



AUBURNDALE POWER PLANT

LOWERING INLET FILTER PRESSURE DROP BRINGS YEARLY SAVINGS OF OVER \$100 000

Auburndale Power Partners is a combined cycle gas turbine power plant, operated as an intermittent facility by the Cathiness Energy Group. The plant is located in central Florida, USA.

Commissioned in 1994, the gas turbine is a Siemens Westinghouse 501D5 with typical capacity of 117 Megawatts. The inlet airflow of this turbine is approximately 650,000 cubic feet per minute. The filter house is a vertical design using 860 filters with a “twist

lock” retention method.

Auburndale has a humid subtropical climate, with two main seasons. Hot and rainy summers, with temperatures that exceed 90 °F (32 °C) nearly every day. The average annual rainfall in Orlando is 50.6 inches (1,290 mm), a majority of which occurs in the period from June to September. During the cooler seasons, humidity is lower and temperatures average 71 °F (22 °C).

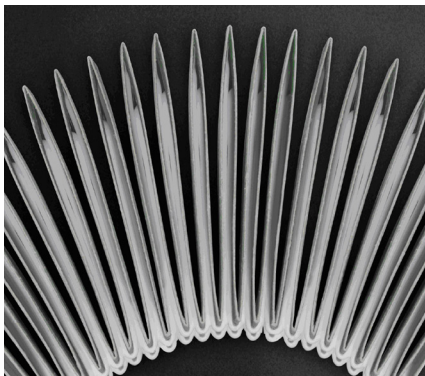
The problem

The plant was experiencing high pressure drop and short filter life. In reviewing the situation it was determined that the hot and humid climate of Florida was degrading the performance of the filter.

It was causing the filter media to swell and in turn the filter pleats were deforming, pinching together under the humid conditions, causing the pressure drop to increase. The operator was seeking a high performing filter to solve his issues.

Camfil Solution

Camfil proposed its pat-ented **HemiPleat™** technology using high efficiency (HE) filter media. The HemiPleat™ tech-nology uses hot melt glue beads to hold the pleats open with wide pleat spacing which is not found in other filters.



The wider pleat is kept open with hot melt glue beads

This pleating combined with the glue bead technology is effective in all environments, especially hot and humid places such as Florida. The beading separates the filter pleats and ensures that all of the filter mediapack is fully utilized. The HE media is a high

efficiency – MERV 15 / F9 – moisture resistant filter media. This combination of the HE media and **HemiPleat™** technology provides a robust solution.

The technical key differentiation points

The **HemiPleat™** open pleat-ing technology offered wider spacing, exposing more surface media to the air stream and resulting in:

- Lower overall pressure drop and more importantly, minimal pressure drop increases in high humidity
- Improved dust release during pulse cleaning
- Longer element life

Results

Three years ago, the operator purchased the **HemiPleat™** filters rather than returning to the original supplier filters. The performance advantages after three years have more than paid off.

The power output was improved due to the lower pressure drop, savings approximately \$395 000 over the 3 years. The longer life also reduced filter change out frequency and reduced man hours required to do the changes. The **HemiPleat™** improved the overall life cycle cost of the filters for the operator.

THE RESULTS	COMPETITION FILTERS	CAMFIL HEMIPLEAT™
INITIAL PRESSURE DROP	2.2'' wg (550 Pa)	1.4'' wg (350 Pa)
SERVICE LIFE	Plugged after 2 years	1.7'' wg (425 Pa) after 3 years

PRESSURE DROP SAVINGS ESTIMATION OVER 3 YEARS

Power loss due to pressure drop (DP)	0.45% of power per ''wg (250 Pa)
Average lower DP of HemiPleat [Initially 0.8''wg, 1.30''wg after 3 yrs = 1.0'' in average]	1.0 inch of water (250 Pa)
Total power loss [0.0045 x 117 MW]	.5265 MW
Average operating hours per year	5000 hr
Power loss per year	2632.5 MW-hr
Value of Power	\$50 / MW-hr
Value per year [2632.5x\$50]	\$131 625
Total savings for 3 years	\$394 875

