

## Calculul necesarului de caldura parter

Denumire	Orientare	Latime	Inaltime	Suprafata	Numar	De scazut	In calcul	R	m	$\Delta t$	cm	(m.S. $\Delta t$ )/R	Adaosuri		1+( $\Sigma A$ )/100	QT[1+( $\Sigma A$ )/100]	L	i	v <sup>4/3</sup>	
													Ao	Ac						
[-]	[-]	[m]	[m]	[m <sup>2</sup> ]	[-]	[m <sup>2</sup> ]	[m <sup>2</sup> ]	M2k/W	[-]	°C	[-]	[W]	[-]	[-]	[-]	[W]	[m]	[-]	(m/s) <sup>4/3</sup>	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 Atelier legatorie							St=	132.02			Rm=	4.92								
PE	S	3.60	1.50	5.40	1	2.36	3.04	1.34	1.00	30	1.00	68.12	0	5.4	1.054	1643.596	27.620	0.0079	6.350	
FE	S	2.05	1.15	2.36	1		2.36	0.50	1.20	30	1.00	169.74								
PE	E	1.77	1.80	3.19	1	1.70	1.49	1.34	1.00	30	1.00	33.35								
FE	E	1.17	1.45	1.70	1		1.70	0.50	1.20	30	1.00	122.15								
PE	S	0.85	1.80	1.53	1		1.53	1.34	1.00	30	1.00	34.25								
PE	E	1.98	1.80	3.56	1	1.70	1.87	1.34	1.00	30	1.00	41.81								
FE	E	1.17	1.45	1.70	1		1.70	0.50	1.20	30	1.00	122.15								
PE	S	0.95	1.80	1.71	1		1.71	1.34	1.00	30	1.00	38.28								
PE	E	2.25	1.80	4.05	1	1.70	2.35	1.34	1.00	30	1.00	52.69								
FE	E	1.17	1.45	1.70	1		1.70	0.50	1.20	30	1.00	122.15								
QT=												804.68								
2 Sala calculatoare 1							St=	144.98			Rm=	12.51								
PE	S	5.40	1.50	8.10	1	2.42	5.69	1.34	1.00	38	1.00	161.22	-5	0.0	0.950	1375.720	7.650	0.0079	6.350	
FE	S	2.10	1.15	2.42	1		2.42	0.50	1.20	38	1.00	220.25								
PI		4.00	3.80	15.20	1		15.20	0.85	1.10	3	1.00	59.01								
QT=												440.48								
3 Sala Proiectii							St=	152.90			Rm=	12.02								
PE	S	5.85	1.50	8.78	1	2.82	5.96	1.34	1.00	38	1.00	168.94	0	0.0	1.000	1514.532	8.350	0.0079	6.350	
FE	S	2.45	1.15	2.82	1		2.82	0.50	1.20	38	1.00	256.96								
PE	V	1.35	1.50	2.03	1		2.03	1.34	1.00	38	1.00	57.43								
QT=												483.33								
4 Sala expozitie							St=	487.74			Rm=	21.24								
PE	S	7.30	1.40	10.22	1	3.91	6.32	1.34	1.00	38	1.00	179.08								
FE	S	3.55	1.10	3.91	1		3.91	0.50	1.20	38	1.00	356.14								

PE	S	6.00	1.00	6.00	1	2.66	3.34	1.34	1.00	38	1.00	94.65	-5	0.0	0.950	4760.611	10.400	0.0079	6.350
FE	S	3.55	0.75	2.66	1		2.66	0.50	1.20	38	1.00	242.82							
QT=											872.68								
<b>5 Sala calculatoare 2</b>							St=	300.74		Rm=		4.76							
PE	S	7.20	3.70	26.64	1	2.66	23.98	1.34	1.00	38	1.00	679.96	0	5.5	1.055	2530.609	9.350	0.0079	6.350
FE	S	3.55	0.75	2.66	1		2.66	0.50	1.20	38	1.00	242.82							
PE	E	12.25	3.70	45.33	1		45.33	1.34	1.00	38	1.00	1285.34							
PI		11.80	3.70	43.66	1	4.30	39.36	0.85	1.10	2	1.00	101.87							
UI		2.00	2.15	4.30	1		4.30	0.50	1.00	2	1.00	17.20							
PI		6.80	3.70	25.16	1	4.52	20.65	0.85	1.10	2	1.00	53.43							
UI		2.10	2.15	4.52	1		4.52	0.50	1.00	2	1.00	18.06							
QT=											2398.68								
<b>6 Sala media</b>							St=	2055.90		Rm=		29.86							
PE	N	20.35	3.50	71.23	1	31.37	39.85	1.34	1.00	38	1.00	1130.15	5	0.0	1.050	5512.694	30.950	0.0079	6.350
FE	N	0.60	2.35	1.41	6		1.41	0.50	1.20	38	1.00	128.59							
FE	N	2.35	3.25	7.64	3		7.64	0.50	1.20	38	1.00	696.54							
PE	V	6.40	3.50	22.40	1		22.40	1.34	1.00	38	1.00	635.22							
PI		2.10	3.50	7.35	1	3.44	3.91	0.85	1.00	2	1.00	9.20							
UI		1.60	2.15	3.44	1		3.44	0.50	1.20	2	1.00	16.51							
QT=											2616.21								
<b>7 Sala imprumut</b>							St=	159.30		Rm=		3.11							
PE	V	3.50	3.80	13.30	1	2.65	10.66	1.34	1.00	38	1.00	302.16	5	6.5	1.115	2172.613	22.840	0.0079	6.350
FE	V	1.15	2.30	2.65	1		2.65	0.50	1.20	38	1.00	241.22							
PE	N	3.50	3.80	13.30	1	7.75	5.55	1.34	1.00	38	1.00	157.36							
FE	N	3.37	2.30	7.75	1		7.75	0.50	1.20	38	1.00	706.89							
PI		5.10	3.80	19.38	1	2.15	17.23	0.85	1.10	2	1.00	44.60							
UI		1.00	2.15	2.15	1		2.15	0.50	1.00	2	1.00	8.60							
PI		4.30	3.80	16.34	1		16.34	0.85	1.10	2	1.00	42.29							
PI		3.00	3.80	11.40	1		11.40	0.85	1.10	2	1.00								
PS		5.15	5.69	29.30	1		29.30	0.60	1.14	8	1.00	445.41							
QT=											1948.53								
<b>8 Coridor 1</b>							St=	112.28		Rm=		0.75							
PI		2.00	3.80	7.60	1	3.01	4.59	0.85	1.00	6	1.00	32.40	0	13.5	1.135	1018.411	0.000	0.0079	6.350
UI		1.40	2.15	3.01	1		3.01	0.50	1.00	6	1.00	36.12							
PE	E	5.70	3.80	21.66	1		21.66	1.34	1.00	36	1.00	581.91							
PS		2.00	8.12	16.24	1		16.24	0.60	1.14	8	1.00	246.85							

												QT=		897.28							
9 Coridor 2							St=	334.66		Rm=		5.25									
PE	N	2.25	3.80	8.55	1		8.55	1.34	1.00	36	1.00	229.70	5	5.4	1.104	2531.651	0.000	0.0079	6.350		
PE	E	1.60	3.80	6.08	1		6.08	1.34	1.00	36	1.00	163.34									
PE	N	3.30	3.80	12.54	1		12.54	1.34	1.00	36	1.00	336.90									
PE	E	4.10	3.80	15.58	1	1.02	14.56	1.34	1.00	36	1.00	391.16									
FE	E	1.70	0.60	1.02	1		1.02	0.50	1.00	36	1.00	73.44									
PI		3.80	3.80	14.44	2		14.44	0.85	1.10	3	1.00	56.06									
PI		7.50	3.80	28.50	3		28.50	0.85	1.10	3	1.00	110.65									
PI		5.35	3.80	20.33	4	3.87	16.46	0.85	1.10	3	1.00	63.90									
UI		0.90	2.15	1.94	5		1.94	0.50	1.00	3	1.00	11.61									
UI		0.90	2.15	1.94	6		1.94	0.50	1.00	3	1.00	11.61									
PS		7.85	7.08	55.58	1		55.58	0.60	1.14	8	1.00	844.79									
												QT=		2293.16							
10 Sala legatorie							St=	159.30		Rm=		1.89									
PE	E	5.70	3.80	21.66	1	8.23	13.44	1.34	1.00	38	1.00	380.99	5	7.4	1.124	3592.909	14.050	0.0079	6.350		
FE	E	3.50	2.35	8.23	1		8.23	0.50	1.20	38	1.00	750.12									
PE	N	5.70	3.80	21.66	1		21.66	1.34	1.00	38	1.00	614.24									
PI		5.70	3.80	21.66	1	3.05	18.62	0.85	1.10	38	1.00	915.42									
UI		1.45	2.10	3.05	1		3.05	0.50	1.00	2	1.00	12.18									
PI		5.50	3.80	20.90	1		20.90	0.85	1.10	2	1.00	54.09									
UI		0.90	2.15	1.94	1		1.94	0.50	1.00	2	1.00	7.74									
UI		1.90	2.15	4.09	1		4.09	0.50	1.00	2	1.00	16.34									
PS		5.15	5.69	29.30	1		29.30	0.60	1.14	8	1.00	445.41									
												QT=		3196.54							
11 Grup sanitar 1							St=	56.21		Rm=		3.42									
PS		3.35	2.15	7.20	1		7.20	0.50	1.14	8	1.00	131.37	0	6.0	1.060	139.256	0.000	0.0079	6.350		
												QT=									131.37
12 Grup sanitar 2							St=	64.79		Rm=		3.08									
PS		3.35	2.75	9.21	1		9.21	0.50	1.14	8	1.00	168.04	0	6.3	1.063	178.622	0.000	0.0079	6.350		
												QT=									168.04
13 Windfang							St=	32.77		Rm=		2.20									
PE	N	2.10	3.80	7.98	1	4.48	3.50	1.34	1.00	30	1.00	78.36	5	7.0	1.120	501.581	9.200	0.0079	6.350		
UE	N	1.40	3.20	4.48	1		4.48	0.50	1.20	30	1.00	322.56									
PS		2.10	1.47	3.09	1		3.09	0.60	1.14	8	1.00	46.92									
												QT=		447.84							

<b>V</b>	<b>na</b>	<b>Qi1</b>	<b>Qi2</b>	<b>Qi</b>	<b>Q</b>
[m3]	m3/hm	[W]	[W]	[W]	[W]
22	23	24	25	26	27

93.366	0.500	43.811	500.680	500.680	<b>2144.277</b>
--------	-------	--------	---------	---------	-----------------

115.900	0.500	14.583	746.925	746.925	<b>2122.645</b>
---------	-------	--------	---------	---------	-----------------

123.766	0.500	15.917	797.618	797.618	<b>2312.150</b>
---------	-------	--------	---------	---------	-----------------

--	--	--	--	--	--

576.612	0.500	19.825	3716.012	3716.012	<b>8476.623</b>
---------	-------	--------	----------	----------	-----------------

304.266	0.500	18.804	2068.709	2068.709	<b>4599.318</b>
---------	-------	--------	----------	----------	-----------------

96.292	0.500	58.999	620.560	620.560	<b>6133.253</b>
--------	-------	--------	---------	---------	-----------------

111.340	0.500	46.369	764.178	764.178	<b>2936.791</b>
---------	-------	--------	---------	---------	-----------------

61.712	0.500	0.000	71.273	71.273	<b>1089.684</b>
--------	-------	-------	--------	--------	-----------------

211.470	0.500	0.000	1360.823	1360.823	<b>3892.474</b>
122.778	0.500	28.765	849.803	849.803	<b>4442.712</b>
27.370	0.500	0.000	39.362	39.362	<b>178.618</b>
35.008	0.500	0.000	50.489	50.489	<b>229.111</b>
11.731	0.500	14.815	63.861	63.861	<b>565.442</b>

W	Kw
39123.098	39.1231

Incapere	C
Camere	22
Baie	24
Bucatarie	20
Hol	18
Spatii tehnice	15
Showroom	20

Incapere	Ap	Qi	Qp	Rp		Cm	ms	ns	Qi
Sala expozitie	184.54	20	8	0.6	<b>3690.8</b>	1	0.48	1.68	20
Sala calculatoare 2	87.42	20	8	0.6	<b>1748.4</b>	1	0.48	1.68	20
Sala media	119.7	20	8	0.6	<b>2394</b>	1	0.48	1.68	20
Spf-Bucatarie1	9.02	20	9	0.6	<b>165.3667</b>	1	0.48	1.5	20
Spf-Hol	19.41	18	9	0.6	<b>291.15</b>	1	0.48	1.5	18
Spf-Bucatarie2	5.49	20	9	0.6	<b>100.65</b>	1	0.48	1.5	20
Spf-Bucatarie3	5.4	20	9	0.6	<b>99</b>	1	0.48	1.5	20
Spf-Baie	3.492	24	9	0.6	<b>87.3</b>	-	-	-	-
Spf-Hol3	5.3544	18	9	5.33908	<b>9.025825</b>	1	0.48	1.5	18
Atelier legatorie	39.61	18	8	0.6	<b>660.1667</b>	1	0.48	1.68	18
Sala calculatoare 1	42.92	20	8	0.6	<b>858.4</b>	1	0.48	1.68	20
Sala proiectii	46.205	20	8	0.6	<b>924.1</b>	1	0.48	1.68	20
Subsol4	39.6	15	9	5.33908	<b>44.50205</b>	1	0.48	1.5	15



Qe	Rbc	Abc		Qi	Qej	Abcj		Qs
-18	0.593	13.15	<b>240.7613</b>	-	-	-	-	3931.561
-18	0.593	7.2	<b>131.8237</b>	-	-	-	-	1880.224
-18	0.593	20.3	<b>371.6695</b>	-	-	-	-	2765.669
-18	0.665	3.31	<b>60.52571</b>	20	10	3.5	<b>35.08772</b>	267.3961
				20	18	3.2	<b>6.41604</b>	
-18	0.665	6.27	<b>108.6171</b>	-	-	-	-	399.7671
-18	0.665	6.5	<b>118.8571</b>	20	18	3.05	<b>6.115288</b>	225.6224
-18	0.665	6.6	<b>120.6857</b>	20	18	3	<b>6.015038</b>	225.7008
-	-	-	-	24	20	2.91	<b>11.66917</b>	
				24	18	1.2	<b>7.218045</b>	
				24	10	1.2	<b>16.84211</b>	
				24	18	2.91	<b>17.50376</b>	140.5331
-18	0.665	2.91	<b>50.41083</b>	18	10	1.84	<b>14.75689</b>	74.19354
-18	0.593	7.8	<b>135.2927</b>	-	-	-	-	795.4594
-18	0.593	5.4	<b>98.86774</b>	-	-	-	-	957.2677
-18	0.593	5.85	<b>107.1067</b>	-	-	-	-	1031.207
-18	0.665	15.05	<b>238.9895</b>	-	-	-	-	283.4915

td= 75      Δtn= 50  
 tf= 65

Dimensionarea suprafetelor de schimb termic  
 Parter

Casa

Denumire inc.	Temp interioara	Δt	Qnec	Tip corp incalzire	Corpuri			ch	c4(cr)	c5(cf)	c <sub>t</sub> *c <sub>m</sub> *c <sub>n+c4+c5</sub>	n	Qinst	Qinst
					qn	ct	cm							
[-]	[°C]	[°C]	[W]	[-]	[W/m]	[-]	[-]	[-]	[-]	[-]	[-]		[W]	[kcal/h]
Atelier legatorie	12	58	2144.00	Tip 22	1196	1.224	1	1	1	1	1.224	1.465	2927.01	2516.77
Sala calculatoare 1	20	50	2122.00	Tip 33	2197	1.000	1	1	1	1	1.000	0.966	2197.00	1889.08
Sala proiectii	20	50	2312.00	Tip 22	2393	1.000	1	1	1	1	1.000	0.966	2393.00	2057.61
Sala expozitie	20	50	8476.00	Tip 33	4241	1.000	1	1	1	1	1.000	1.999	8482.00	7293.21
Sala calculatoare 2	20	50	4600.00	Tip 33	4712	1.000	1	1	1	1	1.000	0.976	4712.00	4051.59
Sala media	20	50	6133.00	Tip 22	2051	1.000	1	1	1	1	1.000	2.990	6153.00	5290.63
Sala imprumut	20	50	2936.00	Tip 22	1538	1.000	1	1	1	1	1.000	1.909	3076.00	2644.88
Coridor 1	18	52	1089.00	Tip 22	1196	1.055	0.91	1	1	1	0.960	0.949	1147.99	987.09
Coridor 2	18	52	3892.00	Tip 33	4241	1.055	1	1	1	1	1.055	0.870	4473.36	3846.40
Sala legatorie	20	50	4442.00	Tip 33	4712	1.000	1	1	1	1	1.000	0.943	4712.00	4051.59
Grup sanitar 1	15	55	178.00	Tip 11	258	1.138	0.91	1	1	1	1.036	0.666	267.27	229.81
Grup sanitar 2	15	55	229.00	Tip 11	258	1.138	0.91	1	1	1	1.036	0.857	267.27	229.81
Windfang	12	58	565.00	Tip 11	509	1.224	1	1	1	1	1.224	0.907	622.85	535.55

2x700/600 Compact  
 900/550 Compact  
 1400/600 Compact  
 2x1800/600 Compact  
 2000/600 Compact  
 3x1200/600 Compact  
 2x900/600 Compact  
 700/600 Compact  
 1800/600 Compact  
 2000/600 Compact  
 500/300 Planora  
 500/300 Planora  
 500/600 Compact

### Calcul hidraulic

Denumire inc.	Q instalat			l [m]	d [mm]	w [m/s]	R [Pa/m]	$\Sigma\xi$ [-]	Z [Pa]	R*I [Pa]	R*I+Z [Pa]	$\Sigma(R*I+Z)$ [Pa]
	[W]	[kcal/h]	[kg/h]									
1.1	4712	4052.32	202.616	12	15x1	0.44	200	13.5	1350	2400	3750	3750
1.2	8953	7699.58	384.979	12.4	18x1	0.56	240	8.2	1230	2976	4206	7956
1.3	13194	11346.84	567.342	17	22x1	0.52	160	11	1430	2720	4150	12106
1.4	15587	13404.82	670.241	13	22x1	0.62	220	2.6	468	2860	3328	15434
1.5	17784	15294.24	764.712	13	22x1	0.7	260	2.6	637	3380	4017	19451
1.6	18980	16322.8	816.14	9.6	28x1.5	0.48	100	6.8	748	960	1708	21159
1.7	20176	17351.36	867.568	5	28x1.5	0.52	120	7.8	975	600	1575	22734
2.1	2051	1763.86	88.193	15.2	15x1	0.19	50	19.1	343.8	760	1103.8	1103.8
2.2	4102	3527.72	176.386	14	15x1	0.38	155	13.8	1035	2170	3205	4308.8
2.3	6153	5291.58	264.579	18	18x1	0.38	120	18	1350	2160	3510	7818.8
2.4	7691	6614.26	330.713	10	18x1	0.47	170	9.6	1104	1700	2804	10622.8
2.5	9229	7936.94	396.847	24	18x1	0.56	240	8.2	1271	5760	7031	17653.8
2.6	10425	8965.5	448.275	16	22x1	0.4	100	6.8	544	1600	2144	19797.8
2.7	14666	12612.76	630.638	7.4	22x1	0.57	190	5.4	891	1406	2297	22094.8
2.8	15182	13056.52	652.826	14	22x1	0.59	200	5.4	972	2800	3772	25866.8
2.9	19894	17108.84	855.442	12	28x1.5	0.5	110	9.6	1200	1320	2520	28386.8