PSM's Inlet Bleed Heat System (IBH) for the 501F Gas Turbine addresses the issue of ice or snow buildup on the Inlet Filters and Compressor, which can lead to damage of the filter components and compressor. The IBH system can also provide increased turndown flexibility allowing emissions compliance at lower loads.

+ Ice and snow buildup on the filters causes damage to the filter house or blowout of the filter. This can result in anything from operation with unfiltered air to structural damage of the filter house. Protecting Inlet filters from ice buildup reduces flow blockage and FOD risk.

+ Sheets of ice which build up on the bell mouth/IGV get ingested to the unit and can create compressor airfoil damage, structurally compromising the system.

+ Ice created in the Row 1 Diaphragm during low load operation can result in Row 2 compressor blade damage.

+ When Part Load emissions limits are reached, a turndown benefit is realized with this installation.

PSM’s system puts air in front of the filters, diverting high pressure air from the turbine and injecting it upstream for full inlet system ice protection.
BENEFITS

PSM’s Inlet Bleed Heat System provides GT operability enhancements for cold climates as well as more temperate zones that experience condensate icing on the Diaphragms.

- Prevention of snow buildup and snow and ice in front of filters which can damage the filter house or cause a blow out of the super clogged filter.
- Prevention of ice buildup on the inlet bell mouth
- Prevention of Icing – ice building on Row 1 Diaphragm during part load operation.
- Turndown benefit – bleeding air from the combustor shell allows emissions compliance at lower loads.
- Installation can be completed during scheduled maintenance outages.

Summary of Features

- Anti-Icing system utilizes inlet heating from compressor discharge bleed air via extraction and injection hardware and instrumentation to:
  - Protect compressor airfoils against ice formation during “normal” GT operation
  - Protect inlet filters against ice / snow accumulation during “normal” GT operation

- Anti-Icing Alarm system at Filter, Inlet (Bellmouth & IGV) and Row 1 Diaphragm using Ice Formation Alarms will alert operator if:
  - Ice formation conditions exist in compressor
  - Ice / snow accumulation may be occurring on inlet air filters