

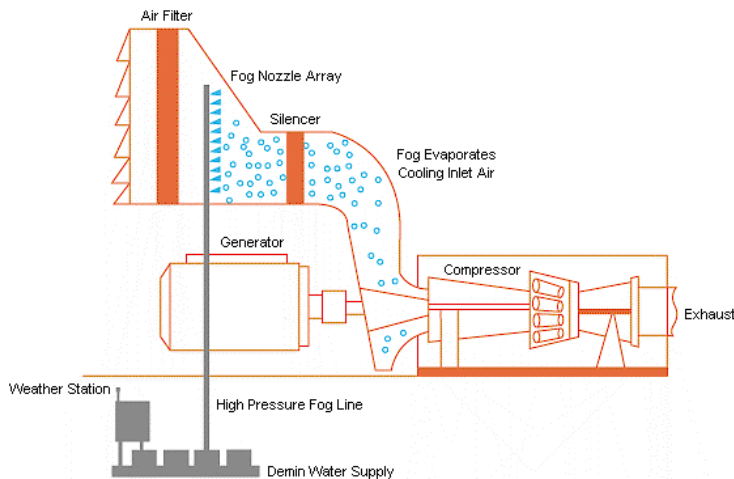
MIST/FOG COOLING OF INLET AIR OF GAS TURBINE

BENEFITS


- Reduction of inlet temperature, especially in dry hot seasons, which, in turn, increases the gas turbine output.
- Small droplets of 5-10 microns can evaporate effectively in airflow.
- Low capital investment (\$30-50/kW).

RESEARCH PROGRAM

- Simulating particle dynamics & phase change in rotating machinery
- Modeling droplet coalescence & break-up
- Modeling effect of duct contraction & expansion
- Modeling effect of over-spray & inter-cooling
- Conducting wind tunnel experiment to investigate droplet dynamics using a phase Doppler particle analyzer (PDPA)



CURRENT CHALLENGES



- Droplet collision & agglomeration
- Duct wetting & drainage
- Compressor inlet distortion of temperature & pressure properties
- Excessive fallout & pooling
- Efficiency of spraying matrix arrangement

