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Application of abradable seal to improve compressor performance & to reduce corrosion damage

REASON FOR SUGGESTION:

It is desirable to maintain the compressor efficiency at high level in long term operation, and the labyrinth seal is one of the key components for the compressor efficiency. Aluminum labyrinth seals are generally applied at the impeller eye and between the impeller stages to minimize the gas leakage loss.

Though it is conventional one and it has rich experiences, it may be deteriorated by rubbing and/or corrosion depending on the actual field operating conditions.

DETAILS OF SUGGESTION:

Instead of the conventional Aluminum labyrinth seal, abradable seal is possible to be applied to save the leakage loss. Labyrinth fins are machined on rotating parts, and abradable material (FLUOROSINT or Si-Al graphite) is applied on stationary part. This type of seal can be installed at impeller, inter stage, balance piston and shaft seal labyrinths.

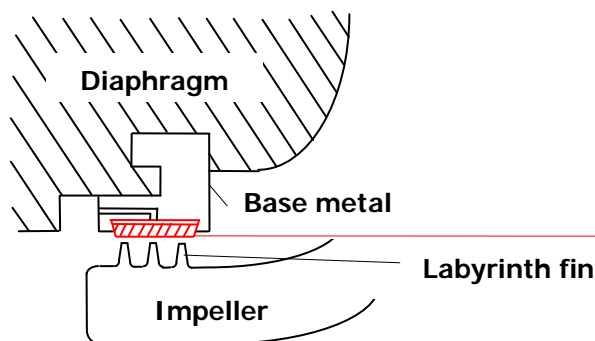
Abradable seal has following advantages.

- 1) Narrow clearance can be realized compared with conventional Aluminum labyrinth seal.
- 2) Narrow clearance can be maintained, because the tip of labyrinth fins can be preserved against the abrasion.
- 3) Abradable material has good resistance property to the caustic environment.

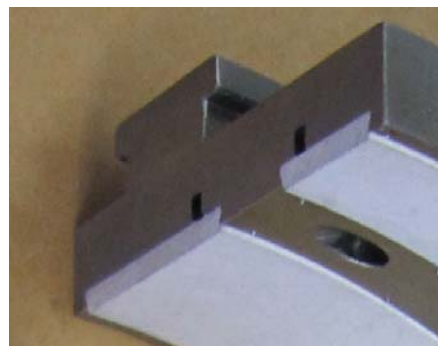
Below table shows the application guideline of abradable seals.

Material	FLUOROSINT	Si-Al Graphite
Pressure differential	Below 60 kgf/mm ²	Be subjected to base metal.
Temperature	From -50 deg c to 150 deg c	From 0 deg c to 430 deg c
Gas	All hydro carbon, Sour natural gas, chlorine mixed gas	

Remarks) If this type of labyrinth is applied, it is necessary to machine labyrinth fin on rotating part.



Layout map of Abradable Seal at Impeller



Abradable seal material (FLUOROSINT)

For more information or questions about these products, please contact us.