Low Inlet Guide Vane (IGV) Settings on the 7FA

The Inlet Guide Vane (IGV) controls the level of generation by modulating the airflow into the compressor. When the 7FA installations began rolling out in the 1990's, IGV settings were typically set at 88 degrees. For installations (PG7241) in the late 1990's into the early 2000's it was more common to see IGV settings anywhere from 78 to 84 degrees.

The shift occurred when the newer model was manufactured with flared compressors which increased airflow. The increased airflow provided additional margin, and thus allowed reducing the IGV angle, and actually reducing the generation to the guarantee. The first release of the newer model had lower margin and when guarantees were missed liquidated damages were triggered. In order to minimize the penalty units were sometimes overfired which put lifecycle stress on the component parts. The flared compressor was a sound strategy to provide additional generation rather than overfiring the turbine, however that extra margin allowed for a derating of the turbine firing. Contractual programs and software were then sold to correct these low IGV settings at a high cost to plant ownership.

The flared compressor design has operated for years in an underfired state that was set at commissioning. There is an opportunity to recover the hidden generation.

GTAnalysis offers an economical and practical alternative to restore your 7FA to its rated firing and to increase generation. We have developed ***GTopt***, our alternative Performance Optimization Program, which will improve performance at a much lower cost to plant ownership. With the ***GTopt*** process a performance engineer will review plant and performance data and will adjust control settings that were left during commissioning (such as the partially closed IGV's) and correct underfired control curves, underrated unit operation, and mismatched part-load control curves.

GTopt is a one-time project with long term results.

A typical late 1990's - early 2000's 7FA installation can expect these types of results after ***GTopt***:

GTopt Typical Results	Combined Cycle 2x1 Plant	Simple Cycle Plant
Generation Gain	+25 MWe	+8 MWe
Heat Rate Decrease	-40 Btu/kWh	-60 Btu/kWh

THE NET:

Increased MW output
Heat Rate Improvement
Better Turndown
Reduced Start-Up Costs

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