Calculation and Analysis of the Dependence of Steam Turbine Power on the Operation Mode of the Absorption Cooling Machine at Trigeneration Thermal Power Plants

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ABSTRACT

Heat electricity at the stations external environment temperature rise with station power relatively decreased goes him in moderation holding stand up problem very complicated task is considered Him in moderation holding stand up many to factors depend on This is the problem solution to do for heat electricity stations about has been very a lot information analysis to do Demand will be done.

In the article external environment temperature change with absorption cooling of the car the work mode power and a steam turbine power change between dependence temperature , cooling coefficient, cooling of the car energetic useful the work coefficient and from the station use coefficient and another sizes based on analysis done.

Keywords: Trigeneration, cold energy, absorption, cooling coefficient, from the station use coefficient of steam turbine power

Electric energy consumers continuously and good quality electricity energy with provide for heat electricity stations steam turbine constant power with performance Demand will be done. But effectively a steam turbine power constant won't be ie from the set more or less power with works _ External of the environment temperature increase with heat electricity stations compressor of devices performance it becomes difficult . And this of a steam turbine power from the set decreased to go reason will be from this except from the station use to decrease the coefficient take will come This is the problem solution to do for one how much complicated issue seeing exit and analysis to do need.

Of this for cold in season from the heat of the steam is being used heat from energy heat supply need non-existent from the heat almost unused period absorption cooling from his car using cold the air and cold-water work release can offer being carried out the process the following scheme based on done increase possible will be:

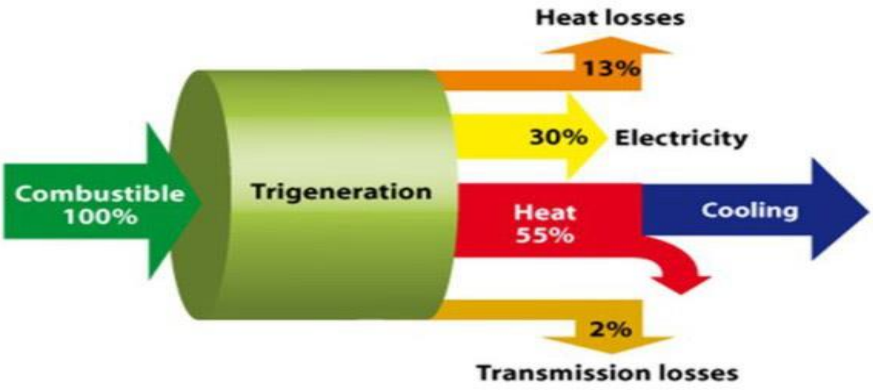

Fig 1. Energy balance trigeneration

Absorbent cooling machine trigenerational heat electricity of the station main aggregate is considered and it is har one of the stations from power come out account - books and analyses as a result is selected.

" Fergana thermal power station" enterprise for absorption cooling of the car the work mode indicators account:

- condenser heat:

$Q_k = h'_3 - h_3$ =3060-552= 250kJ/kg

- of the absorber heat:

$Q_a = h_1 + (f-1) * h_8 - f * h_8$ = 2915+(29.75-1) *270-29.75*248=3299.5kJ/kg

- Take it bride heat quantity:

$\sum Q_{ber} = Q_h + Q_o$ = 3444,6 + 2363=5807.6kJ/kg

- received heat quantity:

$\sum Q_{obtained} = Q + Q_a$ =2508+3299.5=5807.5kJ/kg

$\sum Q_{ber} \approx \sum Q_{received}$

- absorption cooling of the car cooling coefficient:

$E = Q_o / Q_h$ =2364/344.6=0.686;

- in the boiler room in use conditional of fuel heat to give ability Q=29.308MJ/kg ha equality and cooling coefficient account received without how much in quantity conditional fuel saving we calculate:

Dm =(1-1/2*k)/Q= (1-1/1.799)/29.308=15.149kg conditional fuel _

So, trigeneration the device if we use conditional 15.149 kg per hour fuel saving remains, we are:

- average consumption of natural fuel for 1kWh of electricity produced

$$B_i = \frac{b_{shart} * 5500}{Q_i^P} = \frac{359 * 5500}{8626,7} = 289$$

Here , **Q_i^P - for brine gas Q_i^P = 8626,7(kcal/m^3);**

b_{shart} − 1kvt

∗ soat elektr energiya ishlab chiqarish uchun shartli yo

- trigeneration device is mainly used in the hot season of the year, this time lasts from May to September in the conditions of Uzbekistan. If we calculate its working time, it will be as follows:

t_{work} = 6 months = 183 days*24 hours = 4392 hours organize does

- this at the time aggregate full in power when working:

$W_{trigeneration} = P_{installed} * t_{work}$ = 1551*4392 = 6811992 kW * h Cold energy work emits

- heat electricity from the center use coefficient if we calculate :

$K_f = W_{trigeneration} / W_{total}$ = 6811992/263520000 = 0.2585 organize is doing

Previous in case while that's it 60% of the coefficient does was:

$K_{f.previous} = K_f * 0.6$ = 0.2585*0.6 = 0.1551 organize does

So, K_f of value theoretical account to books according to to the previous one relative to:

$\blacktriangle K_f = K_f - K_{f.previous}$ = 0.1034 to rise reach possible will be

Conclusions and suggestions:

- the above theoretical calculations and analysis show that the use of an absorption cooling machine allows the use of almost unused low-potential heat;

- it will be possible to increase the coefficient of use of the station;
- we will be able to produce 3 types of combined energy at the same time
- reduction of fuel consumption is achieved

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