REGULUS-SYSTEM HEATERS

CONTROLLED HEAT DISTRIBUTION

DYNAMIC HEATER SYSTEM

Present-day central heating systems are more and more complex and developed. They require sophisticated electronics, are more and more precise and they more respect produced energy. To plan a central heating system configured for a certain investor's needs well, elements which comprise the system and which possess separate functions must be looked upon separately:

1/. Heat production

2/. Storage of the produced heat

3/. Heat distribution

Those three components must consciously harmonize with each other. The result of the operation of a thought-out system shall be not only high thermal comfort but also high efficiency of the heating process at each of its stages mentioned.

The heat distribution system, i.e., the type of the heaters used, is an element neglected in reflections concerning economics of heating.

Heat distribution, i.e., a heater system, should be uniform or uniform to a maximum degree in relation to operation dynamics, that is, in relation to reactivity to a thermal impulse.

Controlling a mixed, dynamic and low dynamic heater system is an unnecessary impediment and requires more complicated installation which, in addition, does not use the produced heat in an optimal way.

The offer of the Regulus-system company is an example of the heater system uniform dynamics. A system of heaters built-in inside walls under the common name of Regulus-system INSIDE shall soon join the produced so far wall-mounted heater systems and canal heating systems.

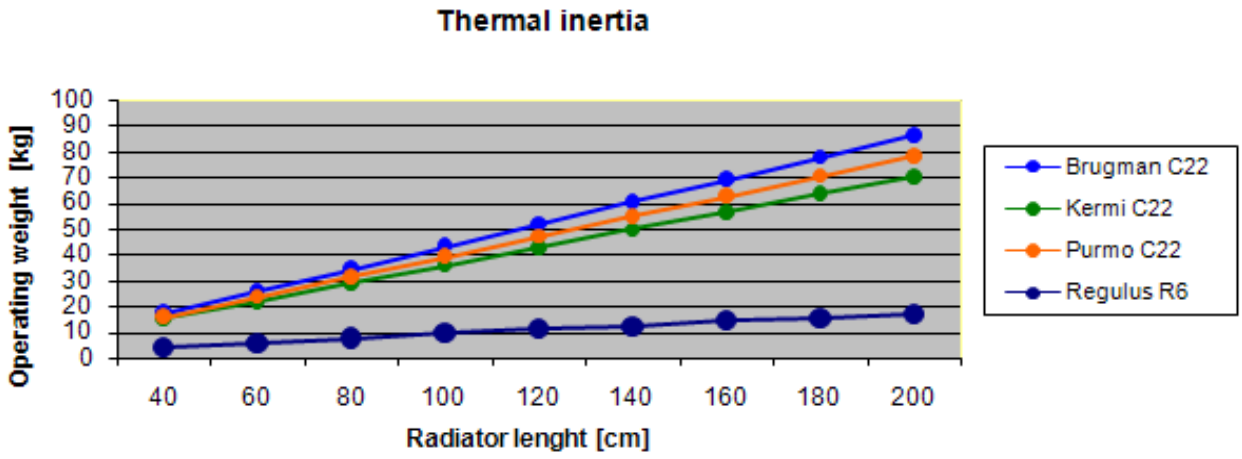
The Regulus-system heaters work fastest and most efficiently in the widest range of temperatures. The association "dynamic heaters = regulus heaters" is most legitimate.

What does the term "dynamic heater" exactly mean?

It is such a heater whose operation is easy to control. Easy and quick.

A dynamic heater reaches its full nominal power relevant to the temperature given on the supply with a small initial energy expenditure.

An installation with dynamically working heaters is easy to start and equally easy to stop. Some people claim that a heater is a heater , that differences in operation dynamics between different types of heaters are negligible. Consciously or not? Since how can differences in heating dynamics for different heaters of fundamentally different total weights (water in the heater + the heater weight) be negligible?



Total weight (water in the heater + the heater

Brand\Length (for heater 60cm high)	40	60	80	100	120	140	160	180	200
Brugman C22	17,28	25,92	**34,56**	43,2	51,84	60,5	69,1	77,76	86,4
Kermi C22	15,11	21,92	**28,74**	35,7	42,47	49,5	56,3	63,2	70
Purmo C22	15,64	23,46	**31,28**	39,1	46,92	54,7	62,6	70,38	78,2
Regulus R6	4,15	5,89	**7,63**	9,5	11,19	12,3	14,5	15,27	16,8

Attention! Data contained in the tables come from generally available producers' catalogues.

When it comes to size, a heater 80 cm long and 60 cm high is a heater most often used in Poland and applied in the largest number of premises.

If the heaters of this size are classified according to the criterion of the heater weight together with water contained inside, they shall appear in the following order:

1/. Regulus - 7.63 kg
2/. Kermi - 28.74 kg
3/. Purmo - 31.28 kg
4/. Brugman - 34.56 kg

The comparison of single heater weights, however meaningful, does not appeal to imagination as much as calculating the sum of heater weights for the whole installation does.

Let us calculate it for a medium-sized accommodation and restaurant object with, for example, 40 of our calculation heaters in it.

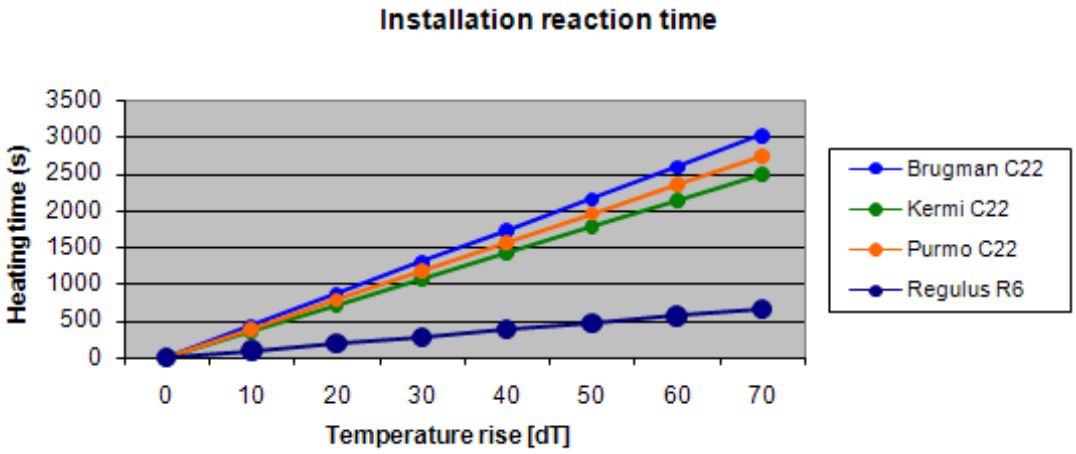
Their weight with water in the whole installation shall amount to:

1/. Regulus - 305.20 kg
2/. Kermi – 1149.60 kg
3/. Purmo – 1251.20 kg
4/. Brugman – 1382.40 kg

Which installation is easier to start and to stop quickly if the need be?

How much energy should be engaged for its start-up?

The difference in the c.h. system reaction time to thermal impulse results directly from the difference in its weight, and this parameter is an objective measure of the thermal inertia:



The time of the installation reaction at the constant boiler power

Brand\ΔT	0	10	20	30	40	50	60	70
Brugman C22	0	432	864	1296	1728	2160	2592	3024
Kermi C22	0	357	714	1071	1428	1785	2142	2499
Purmo C22	0	391	782	1173	1564	1955	2346	2737
Regulus R6	0	95	190	285	380	475	570	665

The time of the installation reaction to thermal impulse at the constant boiler power dT =30 oC (20- 50 oC)
1/. Regulus - 4.75 min
2/. Kermi - 17.85 min
3/. Purmo - 19.55 min
4/. Brugman - 21.60 min

Thus, the Regulus-system heater type R6/80 (60 x 80 cm) shall come faster by about 15 minutes in each heating cycle from the temperature of 20oC to the temperature of 50oC than any steel heater of similar size and power.

The time of 15 minutes in each heating cycle makes undoubtedly a significant difference, especially when we want to join economy in heating with maximum thermal comfort. However, the beginning of the heating process is not everything.

There is also the other end of the heating process. It is also extremely significant for thermal comfort and economical heating.

Heating should stop right after the required temperature registered by the thermostat or by the room temperature controller is reached.

The decision concerning the desired temperature was made by setting a specific interior temperature. Thus, when the temperature set on the controller is reached, the installation should stop heating. Immediately. In the meantime the boiler is turned off and the process of cooling of distribution system, that is, heaters, to the room temperature begins. It does not progress as fast as warming of the heaters due to gradually decreasing difference of temperatures (dT) between the heater and the room.

The low-weight Regulus heater warms up almost precisely to the temperature we want (excess over it is minimal), while the remaining heater types heat for a long time still since they have much larger weight. The heaters must give back the heat accumulated in them. And the desired temperature has already been reached… Is the heating still necessary? Certainly not… Quick stopping of the process of heat distribution, that is, heating, is also significant for thermal comfort and heating costs at the appearance of unexpected heat gains which in modern houses are countless or e.g., at sudden increase of insolation. Only a fast-reacting heater system will allow us to obtain financial profit from heat gains without any damage to thermal comfort.

To sum up: heating with the regulus heaters means controlled heat distribution, quick, dynamic heating; it is a unique thermal comfort on one hand and precise, optimal use of heat on the other.

Only precise heat distribution allows the optimal use of heat accumulated in buffer heat reservoirs of all kinds.