



## Air-Power Analysis Package (APAP)

Turn-key Metering and Analysis of  
Compressed Air System  
Supply & Demand

Measurement and Verification

ROI Analysis

Hosted Service  
*No software to install & maintain*

APAP is a turnkey platform for metering, measuring and analyzing industrial compressed air systems. It includes meters for power, airflow, and air pressure, along with data logging and analysis tools. APAP is a hosted service, uploading metered data and providing airflow-to-power efficiency profile reports.

Compressed air is most often the least efficient utility in industrial use. Compressed air systems are commonly overlooked, or at least misunderstood, when considering energy conservation measures. In large part, that's because the efficiency of compressed air systems can be difficult to quantify.

Without tangible measurements, how do you know where you're starting from? Or what you expect to achieve?

With APAP, Air Power Analytics provides a turn-key package for measuring and evaluating the efficiency of industrial compressed air systems. Using uploaded metered data, logged at 3 second intervals, APAP builds a airflow-to-power profile that quantifies the efficiency of the system.

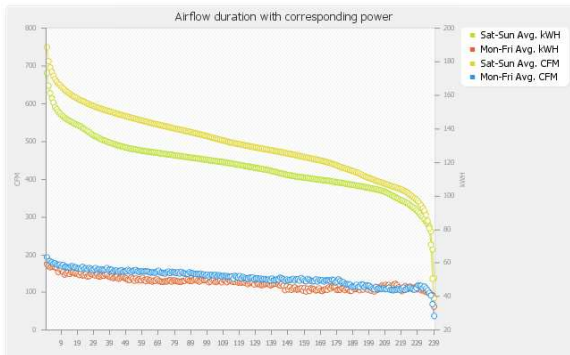
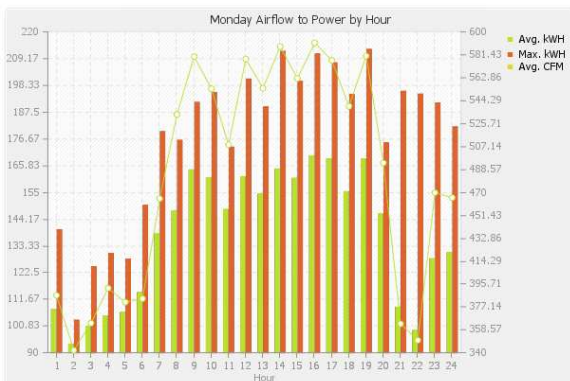
Using the actual measured airflow consumed in the plant, the ROI tool calculates projected energy saving based on adjusts for:

- Planned/proposed airflow reduction from leak remediation or other demand reduction steps
- Changes to air compressor controls
- Addition of air receivers
- Replacement or addition of new air compressor(s)

The APA server has a comprehensive database of published CAGI data sheets for air compressors from Atlas Copco, CompAir, Gardner Denver, Ingersoll-Rand, Kaeser, Quincy, and Sullair.

ROI projections are calculated using algorithms published by Compressed Air Challenge (CAC) and the Compressed Air and Gas Institute (CAGI).

After the compressed air system optimization steps have been performed and remediation steps are complete, APAP can be used to measure the results to verify that performance objectives have been achieved. APAP can provide on-going analysis of leak load and periodic air-power energy analysis to ensure that projected savings are realized and sustained.

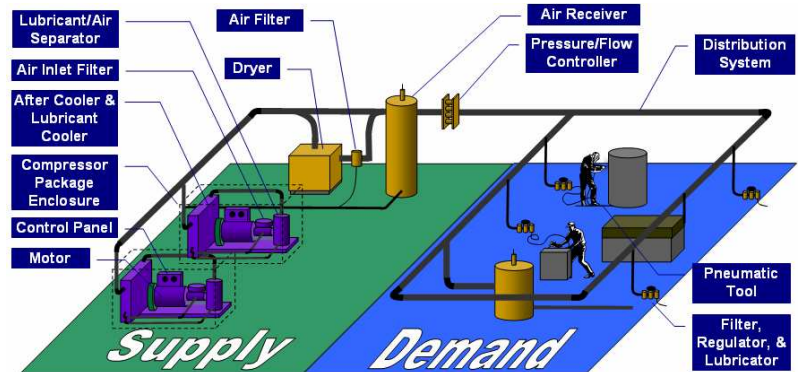


Over time, APAP provides periodic measurements and historical trend analysis to determine when further remediation actions are appropriate and justified. It can also be used to verify and justify the *measured life* of remediation efforts.

### Evaluating Compressed Air Supply and Demand

Compressed air systems are comprised of two parts: Supply and Demand. APAP measures and analyzes both.

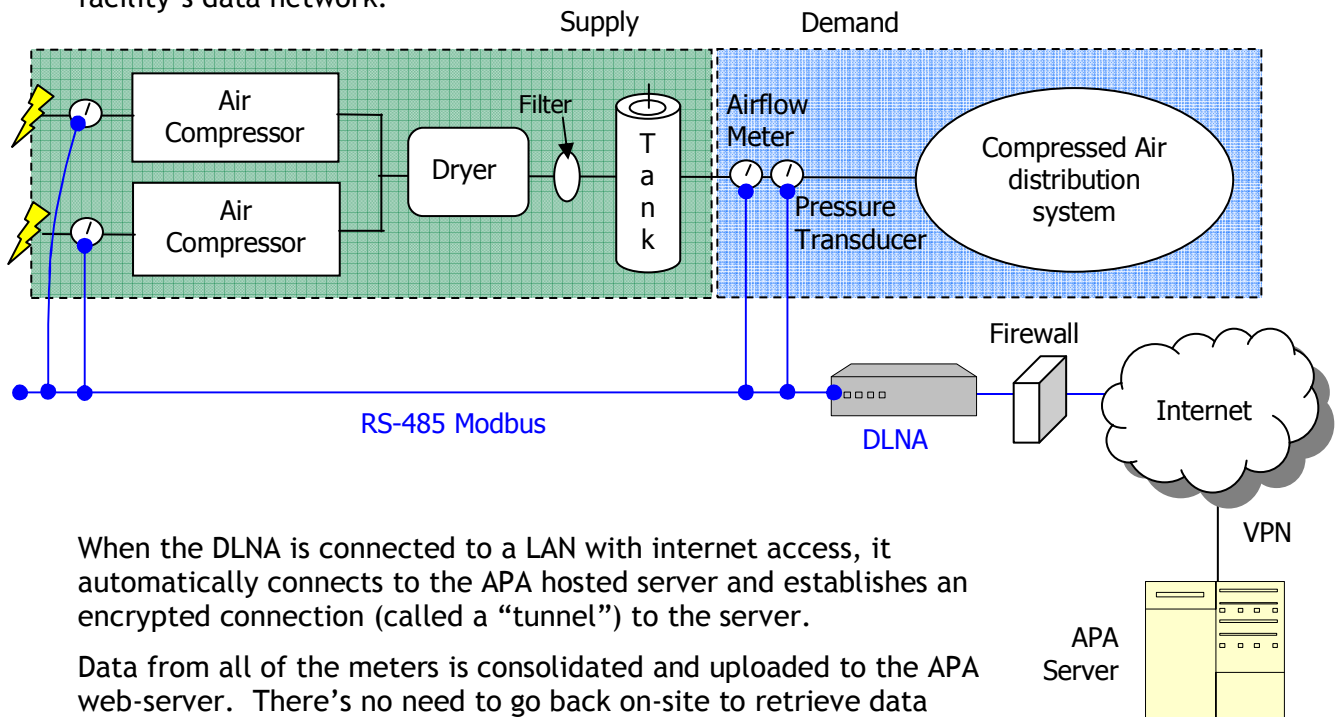
The supply side includes all of the equipment needed to produce appropriately clean air at high pressure. The demand side includes all of the devices and machinery that consumes compressed air. To properly analyze the energy efficiency of a compressed air system one has to consider the amount of air consumed and the cost of generating that compressed air.



While most products evaluate the Supply side or the Demand side, the Air-Power Analysis Package (APAP) looks at both the airflow required by the consumers of compressed air and the power needed to generate that pressurized air. Often, the energy used to produce compressed air is disproportionate to the demand, especially when the consumption has spikes or bursts that must be satisfied.

### Data Logging Network Appliance and APA Server

The meters are connected to the Data Logging Network Appliance (DLNA, patent pending) using RS-485 serial communication. In turn, the DLNA is connected to the facility's data network.



When the DLNA is connected to a LAN with internet access, it automatically connects to the APA hosted server and establishes an encrypted connection (called a “tunnel”) to the server.

Data from all of the meters is consolidated and uploaded to the APA web-server. There’s no need to go back on-site to retrieve data loggers and extract metering results from them.

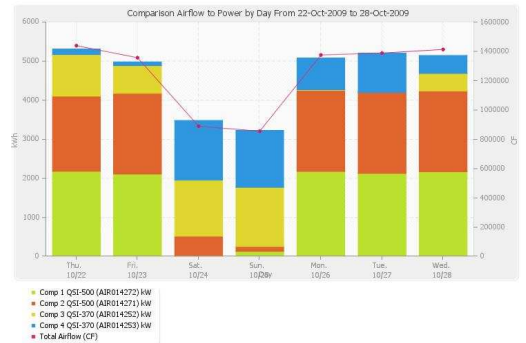
The DLNA also has an on-board display that shows the current readings (including kW, amps, kVA, and power factor) from up to 6 meters at a time in histogram. It can also display discrete readings from any of the meters in real-time.

Measurements from the meters are logged on the DLNA and uploaded to the APA Server for analysis and reporting. The APA server retains historical data for each compressed air system. It provides a web-browser interface that allows a client to view reports, compare test results with previous sampling periods, and drill down into specific time intervals to evaluate performance.

Performance reports allow the user to see a daily summary of airflow, pressure, and power, and to drill down and view details by hour, by minute, all the way to the individual 3 second samples. APAP reports also airflow duration reports, power factor analysis, and airflow/power capacity profile.

Air Power Analytics is not affiliated with any air compressor or pneumatic equipment manufacturers, so our approach is vendor-neutral.

**The Air-Power Analysis Package redefines the state-of-the-art for measuring and evaluating the efficiency of industrial compressed air systems. While adopting the best practices of the Compressed Air Challenge and the Compressed Air and Gas Institute, APA has established the first of its kind hosted application for measuring and analyzing the real consumption of compressed air and consequent energy needed to produce it.**



Contact: Ed Mitchell  
 Air Power Analytics, Inc.  
 8 South Hills Terrace, Bedford, NH 03110  
 E-mail: emitchell@airpoweranalytics.com  
 Phone: (603) 345-4332 Fax: (603) 647-0210



Air Power Analytics, Inc. (formerly Compressor Energy Solutions, Inc.)  
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