

Thermoelectric Devices

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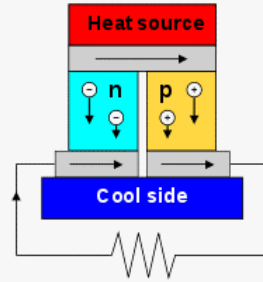
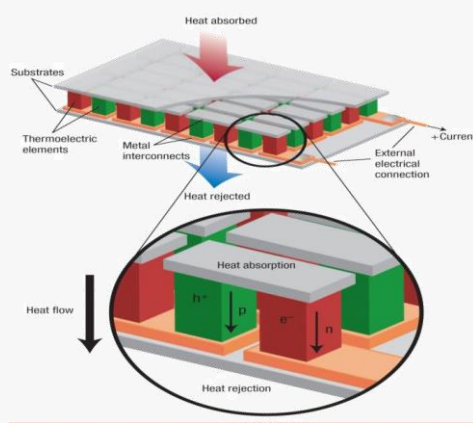
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Thermoelectric Generators (TEGs)



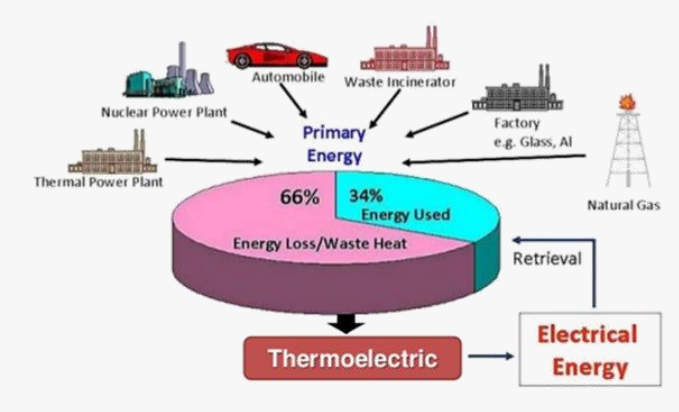
Seebeck effect
$$E_1 - E_2 = S(T_1 - T_2)$$



- Direct energy conversion.
- No moving parts or working fluids.
- Noiseless operation.
- Long life span.
- Versatile.
- No scale effect.
- Low efficiencies (up to 20%).
- High cost.

Applications

- Electricity generation in extreme environments (Space exploration; Remote areas).
- Waste heat recovery in transport and industry.
- Domestic production in developing and developed countries .
- Micro-generation for sensors and microelectronics.
- Solar thermoelectric generators.



Improving TEG electric power generation for:

- Waste heat recovery (Cement Plants).
- Portable devices.