typ C: | | Typ D: | |
| Typ E: | | Typ F: | | Typ G: | | Typ H: | |
| Typ I: | | Typ J: | | Typ K: | | Typ L: | |
| Typ M: | | Typ N: | | Typ O: | | Typ P: | |

| | |
|--|--------|
| Opór hydr. obiegu pierwotnego i źródła ciepła.. dPc, [Pa]: | 276043 |
| Minimalny opór działki z grzejnikiem..... dPgmin, [Pa]: | |
| Całkowity strumień wody w instalacji..... Gc, [kg/s]: | 1.006 |
| Całkowita pojemność instalacji..... Vc, [l]: | 549 |
| Obliczeniowa moc cieplna instalacji..... Qo, [W]: | 105170 |
| Moc tracona..... Qtr, [W]: | 6493 |
| Całk. moc przekazywana przez instalację..... Qcał, [W]: | 111583 |

Pomieszczenia ogrzewane:

| | | | |
|-------------------|-------|--------------------------|-------|
| Przegrzewane...: | 5 | Nadmiar mocy, [W]: | 1938 |
| Niedogrzewane...: | 1 | Deficyt mocy, [W]: | 50080 |
| Moc grzej.. [W]: | 53151 | Zyski od przewodów, [W]: | 3877 |

Pomieszczenia nieogrzewane:

| | | | |
|------------------|---|--------------------------|-----|
| Moc grzej.. [W]: | 0 | Zyski od przewodów, [W]: | 339 |
|------------------|---|--------------------------|-----|

Grzejniki:

| | | | |
|------------------|--------|-----------------------|-------|
| Przegrzewające: | 4 | Nadmiar mocy, [W]: | 1942 |
| Niedogrzewające | 0 | Deficyt mocy, [W]: | 139 |
| Obl. moc, [W]..: | 105170 | Rzeczywista moc, [W]: | 53151 |

Wyniki - Grzejniki

| Numer | | Pom. | Typ grz. | L | Qobl | Qwym | Qrz | Qdef | Agrz | tz |
|-------|--------|-------|---------------|------|------|------|------|------|-------|-------|
| Pion | Dział. | | | [m] | [W] | [W] | [W] | [W] | | [°C] |
| | | 010. | PROFIL-11K-60 | 0.50 | 458 | 432 | 441 | -9 | 0.944 | 77.49 |
| | | 014. | PROFIL-11K-60 | 0.40 | 367 | 301 | 332 | -31 | 0.834 | 78.47 |
| | | 015. | PROFIL-11K-60 | 0.60 | 499 | 453 | 490 | -37 | 0.914 | 78.80 |
| | | 017. | PROFIL-11K-60 | 0.40 | 408 | 345 | 340 | 5 | 0.844 | 78.64 |
| | | 019. | PROFIL-11K-60 | 0.40 | 400 | 341 | 339 | 2 | 0.852 | 78.62 |
| | | 022. | PROFIL-11K-60 | 0.40 | 340 | 244 | 351 | -107 | 0.785 | 78.10 |
| 7 | | K1. | PROFIL-33K-60 | 0.90 | 1822 | 1715 | 1826 | -111 | 0.945 | 79.65 |
| 4 | | K11. | FHO-30-90 | 1.60 | 2674 | 2645 | 2626 | 19 | 0.989 | 78.70 |
| 3 | | K14. | PROFIL-22K-60 | 1.20 | 1854 | 1725 | 1729 | -4 | 0.931 | 79.59 |
| 3 | | K15. | PROFIL-11K-60 | 0.50 | 353 | 335 | 379 | -44 | 0.955 | 77.16 |
| 2 | | K16. | PROFIL-22K-60 | 0.60 | 761 | 736 | 816 | -80 | 0.970 | 79.06 |
| 39 | | K17. | PROFIL-11K-60 | 0.50 | 368 | 349 | 385 | -36 | 0.953 | 77.41 |
| 1 | | K18B. | PROFIL-22K-60 | 0.60 | 759 | 722 | 753 | -31 | 0.953 | 79.31 |
| 1 | | K19. | PROFIL-11K-60 | 0.50 | 385 | 367 | 391 | -24 | 0.956 | 77.56 |
| 6 | | K4. | FHO-20-60 | 0.50 | 455 | 433 | 428 | 5 | 0.951 | 78.24 |
| 5 | | K5. | FHO-20-60 | 0.50 | 442 | 423 | 428 | -5 | 0.958 | 78.61 |
| 5 | | K6. | FHO-30-60 | 1.80 | 2034 | 2012 | 2138 | -126 | 0.990 | 79.44 |
| 27 | | S10 | PROFIL-22K-60 | 1.80 | 1643 | 1554 | 1651 | -97 | 0.949 | 77.79 |
| 28 | | S12A | PROFIL-11K-40 | 0.50 | 253 | 216 | 215 | 1 | 0.853 | 75.73 |
| 36 | | S14 | PROFIL-22K-60 | 1.20 | 1651 | 1611 | 1608 | 2 | 0.976 | 77.83 |
| 37 | | S14 | PROFIL-22K-60 | 1.20 | 1651 | 1611 | 1591 | 19 | 0.975 | 77.24 |
| 19 | | S15 | PROFIL-22K-30 | 1.60 | 1216 | 1044 | 1213 | -169 | 0.875 | 77.39 |
| 20 | | S15 | PROFIL-22K-30 | 1.60 | 1216 | 1044 | 1207 | -164 | 0.875 | 77.14 |
| 21 | | S16 | PROFIL-22K-60 | 1.40 | 1303 | 1255 | 1272 | -17 | 0.964 | 77.15 |
| 22 | | S17 | PROFIL-22K-60 | 1.40 | 1365 | 1290 | 1273 | 17 | 0.944 | 76.67 |
| 29 | | S2 | PROFIL-22K-60 | 1.40 | 1538 | 1487 | 1483 | 4 | 0.967 | 78.29 |
| 33 | | S2 | PROFIL-22K-60 | 1.40 | 1538 | 1487 | 1495 | -8 | 0.967 | 78.68 |
| 20A | | S22 | PROFIL-11K-60 | 0.70 | 544 | 493 | 534 | -41 | 0.913 | 76.27 |
| 18 | | S23 | PROFIL-22K-30 | 1.60 | 1451 | 1240 | 1265 | -25 | 0.857 | 77.86 |
| 17 | | S26 | PROFIL-33K-60 | 1.40 | 2017 | 1931 | 1922 | 9 | 0.957 | 78.56 |
| 35 | | S28A | PROFIL-22K-30 | 0.70 | 641 | 523 | 562 | -39 | 0.826 | 78.61 |
| 35 | | S28A | PROFIL-22K-30 | 0.70 | 641 | 523 | 562 | -39 | 0.826 | 78.61 |
| 34 | | S29 | PROFIL-11K-60 | 0.50 | 329 | 297 | 302 | -5 | 0.904 | 76.55 |
| 32 | | S3 | PROFIL-33K-30 | 0.80 | 887 | 823 | 903 | -80 | 0.934 | 78.48 |
| 31 | | S4 | PROFIL-33K-30 | 0.80 | 1023 | 961 | 936 | 25 | 0.938 | 78.61 |
| 31 | | S5 | PROFIL-33K-30 | 0.80 | 963 | 863 | 923 | -60 | 0.902 | 78.58 |
| 30 | | S6 | PROFIL-22K-30 | 1.20 | 939 | 900 | 936 | -36 | 0.960 | 78.03 |
| 30 | | S6 | PROFIL-22K-30 | 1.20 | 939 | 900 | 936 | -36 | 0.960 | 78.03 |
| 25 | | S7 | PROFIL-22K-30 | 1.40 | 1111 | 1041 | 1040 | 0 | 0.937 | 75.83 |
| 26 | | S7 | PROFIL-22K-30 | 1.40 | 1111 | 1041 | 1060 | -20 | 0.938 | 76.86 |
| 23 | | S8 | PROFIL-22K-30 | 1.80 | 1330 | 1261 | 1325 | -64 | 0.951 | 76.13 |
| 24 | | S8 | PROFIL-22K-30 | 1.80 | 1330 | 1261 | 1304 | -43 | 0.950 | 75.26 |
| 8 | | Z10. | PROFIL-22K-60 | 0.40 | 541 | 492 | 549 | -57 | 0.918 | 78.70 |
| 10 | | Z11. | PROFIL-22K-60 | 0.70 | 917 | 797 | 782 | 15 | 0.867 | 79.00 |
| 10 | | Z12. | PROFIL-22K-60 | 0.40 | 450 | 398 | 428 | -30 | 0.892 | 78.47 |
| 11 | | Z13. | PROFIL-22K-60 | 0.90 | 1094 | 973 | 993 | -20 | 0.891 | 79.12 |
| 12 | | Z14. | PROFIL-22K-60 | 1.00 | 1072 | 993 | 980 | 13 | 0.925 | 78.95 |
| 13 | | Z2. | PROFIL-22K-60 | 1.40 | 1614 | 1477 | 1520 | -43 | 0.917 | 78.93 |
| 14 | | Z3. | PROFIL-22K-60 | 0.90 | 937 | 841 | 870 | -29 | 0.901 | 78.62 |
| 15 | | Z5. | PROFIL-22K-30 | 1.40 | 1156 | 1071 | 1102 | -31 | 0.928 | 78.58 |
| 15 | | Z5. | PROFIL-22K-30 | 1.40 | 1156 | 1071 | 1102 | -31 | 0.928 | 78.58 |
| 16 | | Z6. | PROFIL-22K-30 | 1.10 | 962 | 836 | 865 | -29 | 0.873 | 77.94 |
| 9 | | Z8. | PROFIL-22K-60 | 1.60 | 1613 | 1594 | 1679 | -85 | 0.989 | 78.81 |
| 8 | | Z9. | PROFIL-22K-60 | 0.40 | 653 | 576 | 574 | 2 | 0.882 | 78.85 |

Wyniki - Nastawy

| Typ | Pom. | Symbol | Nastawa | Aut. | dn | G | Kv | dP |
|-----|-------|-----------|---------|------|------|--------|---------------------|-------|
| | | | | | [mm] | [kg/s] | [m ³ /h] | [Pa] |
| Z | K19. | AV6-P | 1 | 0.81 | 15 | 0.005 | 0.030 | 32544 |
| Z | K18B. | AV6-P | 2 | 0.82 | 15 | 0.009 | 0.059 | 32795 |
| P | K19. | COMBI-3-P | 0.35 | | 15 | 0.005 | 0.086 | 3774 |
| P | K18B. | COMBI-3-P | 0.7 | | 15 | 0.009 | 0.177 | 3495 |
| Z | K16. | AV6-P | 2 | 0.81 | 15 | 0.009 | 0.059 | 32321 |
| P | K16. | COMBI-3-P | 0.7 | | 15 | 0.009 | 0.177 | 3507 |
| Z | K15. | AV6-P | 1 | 0.73 | 15 | 0.004 | 0.029 | 29318 |
| Z | K14. | AV6-P | 2 | 0.76 | 15 | 0.022 | 0.148 | 30450 |
| P | K15. | COMBI-3-P | 0.3 | | 15 | 0.004 | 0.073 | 4413 |
| P | K14. | COMBI-3-P | 1.55 | | 15 | 0.022 | 0.460 | 3100 |
| Z | K11. | AV6-P | 3 | 0.75 | 20 | 0.032 | 0.216 | 29782 |
| P | K11. | COMBI-3-P | 1.8 | | 20 | 0.032 | 0.659 | 3131 |
| Z | K6. | AV6-P | 2 | 0.80 | 15 | 0.024 | 0.159 | 31890 |
| Z | K5. | AV6-P | 1 | 0.79 | 15 | 0.005 | 0.035 | 31533 |
| P | K6. | COMBI-3-P | 1.6 | | 15 | 0.024 | 0.500 | 3151 |
| P | K5. | COMBI-3-P | 0.4 | | 15 | 0.005 | 0.100 | 3750 |
| Z | K4. | AV6-P | 1 | 0.80 | 15 | 0.005 | 0.036 | 31783 |
| P | K4. | COMBI-3-P | 0.4 | | 15 | 0.005 | 0.100 | 3975 |
| Z | K1. | AV6-P | 2 | 0.79 | 15 | 0.022 | 0.143 | 31592 |
| P | K1. | COMBI-3-P | 1.55 | | 15 | 0.022 | 0.460 | 2990 |
| Z | Z9. | AV6-P | 2 | 0.75 | 15 | 0.008 | 0.053 | 29905 |
| Z | Z10. | AV6-P | 1 | 0.73 | 15 | 0.006 | 0.044 | 29419 |
| P | Z9. | COMBI-3-P | 0.65 | | 15 | 0.008 | 0.164 | 3011 |
| P | Z10. | COMBI-3-P | 0.5 | | 15 | 0.006 | 0.126 | 3508 |
| Z | Z8. | AV6-P | 2 | 0.73 | 15 | 0.019 | 0.132 | 29160 |
| P | Z8. | COMBI-3-P | 1.5 | | 15 | 0.019 | 0.420 | 2805 |
| Z | Z11. | AV6-P | 2 | 0.74 | 15 | 0.011 | 0.074 | 29748 |
| Z | Z12. | AV6-P | 1 | 0.73 | 15 | 0.005 | 0.037 | 29333 |
| P | Z11. | COMBI-3-P | 1 | | 15 | 0.011 | 0.250 | 2569 |
| P | Z12. | COMBI-3-P | 0.45 | | 15 | 0.005 | 0.113 | 3032 |
| Z | Z13. | AV6-P | 2 | 0.73 | 15 | 0.013 | 0.089 | 29365 |
| P | Z13. | COMBI-3-P | 1.1 | | 15 | 0.013 | 0.284 | 2831 |
| Z | Z14. | AV6-P | 2 | 0.69 | 15 | 0.013 | 0.090 | 27713 |
| P | Z14. | COMBI-3-P | 1.2 | | 15 | 0.013 | 0.318 | 2167 |
| Z | Z2. | AV6-P | 2 | 0.60 | 15 | 0.019 | 0.145 | 24183 |
| P | Z2. | COMBI-3-P | 1.65 | | 15 | 0.019 | 0.540 | 1705 |
| Z | Z3. | AV6-P | 2 | 0.60 | 15 | 0.011 | 0.084 | 23949 |
| P | Z3. | COMBI-3-P | 1.2 | | 15 | 0.011 | 0.318 | 1655 |
| Z | Z5. | AV6-P | 2 | 0.57 | 15 | 0.014 | 0.107 | 22757 |
| Z | Z5. | AV6-P | 2 | 0.57 | 15 | 0.014 | 0.107 | 22757 |
| P | Z5. | COMBI-3-P | 1.5 | | 15 | 0.014 | 0.420 | 1442 |
| P | Z5. | COMBI-3-P | 1.5 | | 15 | 0.014 | 0.420 | 1442 |
| Z | Z6. | AV6-P | 2 | 0.55 | 15 | 0.011 | 0.091 | 21832 |
| P | Z6. | COMBI-3-P | 1.3 | | 15 | 0.011 | 0.352 | 1423 |
| Z | S26 | AV6-P | 3 | 0.54 | 15 | 0.024 | 0.192 | 21394 |
| P | S26 | COMBI-3-P | 1.9 | | 15 | 0.024 | 0.739 | 1418 |
| Z | S23 | AV6-P | 2 | 0.52 | 15 | 0.017 | 0.141 | 20710 |
| P | S23 | COMBI-3-P | 1.7 | | 15 | 0.017 | 0.580 | 1195 |
| Z | S15 | AV6-P | 2 | 0.46 | 15 | 0.014 | 0.125 | 18273 |
| P | S15 | COMBI-3-P | 1.75 | | 15 | 0.014 | 0.620 | 732 |
| Z | S15 | AV6-P | 2 | 0.44 | 15 | 0.014 | 0.128 | 17546 |
| P | S15 | COMBI-3-P | 1.9 | | 15 | 0.014 | 0.739 | 514 |
| Z | S16 | AV6-P | 2 | 0.41 | 15 | 0.016 | 0.142 | 16408 |
| P | S16 | COMBI-3-P | 2.25 | | 15 | 0.016 | 0.923 | 379 |
| Z | S17 | AV6-P | 2 | 0.39 | 15 | 0.016 | 0.152 | 15747 |
| P | S17 | COMBI-3-P | 3 | | 15 | 0.016 | 1.236 | 232 |

Wyniki - Nastawy

| Typ | Pom. | Symbol | Nastawa | Aut. | dn | G | Kv | dP |
|-----|------|-----------|---------|------|------|--------|---------------------|-------|
| | | | | | [mm] | [kg/s] | [m ³ /h] | [Pa] |
| Z | S8 | AV6-P | 2 | 0.38 | 15 | 0.016 | 0.150 | 15351 |
| P | S8 | COMBI-3-P | 3.5 | | 15 | 0.016 | 1.468 | 156 |
| Z | S8 | AV6-P | 2 | 0.38 | 15 | 0.016 | 0.151 | 15029 |
| P | S8 | COMBI-3-P | 4 | | 15 | 0.016 | 1.700 | 116 |
| Z | S7 | AV6-P | 2 | 0.60 | 15 | 0.013 | 0.100 | 24074 |
| P | S7 | COMBI-3-P | 1.4 | | 15 | 0.013 | 0.386 | 1574 |
| Z | S7 | AV6-P | 2 | 0.60 | 15 | 0.013 | 0.100 | 24000 |
| P | S7 | COMBI-3-P | 1.3 | | 15 | 0.013 | 0.352 | 1894 |
| Z | S10 | AV6-P | 2 | 0.62 | 15 | 0.020 | 0.146 | 24748 |
| P | S10 | COMBI-3-P | 1.6 | | 15 | 0.020 | 0.500 | 2055 |
| Z | S12A | AV6-P | 1 | 0.43 | 15 | 0.003 | 0.027 | 17068 |
| P | S12A | COMBI-3-P | 0.25 | | 15 | 0.003 | 0.060 | 3384 |
| Z | S2 | AV6-P | 2 | 0.66 | 15 | 0.018 | 0.133 | 26198 |
| P | S2 | COMBI-3-P | 1.55 | | 15 | 0.018 | 0.460 | 2128 |
| Z | S6 | AV6-P | 2 | 0.66 | 15 | 0.011 | 0.081 | 26211 |
| Z | S6 | AV6-P | 2 | 0.66 | 15 | 0.011 | 0.081 | 26211 |
| P | S6 | COMBI-3-P | 1.1 | | 15 | 0.011 | 0.284 | 2077 |
| P | S6 | COMBI-3-P | 1.1 | | 15 | 0.011 | 0.284 | 2077 |
| Z | S5 | AV6-P | 2 | 0.68 | 15 | 0.011 | 0.082 | 27106 |
| Z | S4 | AV6-P | 2 | 0.67 | 15 | 0.012 | 0.087 | 26813 |
| P | S5 | COMBI-3-P | 1.1 | | 15 | 0.011 | 0.284 | 2190 |
| P | S4 | COMBI-3-P | 1.1 | | 15 | 0.012 | 0.284 | 2474 |
| Z | S3 | AV6-P | 2 | 0.71 | 15 | 0.011 | 0.074 | 28217 |
| P | S3 | COMBI-3-P | 1 | | 15 | 0.011 | 0.250 | 2395 |
| Z | S2 | AV6-P | 2 | 0.70 | 15 | 0.018 | 0.128 | 28137 |
| P | S2 | COMBI-3-P | 1.5 | | 15 | 0.018 | 0.420 | 2552 |
| Z | S29 | AV6-P | 1 | 0.68 | 15 | 0.004 | 0.028 | 27392 |
| P | S29 | COMBI-3-P | 0.3 | | 15 | 0.004 | 0.073 | 3843 |
| Z | S28A | AV6-P | 2 | 0.72 | 15 | 0.008 | 0.053 | 28934 |
| Z | S28A | AV6-P | 2 | 0.72 | 15 | 0.008 | 0.053 | 28934 |
| P | S28A | COMBI-3-P | 0.65 | | 15 | 0.008 | 0.164 | 2901 |
| P | S28A | COMBI-3-P | 0.65 | | 15 | 0.008 | 0.164 | 2901 |
| Z | S14 | AV6-P | 2 | 0.71 | 15 | 0.020 | 0.136 | 28504 |
| P | S14 | COMBI-3-P | 1.55 | | 15 | 0.020 | 0.460 | 2451 |
| Z | S14 | AV6-P | 2 | 0.47 | 15 | 0.020 | 0.168 | 18857 |
| P | S14 | COMBI-3-P | 2 | | 15 | 0.020 | 0.819 | 772 |
| Z | K17. | AV6-P | 1 | 0.76 | 15 | 0.004 | 0.029 | 30570 |
| P | K17. | COMBI-3-P | 0.3 | | 15 | 0.004 | 0.073 | 4800 |
| Z | S22 | AV6-P | 2 | 0.43 | 15 | 0.006 | 0.058 | 17084 |
| P | S22 | COMBI-3-P | 1.25 | | 15 | 0.006 | 0.335 | 501 |
| Z | 014. | AV6-P | 1 | 0.75 | 15 | 0.004 | 0.030 | 29696 |
| Z | 015. | AV6-P | 1 | 0.77 | 15 | 0.006 | 0.040 | 30755 |
| Z | 017. | AV6-P | 1 | 0.79 | 15 | 0.005 | 0.032 | 31564 |
| Z | 019. | AV6-P | 1 | 0.80 | 15 | 0.005 | 0.031 | 31732 |
| Z | 010. | AV6-P | 1 | 0.79 | 15 | 0.005 | 0.036 | 31259 |
| Z | 022. | AV6-P | 1 | 0.78 | 15 | 0.004 | 0.027 | 30904 |
| P | 021. | STAD | 2.8 | | 32 | 0.410 | 8.540 | 3092 |
| P | 021. | STAD | 4 | | 40 | 0.596 | 19.200 | 1306 |
| P | 014. | COMBI-3-P | 0.3 | | 15 | 0.004 | 0.073 | 4793 |
| P | 015. | COMBI-3-P | 0.45 | | 15 | 0.006 | 0.113 | 3727 |
| P | 017. | COMBI-3-P | 0.35 | | 15 | 0.005 | 0.086 | 4259 |
| P | 019. | COMBI-3-P | 0.35 | | 15 | 0.005 | 0.086 | 4092 |
| P | 010. | COMBI-3-P | 0.4 | | 15 | 0.005 | 0.100 | 4023 |
| P | 022. | COMBI-3-P | 0.3 | | 15 | 0.004 | 0.073 | 4101 |