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1 *Thermoelectric high temperature modules (TEM) based on half-Heusler alloys and on skutterudites.*
2 *TEM based on skutterudite compounds. The module can be deployed at temperatures of up to 450 °C.*

SKUTTERUDITE MODULES

THERMOELECTRIC HIGH TEMPERATURE MODULES BASED ON SKUTTERUDITES

Converting waste heat into electricity – this is what Fraunhofer IPM achieves with the aid of thermoelectric modules (TEM): In future, thermoelectric waste heat recovery will play a key role in making more efficient use of energy – in power plants, industrial processes or automobiles. Fraunhofer IPM Skutterudite TEM are based on skutterudite compounds and can be deployed at temperatures of up to 450 °C. With a size of 16 mm × 16 mm, they achieve a maximum output power of 1.4 W. The thermal resistance of the module can be individually adjusted to the application through optimization of the module's geometry. Fraunhofer IPM offers custom-tailored TEM for specific requirements.

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Electrical data

Hot side temperature (T_h)	350 °C	450 °C
Cold side temperature (T_c)	20 °C	22 °C
Maximum output power (P_{max})	0.86 W	1.4 W
Internal resistance (R_i)	90 mΩ	95 mΩ
Short circuit current (I_k)	6.2 A	7.5 A
Open circuit voltage (U_0)	0.56 V	0.74 V
Calculated efficiency	5,0 %	7,0 %