



**SMI Turns an EPA Project into \$765K in Annual Operating Savings**

*Receives \$600K Energy Rebate*

*“To comply, we have to record pressures and visible emissions from 120 dust collectors.”*

## Challenge

New state EPA regulations (Massachusetts DEP) require Specialty Minerals (SMI) to monitor and report filter differential pressure (DP) and pulse pressure and to conduct Method 22 visual emission inspections twice daily on every dust collector/baghouse.

With 120 baghouses at its Adams, MA, calcium carbonate mine, SMI faced a large expense and concerns about straining the maintenance staff and hampering production.

Leading mineral producers gain a competitive edge by investing in technology, including intelligent control and sensing tools to drive production and operational efficiency. SMI took this mind set and not only met the new requirements but found solutions that provided additional benefits.

*The plant installed a network of FilterSense B-PACs™ and FilterWARE™ HMI/SCADA.*

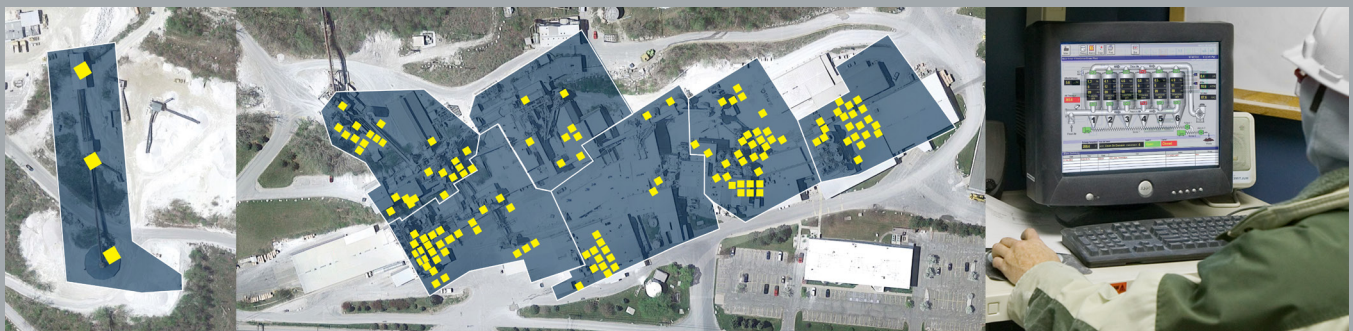
## Solution

Plant engineers reviewed all options, from installing the minimum to meet the regulation, to replacing their DCS.

After learning of the many process control, environmental, and operating benefits of FilterSense B-PACs™ (Baghouse Performance Analyzer & Controllers), SMI saw a fast return on investment operationally and the potential for energy rebates.

SMI initially purchased four B-PACs and FilterWARE™ HMI/SCADA to validate the benefits and energy savings. FilterWARE was used to provide Massachusetts Electric with before-and-after data to authorize a rebate.

The test was a success. SMI estimated the B-PACs alone would provide a two-year return on investment. The utility company issued a \$600K rebate for the documented energy savings, reducing the ROI to one year.



*SMI installed 120 B-PACs™ (yellow squares) networked to 7 FilterWARE™ stations (blue zones) to centralize real-time data from over 10,000 process tags to optimize production, reduce maintenance rounds, keep workers safer, reduce energy use, and cut emissions.*

# Application Note

*With filter leak locating and IntelliPULSE™, “the plant was much cleaner and quieter.”*

## Benefits

While the B-PACs™ provide a turn-key solution to meet the EPA regulations, numerous improvements to operations provided the long-term value.

### B-PAC™ - IntelliPULSE™ Technology

Reduced energy use by 60% (see below). Less pulsing also extended the life of 20,000+ filters – replacement costs fell 40%. Precise DP/airflow control on dryers improved product quality. Neighbors no longer complain of pulsing noise.

### B-PAC™ - Diagnostics

Real-time diagnostics on 2400+ solenoids/valves and leak locating by row for the 20,000+ filters provide preventive maintenance to avoid downtime and keep employees safer. Filter leaks are identified well before visible emissions.

### DynaCHARGE™ Particulate Monitors

DEP approved DynaCHARGE to replace the twice daily visual inspections, a net 100% time saver. DynaCHARGE provided Pre-Visible™ filter leak detection and was maintenance free (vs. previously tested triboelectric). Neighbors no longer complain about dust plumes.

**Non-Clogging DP Transmitter** (FilterSense model DP 20T) Dirty-side clogging and clean-side icing were eliminated, reducing maintenance and increasing safety. Accurate DP enabled optimizing production.

### FilterWARE™ HMI/SCADA

FilterWARE provides centralized analysis and control of 120 baghouses spread over 300 acres. Maintenance is deployed proactively to prevent downtime. FilterWARE logs data, work orders, and corrective actions, and generates EPA, process, and maintenance reports. The result is improved production with countless man hours saved – the plant estimated savings equal to 2 persons, full time, 7 days a week.



Operators access control and diagnostic functions from the B-PAC™ control units at the process, or remotely using FilterWARE™.

**Table 1**

Annual Operating Savings	
General Operations	\$365,000+ <sup>1</sup>
Compressed Air	\$400,000 <sup>2</sup>
1. Labor [\$200K], filter use [\$65K], production output [\$100K+]	
2. Calculated by comparing compressed air consumption (before/after); reviewed and accepted by Massachusetts Electric for rebate amount.	

**Table 2**

High-Value Intangibles	
Employee Health & Safety	Minimize personnel entry into confined spaces, exposure to hazardous particulate, icy ladders, and heights
Good Neighbor	Improve community image and relations
EPA Relations	Proactive actions typically lead to collaborative relations with regulatory agencies

*“FilterSense’s engineering support and product quality made it one of our smoothest projects.”*

### Energy Savings and Rebate

Prior to installing B-PACs, SMI’s baghouses were continuously pulse cleaned unnecessarily. This required 9 compressors to meet the demand. With IntelliPULSE, pulsing was reduced by 90% on most baghouses, providing the majority of savings (Figure 1). Subsequently 4 compressors were taken offline. Together this yielded more than a 60% reduction in electricity consumption.

B-PACs also detect and locate ruptured pulse diaphragms. During commissioning, the plant found and replaced many leaking diaphragms. This contributed to the compressed air savings.

**Figure 1 – Compressed Air Usage (kWh/day)**

