



# Plate Thermoelectric Generator

## 板式热电发电机



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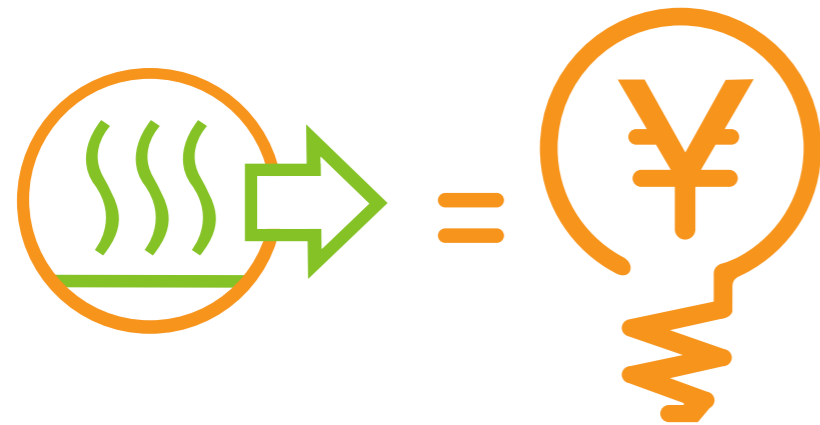


低温域热发电领先技术  
leading manufacturer in thermoelectric technologies

[www.leizigTE.com](http://www.leizigTE.com)

# The Properties Of Materials

ZT=1.81



## About Us

Leizig utilizes unique construction techniques to convert small degrees of temperature difference into electrical (DC) power. And the high efficiency of thermoelectric conversion in low temperature field is our company's purpose for product research.

Our company all the time commits itself to technological innovation and independent research of high performance thermoelectric materials and their process. The thermoelectric figure of merit reaches 1.81, and the thermoelectric conversion efficiency is 14% at 100°C. Our self-developed semiconductor thermoelectric conversion chip is suitable for the field of automobile, business, industry, national defense, aerospace and field, photonics, biomedicine, petroleum, natural gas, mining, telecommunications (optical communications) and so on. They can provide green clean energy for the industry in energy conservation and emission reduction. At the same time, they can produce remarkable economic benefits.

### Thermoelectric core

- > TEG thermoelectric generator (high power generating efficiency, wide range of application, for 300K~400K in low temperature field, thermoelectric power generation or cooling)
- > TTF Thermoelectric thin film

### Thermoelectric product

#### Plate thermoelectric generator

- > PTG1\PTG2\PTG5, plate energy converter (high power generating efficiency, Compatible with the advantages of plate heat exchanger, disassemble, easy to expand modules)

#### Solar Collector thermoelectric Panel

- > STEP1 Solar-thermal compound dry power board (Combined with solar photovoltaic panels, implement solar-thermal composite power full use of solar energy)
- > STEP2 Solar-thermal compound wet power board (Combined with solar photovoltaic panels is applied, combined use of electricity and hot water)
- > STEP5 Plate solar collector electricity board (Distributed solar thermal power generation)

#### Micro thermoelectric generator

- > EHA-PA Panel-Air
- > EHA-WW Water-Water
- > EHA-WA Water-Water

### Thermoelectric Power Station

- > Solar power station with photovoltaic and thermoelectric generation
- > Solar thermal power station
- > Low-enthalpy waste heat station of Industrial low temperature
- > Waste heat station of building
- > Geothermal power station



## 关于我们

雷子克拥有低温领域热电领先技术, 公司以“低温领域高效率的热转电利用”为产品研发宗旨。

不断致力于技术创新, 自主研发高性能热电材料及生产工艺, 材料的热电优值ZT达到1.81, 100°C时材料的热电转换效率为14%, 全自主研发生产的半导体热电转换芯片, 适用于汽车领域、商业、工业、国防、太空和光子学领域、生物医学、石油、天然气和采矿、电信(光通讯)等领域, 为行业节能减排提供绿色清洁能源, 同时给企业带来显著的经济效益。

### 热电核心

- > TEG 热电芯片 (发电效率高, 应用范围广阔, 用于300K~420K 低温的领域, 可选择发电、制冷)
- > TTF 热电薄膜

### 热电产品

#### 板式热电发电机

- > PTG1\PTG2\PTG5, 板式热电发电机 (发电效率高, 兼容了板式换热器的优点, 可拆卸, 易调整发电机组的功率, 可增加拓展模块)

#### 太阳能集热发电板

- > STEP1 太阳能集热复合干式发电板 (与太阳能光伏板结合运用, 实现太阳能光热复合发电太阳能光谱全利用)
- > STEP2 太阳能集热复合湿式发电板 (与太阳能光伏板结合运用, 发电和热水合并利用)
- > STEP5 太阳能平板集热发电板 (太阳能分布式热发电)

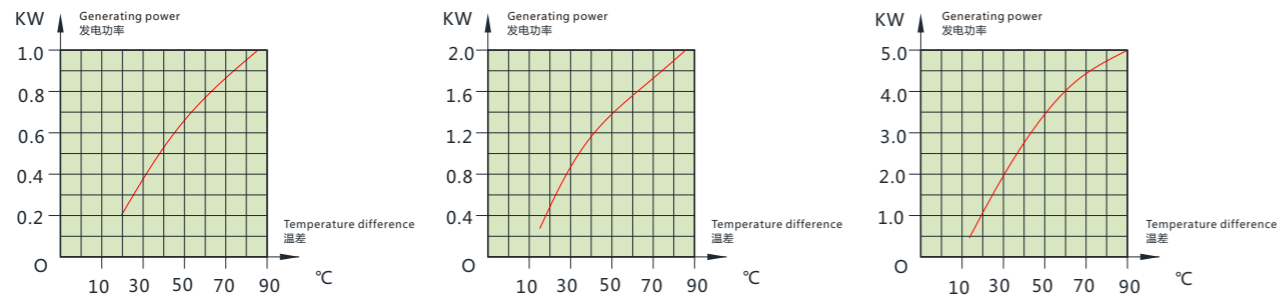
#### 微电源

- > EHA-PA 板气微电源
- > EHA-WW 水水微电源
- > EHA-WA 水气微电源

### 热电电站

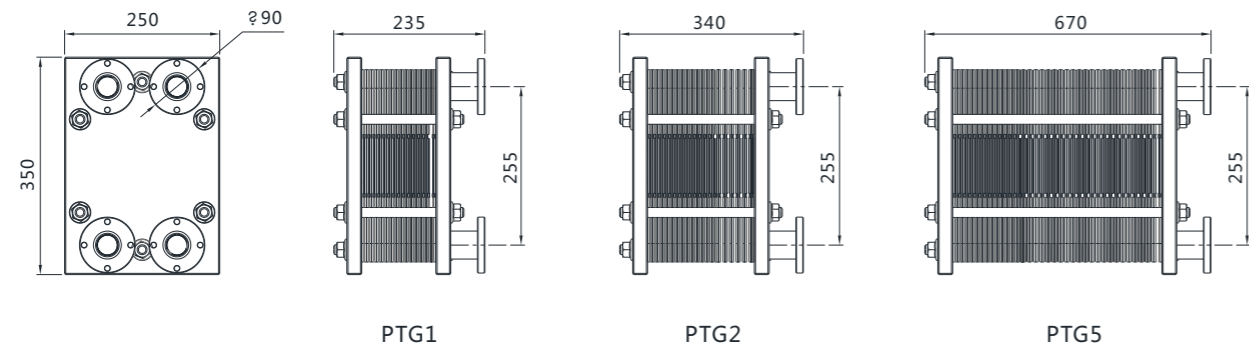
- > 太阳能光热复合发电站
- > 太阳能热发电站
- > 工业低温废热发电站
- > 楼宇废热发电站
- > 地热发电站

Performance curve 曲线性能图

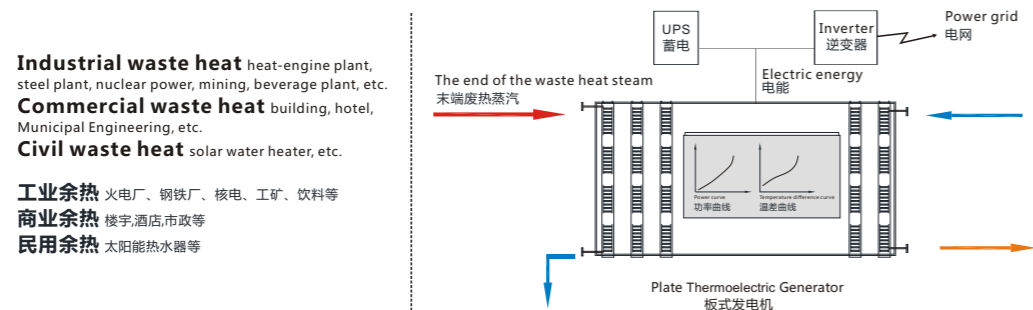


Relations of PTG1 between power and temperature difference  
PTG1温差/功率关系  
Relations of PTG2 between power and temperature difference  
PTG2温差/功率关系  
Relations of PTG5 between power and temperature difference  
PTG5温差/功率关系

Outside dimension drawing 外形尺寸图

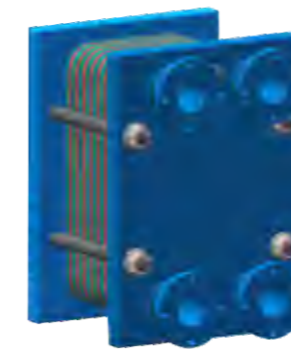


Application 应用图



**Industrial waste heat** heat-engine plant, steel plant, nuclear power, mining, beverage plant, etc.  
**Commercial waste heat** building, hotel, Municipal Engineering, etc.  
**Civil waste heat** solar water heater, etc.  
**工业余热** 火电厂、钢铁厂、核电、工矿、饮料等  
**商业余热** 楼宇、酒店、市政等  
**民用余热** 太阳能热水器等

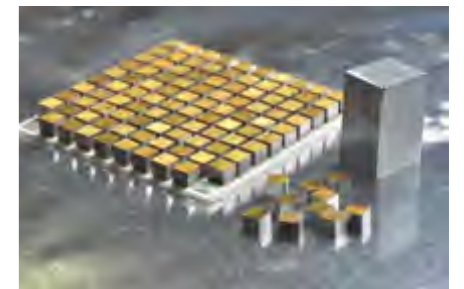
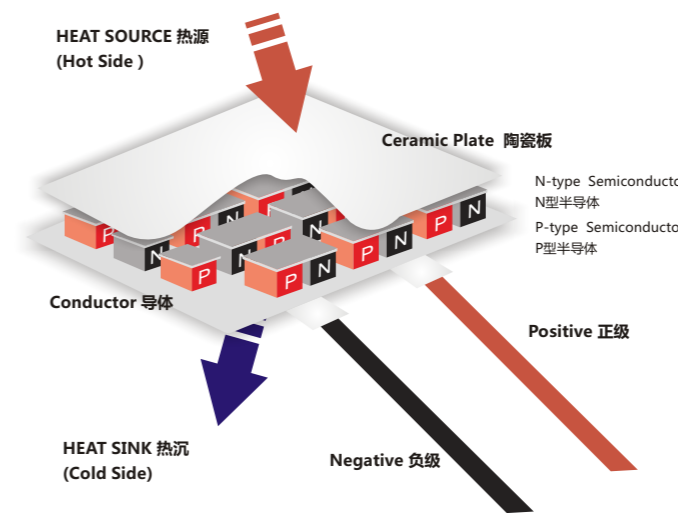
Through the cold and hot fluid or steam pressure and high performance of the Lezig thermoelectric chip to realize high power high energy density electric generation, realizing electric generation from waste heat or available low temperature of distributed heat. 通过有压力的冷热流体或蒸汽和高性能的雷子克热电芯片实现大功率高能量密度的发电功率，实现从废热或可利用低温域热的分布式发电。



Features 性能特点

- Small value, compact-sized, light weight, little space occupation
- Easy-maintainable, non-fouling, Easy installation and cleaning
- Combined the semiconductor wafer with the traditional heat exchanger, providing high electricity generation performance
- Power generation can be adjusted according to the number of plates, easy to control costs and benefits;
- For intensive waste heat power generation, superior performance, long service life.
- 体积小，结构紧凑，重量轻，占用空间小；
- 易维护，不易结垢，安装清洗方便；
- 半导体片与传统板式换热器整合，具有较高的发电性能；
- 发电量可根据板片的数量来调整，易于控制成本与收益；
- 用于密集的废热发电，性能优越，使用寿命长。

Schematic diagram 原理图



Semiconductor thermoelectric power generation module is made of semiconductor materials. The Seebeck effect module can directly convert thermal energy to electricity and have advantages of no mechanical moving parts. It is usually composed of P, N two types of different semiconductor thermoelectric materials with high electrical conductivity. The guide vane is connected in series with a guide plate which is fixed in ceramic pieces on the two sides.

半导体温差发电模块是利用半导体材料制作的塞贝克效应模块，将热能直接转变为电能，而无须任何机械运动。它通常是由P、N两种类型不同的半导体温差发电材料，经电导率较高的导电片串联，并将导电片固定与两端的陶瓷片上。

Version	PTG1	PTG2	PTG5
Serial number	30300001	30300002	30300003
External dimensions (WxHxD)	235 x 350 x 250mm	340 x 350 x 250mm	670 x 350 x 250mm
Plate	SUS304 stainless steel/ δ =1.0mm		
Shim	High temperature resistant fluororubber		
Frame clamping piece	45(Industry)steel plate		
Module dimensions ( W x H x D)	277 x 160 x 8mm		
Rated temperature	-20°C ~ 150°C		
Rated/experimental pressure	2.5/2.8 MPa		
Process assembly	Single flow opposite angles		
Maximum heat exchange power	12KW	23 KW	60 KW
Rating power	1.0 KW	2.0 KW	5.0 KW