

Swaged Thermocouple



TEMPSENS

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What is Swaged Thermocouple?

Swaged tip thermocouple is special-purpose thermocouples in which thermal sensing element area is reduced by swaging, which leads to a faster response from the sensor. The thermocouple is manufactured in rugged construction which allows safeguarding the sensor against the effects of vibrations, therefore increasing its useful life and preventing inoperativeness.

Swaging is a type of forging process in which a part is hammered and reshaped using rotary dies. The method of swaging dies runs at over 500 blows per minute until the desired final, reduced diameter is achieved. The swaging process does not compromise the ruggedness of the structure but helps to increase the tensile strength as the process strengthens the grain structure of the material. This process gives the thermocouple forging the advantages of being simple in construction and inexpensive to manufacture. The process also adds high resistance against being burned up.

These types of thermocouples have large diameter throughout the length to hold out against harsh environmental conditions, except the bottom swage area where the sensor is located. Sheath can be bent, twisted and flattened to suit particular installations. The heat generated on the swaged tip mineral insulated allows the sensor to be formed in a particular shape without disturbing performance.



Features

- Fast response as a result of lower thermal mass at the tip.
- High accuracy and stability throughout operating with high insulation resistance.
- Rugged construction provides high strength and is suitable for harsh conditions.
- Cost Effective as compared to expendable thermocouples.
- Ceramic coated tip can be used to measure temperatures of molten metal with high accuracy without damaging the sensor.
- Can be used with digital pyrometer and other instruments. Durable alternative for expandable thermocouple.

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Swaged Thermocouple Installation

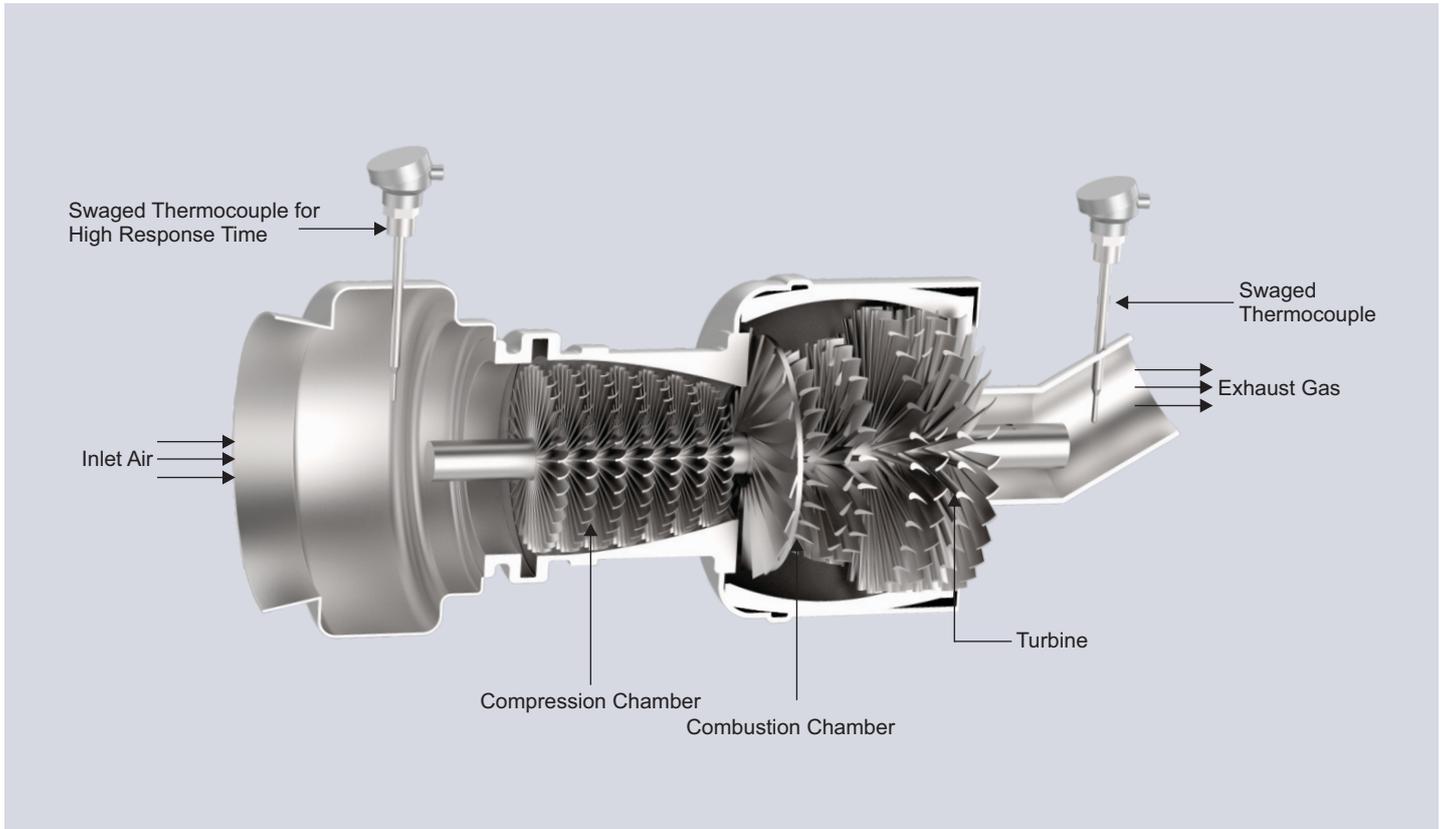


Fig. Gas Turbine Swaged Thermocouple Assembly

Technical Specification

Element	K, N, E, J, R, S, B.
Insulation material	Mineral Magnesium Oxide (MgO)
No. of sensors	Simplex
Hot junction	Grounded, Ungrounded
Sheath material	SS316, SS310 & Inconel 600
Sheath diameter	12.6, 10, 8, 6 etc.
Response Time	Less Than 10 sec.
Temperature Range	Depending on material
Process connection	Customizable according to applications.
Length of probe	Upto 2000mm.
Swaged Outer Diameter	Upto ~1mm for a length of upto 100mm. (Varies acc. to the sheath diameter).

Applications

- Molten metal and non-metal temperature measurements
- Smelting and casting process.
- Aircraft and automotive engines
- Gas turbines and Ground equipments
- Temperature measurement of fluid flow in extreme conditions