

## SCHEMES OF SOLAR HEATING SYSTEMS

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### ABSTRACT

Solar heating systems differ from other low-temperature heating systems by the presence of a special element-solar collector, which serves to receive solar energy and convert it into thermal energy.

**Key words:** passive, active, solar collector, automatic control

In addition to traditional heat sources (coal, gas and liquid fuel heat generating equipment), non-traditional sources such as solar and geothermal water energy can be used in heating systems.

In the conditions of Uzbekistan, it is especially appropriate to use solar energy for heating, because our republic is very rich in solar resources.

Solar heating systems are systems that use solar energy as a heat source. Great attention is paid to the use of solar energy for heating buildings.

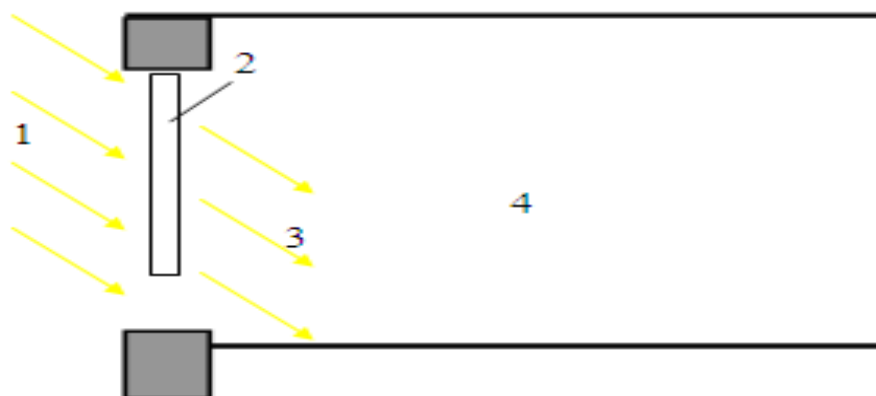
Solar heating systems differ from other low-temperature heating systems by the presence of a special solar collector, which serves to receive solar energy and convert it into thermal energy.

There are passive and active methods of using solar energy for heating buildings.

For passive heating, mainly architectural-constructive solutions are widely used.

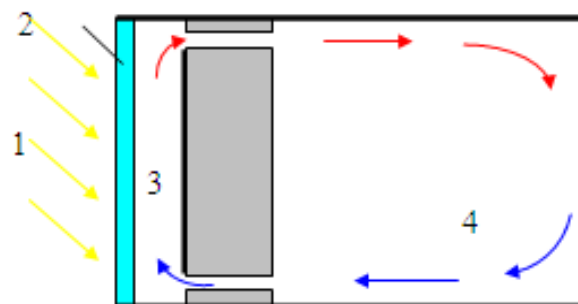
In the passive way, the orientation of the building, the location of windows and rooms, their dimensions and other architectural and constructive solutions play a big role in the direct entry of solar energy into the rooms and their heating in the winter season. In this case, it is necessary to prevent overheating of rooms from solar energy in summer.

**Passive heating of buildings** Direct sunlight enters the building through large windows



1- rays of the falling sun; 2- two-layer transparent coating; 3- solar radiation entering the building; 4- heated building.

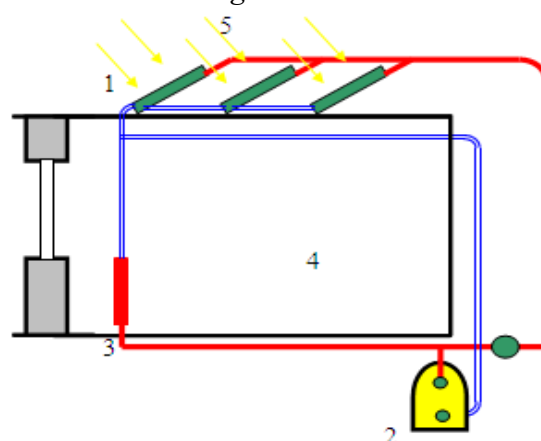
Passive heating systems do not use pumps and automatic controls.



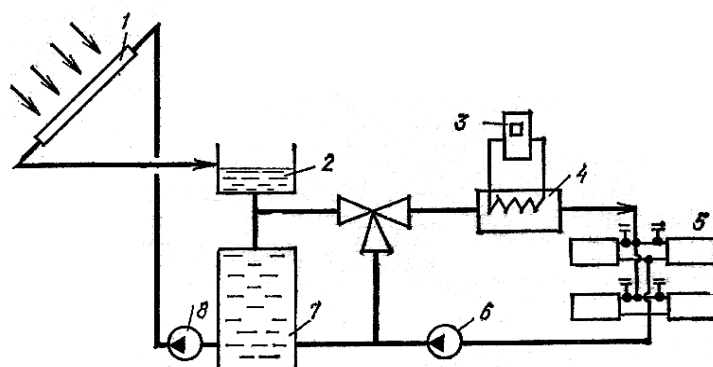
Scheme of passive solar heating system based on heating the outer wall of the building: 1- incident sunlight; 2- two-layer transparent coating; 3- southern wall with blackened outer surface; 4- heated building.

### Active solar heating system

In active systems, solar heaters are placed outside the building, for example on the roof, and the water heated in them is sent to the heating equipment located inside the building, i.e. radiators, with the help of a pump. On cloudy days and in the evenings, heating devices using traditional fuel are used to heat the building.



1- flat solar water heaters installed on the roof of the building; 2- fuel heater (boiler); 3- a heating radiator installed in the heated room; 4- heated room; 5- solar radiation



Solar heating system with flat collector: 1-flat solar collector; 2- expansion tank (drainage tank); 3rd additional heat source; 4- heat exchanger; 5-heating accessories; 6th pump; 7- battery tank; 8th pump

### LIST OF REFERENCES

1. Majidov T.Sh. "Noan'anaviy va qayta tiklanuvchi energiya manbalari" darslik. Toshkent, 2014 y.
2. Rashidov Yu.K. "Muqobil energiya manbalaridan foydalanish" moduli bo'yicha o'quv-uslubiy majmua, Toshkent TAQI, 2019 y.
3. «Системы солнечного теплоснабжения» М. Izdatelstvo MEI 2010 g.
4. R.M.Maxmudov, SH.A.Usmonov, Z.I. Xolmurodova, S.SH.Babanazarov, F.T. Xolmatov (2018) "Quyoshli isitish tizimlarida moddalarning erish issiqligiga asoslangan akkumulyatorlar." "Qayta tiklanuvchi energetikaning zamonaviy muammolari" mavzusidagi respublika ilmiy-amaliy anjumani materiallar to'plami. 2018-yil 71-73 betlar, Qarshi shahri.
5. Xolmatov F.T. Sattorov.A.B. "Use of efficient solar collectors in heating building" "Ishlab chiqarishning texnik, muhandislik va texnologik muammolari innovatsion yechimlari" xalqaro miqyosidagi ilmiy-texnik anjuman materiallari Jizzax, 2021-yil
6. Xolmatov F.T. "Aholi turar-joy binolarida issiqlik tizimini tashkil etishda muqobil energiya manbalarining qo'llanilish sohasining tahlili" Me'morchilik va qurilish muammolari (ilmiy-texnik jurnal) 2021 yil, № 3 (2 qism), SamDAQI
7. Saydullaev S.R, Sattorov A. Ananaviy qozonxona o'choqlarida yoqilg'i sarfini tahlil qilish va kamchiliklarini bartaraf etish. Ilmiy-uslubiy jurnal "UzACADEMIA" 2020, №3 "ACADEMIA SCIENCE" ilmiy tadqiqotlar markazi. 198-204 b
8. Sattorov Akbarali Bahodir o'g'li. ISHLAB CHIQRISH KORXONALARINING SHAMOLLATISH TIZIMINI TO'G'RI TASHKIL ETISH VA SAMARADORLIGINI OSHIRISH. Xalqaoro miqyosidagi texnik anjuman. Jizzax 2022.10.29
9. Мусаев.ИИ, Сатторов.А Умягчение состав воды с помощью реагентов. Memorchilik va qurilish muammolari ilmiy texnik jurnal 4-son Samarqand 2019 23-25b

### QO'SHIMCHA

1. O'zbekiston Respublikasi Prezidentining 01.03.2013 yilgi № PQF-4512-sonli "Muqobil energiya manbalarini yanada rivojlantirish chora-tadbirlari to'g'risida"gi Farmoni
2. O'zbekiston Respublikasi Prezidentining 26.05.2017 yilgi № PQ-3012 "2017-2021 yillarda qayta tiklanuvchi energetikani yanada rivojlantirish, iqtisodiyot tarmoqlari va ijtimoiy sohada energiya samaradorligini oshirish chora-tadbirlari dasturi to'g'risida"gi Qarori
3. QMQ 2.04.16-96 «Quyoshli issiq suv ta'minoti qurilmalari», O'zbekiston Respublikasi Davlat Arxitektura va Qurilish qo'mitasi, Toshkent 1996.

### INTERNET SAYTLARI

1. <http://www.arktika.ru/>
2. <http://www.veza.ru/>
3. <http://www.avok.ru/>