Master Air Control
Great Savings and Performance
Master Air Control

The Forbes Marshall Master Air Control (MAC) is an energy saving control system, which actively helps you control the balance across the demand and supply sides. It acts as a buffer between the compressors and the demand fluctuations due to artificial demand on the consumption side. Installation of the MAC helps reduce the excess load on compressors caused by artificial demand, thereby reducing the energy consumed.

The MAC finds applications in all industries, including automobiles, cement, power, textiles, iron & steel and paper.

The Need for Master Air Control (MAC)

In every industry, the compressed air demand of the plant keeps fluctuating constantly due to intermittent use of pneumatic equipment. Generally industries end up with losses due to inefficiencies and higher energy bills. In this situation, a proper balance between supply and demand of compressed air is required.

The Master Air Control addresses this problem by ensuring a steady delivery of pressure to the consumption side irrespective of the fluctuations in demand.

MAC introduces a differential pressure between the receiver and itself and thus creates a useful high-pressure storage. This helps in isolating the compressors from demand surges.

Peaks in demand are handled by the MAC, rather than being directed towards the compressors. This allows compressors to run longer on no-load, and as a result, the mass of air decreases and compressor load cycles are reduced.

This decrease in compressor load cycles is directly proportional to the decrease in energy consumed by the compressors.

Thus, by installing the MAC, compressors are protected from artificial demand and they have to cater only to base demand, resulting in savings on compressed air energy consumption.

Furthermore, a constant pressure is now delivered to all plants and pneumatic equipment, helping better quality and productivity in production processes.

Master Air Control in a compressed air system
Typical Compressed Air Usage

Features
- HMI with touch screen, clear and bright display, ideal for use in plants.
- History and trending feature
- Failsafe operation
- Accurate pressure control
- Highly responsive to fine changes in demand
- User-friendly HMI interface
- PID tuning assisted with parameter value trends
- Provision to set limits for alarms, flow etc
- Provision to add flow consumption input via a flow meter
- Shift/time based set points can be added
- Optional connectivity to PC available

Benefits
- Saves energy consumed by air compressors by cutting artificial demand for air
- Reduction in compressor loading and induces higher unloading period
- Separates compressors from demand side peaks and lows, thus reduces compressor cycling to minimal
- Consistent air pressure delivery to demand side
- Enhanced useful air storage capacity
- Accommodates any make of compressor
- Demand reduction tends to reduce leakages in plant

Pressure Profiles With and Without the MAC

Pressure Delivered To Plant

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### Specifications

<table>
<thead>
<tr>
<th>Make</th>
<th>Forbes Marshall Master Air Control</th>
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<tbody>
<tr>
<td>Rated for</td>
<td>150lb ANSI</td>
</tr>
<tr>
<td>Power supply</td>
<td>230 V AC, single phase, 50 Hz</td>
</tr>
<tr>
<td>Pressure set point resolution</td>
<td>0.01 bar</td>
</tr>
<tr>
<td>Pressure control range</td>
<td>± 0.01 bar</td>
</tr>
<tr>
<td>Feedback control system</td>
<td>Micro-controller based PID control with closed loop feedback control system</td>
</tr>
<tr>
<td>Inlet air temperature to MAC</td>
<td>55°C</td>
</tr>
<tr>
<td>Ambient operating conditions</td>
<td>0°C – 55°C</td>
</tr>
<tr>
<td>Pressure difference across the MAC at rated flow should be</td>
<td>0.2 bar</td>
</tr>
<tr>
<td>Inlet and outlet connections</td>
<td>From left with ANSI flange</td>
</tr>
</tbody>
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### Better Savings, Better Efficiency

**Average Energy Consumption (kWH)**

<table>
<thead>
<tr>
<th>kWh/Day</th>
<th>Without MAC</th>
<th>With MAC</th>
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<tbody>
<tr>
<td>Without MAC</td>
<td>Energy consumed = 5510 kWh/day</td>
<td>Energy consumed = 4400 kWh/day</td>
</tr>
<tr>
<td>Energy saved</td>
<td>= 1110 kWh/day</td>
<td></td>
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<tr>
<td>Energy cost saving</td>
<td>= Rs. 23 Lakhs per year (20%) = 34460 USD</td>
<td></td>
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