

FS-Elliott's Energy Savings Program Example:

Maintain Existing Driver (Power) and Increase Air Capacity

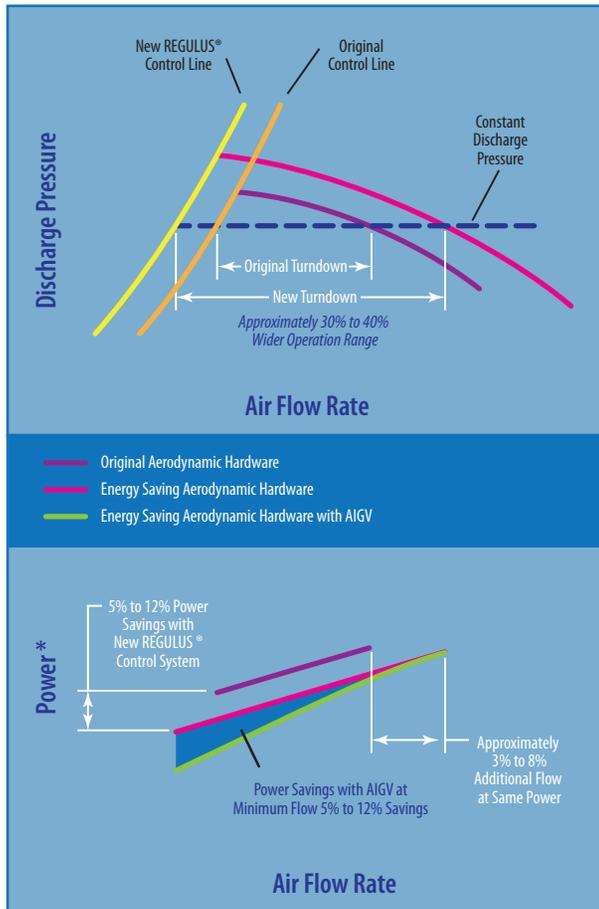
Existing Compressed Air System

- Installed Ten Years
- Constant Discharge Pressure Required
- Inlet Butterfly Valve
- Electro-Pneumatic Control System

Energy Savings Program Upgrades

- New Advanced Aerodynamics
- PLC based REGULUS® Control System
- Adjustable Inlet Guide Vanes

The following illustration characterizes typical ranges of energy and operational enhancements available with the Energy Savings Program.



*Power Required at Constant Discharge Pressure

For more information and details on the Energy Savings Program and other ways FS-Elliott can benefit you please contact us:



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ISO 9001 – Certified for design and manufacture of centrifugal compressors.



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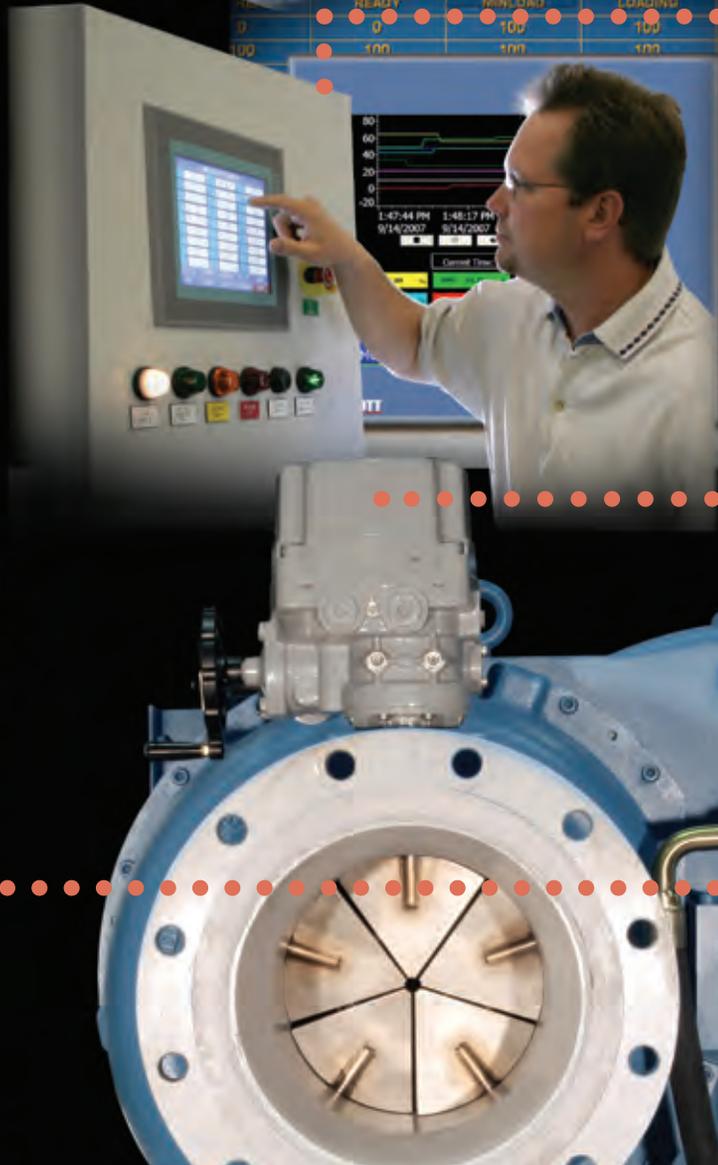
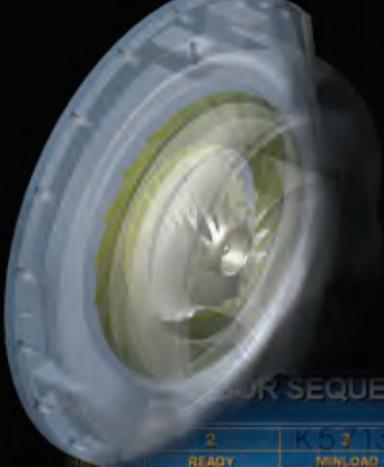
FS-Elliott's Energy Savings Program

Energy management is the most important factor that impacts the long term cost of ownership for a turbocompressor installation. Simply stated – the more efficient the system the lower the operational cost. Many existing compressor installations can benefit from the advances in turbomachinery technology, system controls and materials of construction since these units were commissioned.

Four energy savings modifications that can be installed at your site by our experienced TEAM of technicians.

- *Advanced Aerodynamic Staging*
- *REGULUS® Control System*
- *Adjustable Inlet Guide Vanes*
- *Pulsar™ – Zero Air Loss Drain Valve*

Select one or all four of these modifications that match your facility's need and immediately start benefiting from the energy savings. All of the Energy Savings Program modifications include a one year warranty.



Energy Savings Program – Key Elements

Advanced Aerodynamic Staging:

Rerating an existing compressor to a new set of operating conditions is often the most economical and efficient means to meet your system's changed compressed air requirements. These modification can be accomplished by replacing the specific aero components needed or by replacing the entire air end. This decision is typically a case by case evaluation based on the site specific circumstances and the condition of the existing equipment. Let our experienced TEAM provide the details necessary for you to make the proper evaluation.

REGULUS® Control System:

Modernize and integrate your facility's air compressor controls with today's industry leading benchmark – FS-Elliott's REGULUS® Control System. This proven Programmable Logic Controller (PLC) based system is designed with leading edge technology processors and memory capabilities providing energy savings and improved reliability and convenience. At the touch of the Human Machine Interface (HMI), the operator dictates how the REGULUS® monitors, controls and manages all of the air compressor system needs. Plant operators can perform these functions locally or from a remote location. The compressor can virtually run unattended at optimum efficiency through various plant air demand conditions. The energy savings features include precise air system pressure control, maximizing turndown capability, the advanced adaptive controller permits safe and protected operation closer to actual surge, built in multiple control modes that adapt to changing conditions and multiple compressor unit energy management capability.

Adjustable Inlet Guide Vanes:

Many turbo compressors installed over the past several decades utilize the traditional Inlet Butterfly Valve (IBV) arrangement to control the inlet flow. This type of throttling control device manages the system's inlet flow but in doing so also reduces the inlet pressure to the first stage impeller. The reduced inlet pressure results in additional energy usage to maintain the set point discharge pressure. An Adjustable Inlet Guide Vane (AIGV) arrangement provides the same flow control but accomplishes this task much more efficiently. The AIGV control imparts a pre-swirl to the incoming air stream which reduces the power requirement as compared to the IBV arrangement. These energy benefits occur over a wide operating range and result in excellent part load performance.

Zero Air Loss Drain Valve:

FS-Elliott offers a unique solution for the removal of condensate from intercoolers and aftercoolers. The distinctive feature of this energy savings modification is the Pulsar™ valve. This unique zero air loss automated valve is located in the primary condensate drain path. The benefits include energy savings, improved maintainability and enhanced reliability for the compressor package.

Customer Satisfaction is Our Business