

The 10 most important rules for Thermoelectric Modules

1. Unaffected heat flows only from hot site to cold site.
2. In use of electrical power the thermoelectric module transfers heat from cold side to hot side. The electrical power is only used to convey the heat from one side to the other side of the thermoelectric module. The electrical power is not be used for destruction of heat.
3. The Thermal Management at the hot side of the thermoelectric module is the most important characteristic value for each application. ***As cooler the hot side as cooler the cold side could be kept.***
4. ***The whole heat flow volume which has to be transported must completely dissipated from the hot side of the thermoelectric module by a cooling system, a heat exchanger or a heat sink to obtain as much as possible low temperature at the cold side of the thermoelectric module.*** This is very important to avoid excessive heat at the hot side of the thermoelectric module. Otherwise the thermoelectric module would be destroyed.
5. The heat transfer and the thermal conductivity of all components the heat flows determines the efficiency and the performance of the system.
6. In case of under sizing of the thermoelectric modules for the particular application the temperature difference will become lower as lower the under sizing is. Depending on this the electrical power will increase more and more.
7. If the sizing is made correct the thermoelectric modules will increase the heat flux at the appropriate difference of temperature.
8. The use of thermoelectric modules makes sense
 - if the temperature of the available coolant (air, water etc.) is too warm to ensure a sufficient cooling of the object.
 - If an especial strong cooling has to be concentrated to a very small zone
 - If vibrations may not be generated
 - If noise are not desired
 - If any fitting position is requested
9. The reversion of polarity of the electrical current changes the cold side with the hot side.
10. The quality of the thermoelectric modules is determined mainly by the following properties:
 - Maximum of permitted temperature
 - Quantity of permitted cycles of temperature
 - Mechanical construction without strain
 - Flatness and parallel variance of the surface area