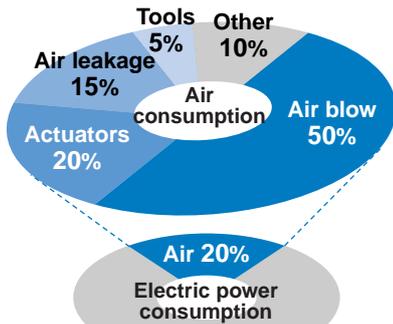


# Plant Air Energy Saving

Compressor power

Proposal for a **50%** reduction  
 —Contributes to **CO<sub>2</sub>** emissions reduction—

## Plant air consumption



1

### Air Blow

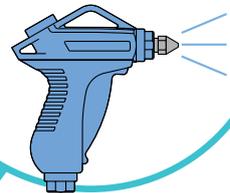
Blows machining chips during processing



2

### Blowing by Air Gun

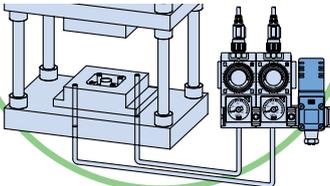
Low pressure loss blow gun



3

### Air Purge/Air Leakage

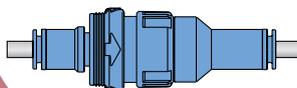
Air purging for placement verification  
 Air supply stops when equipment is not operating



5

### Lower Pressure in the Piping Line

Reduces pressure loss in the piping line



7

### Air Line Maintenance

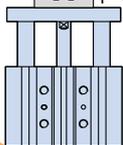
Improved visibility



4

### Actuators

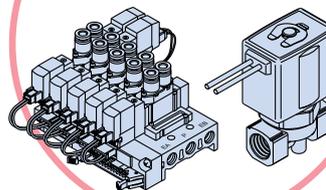
W Cylinder one side pressure regulation



High pressure  
Low pressure

6

### Low Power Consumption



P-E08-6A

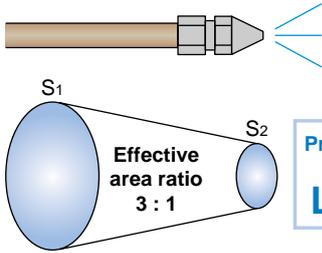
Example

1

# Air Blow

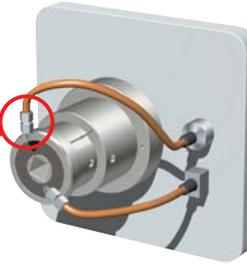
Reduces of air consumption for air blow.

After Improvement



Pressure loss: **Low**

Nozzles are attached



Effect of Energy Saving Improvement

Air consumption

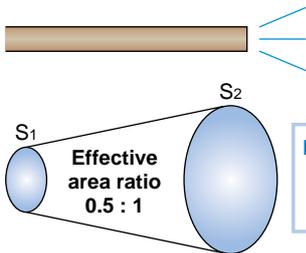
75% Reduction



After

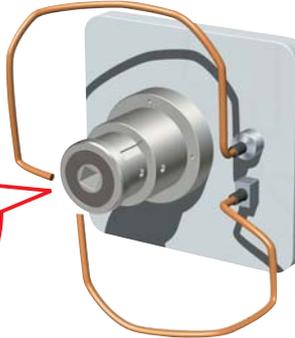
Before

Before Improvement



Pressure loss: **High**

Without nozzles



Example

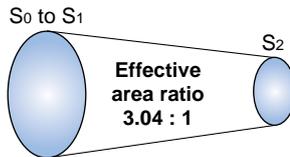
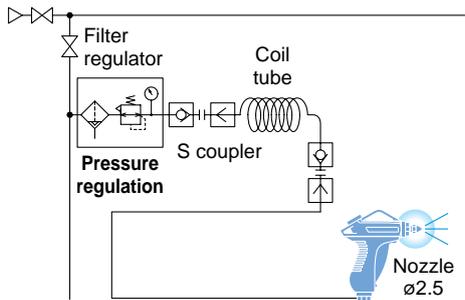
2

# Blowing by Air Gun

Reduces of air consumption for air blow.

After Improvement

A nozzle is attached to the tip of the blow gun. A regulator is added and pressure control is improved. Fittings and tubing are changed to those with large effective areas.



Pressure loss: **Low**

Effect of Energy Saving Improvement

Air consumption

10% Reduction

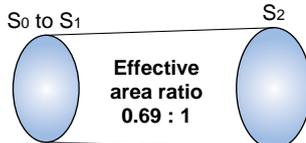
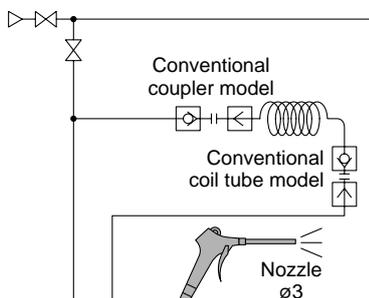


After

Before

Before Improvement

In the case of air guns, energy saving measures are not considered and factory line pressure is used directly in most cases.



Pressure loss: **High**

### Example 3

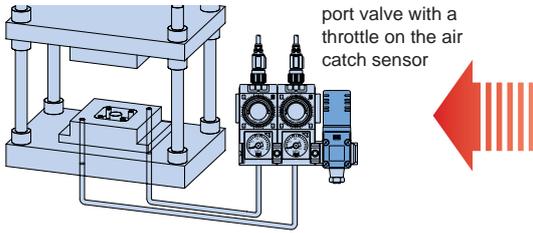
## Air Purge/Air Leakage

Reduces of air consumption when equipment is not operating.

After Improvement

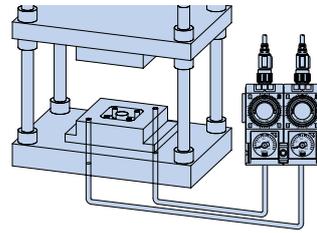
Air supply circuit is used only when measuring a workpiece.

Installation of a 2 port valve with a throttle on the air catch sensor



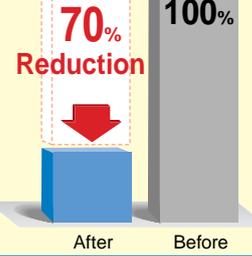
Before Improvement

Air continues to blow whether a workpiece is present or not.



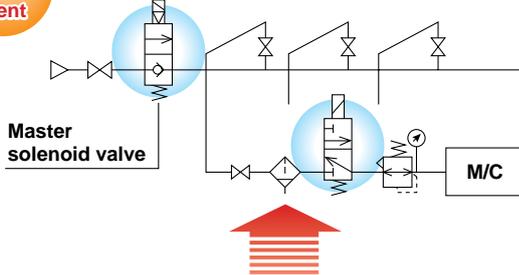
Effect of Energy Saving Improvement

Air consumption



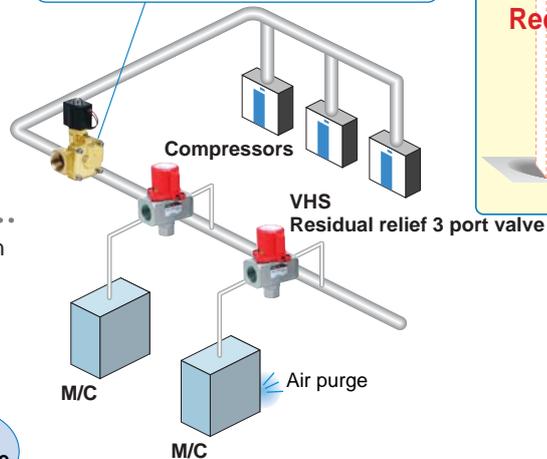
After Improvement

Air supply to the equipment is stopped when it is not operating.



Saves energy when not operating

- Stops air supply when not operating using an installed master solenoid valve.
- Controls air supply with a leakage checker



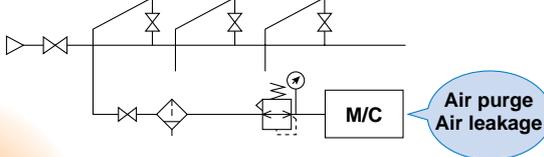
Effect of Energy Saving Improvement

Air consumption



Before Improvement

Because the compressor is in continuous operation even when the equipment is non-operation, air is constantly consumed due to air leakage, purging, etc.



### Example 4

## Actuators

Reduces air consumption by regulating the non-operating return-stroke side.

Pressure valve

Regulator with check valve + Speed controller

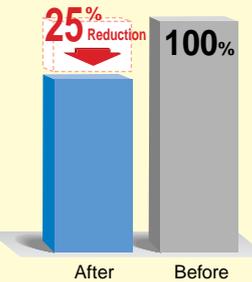
Flow valve

Quick SUP/EXH valve + Speed controller (meter-in, meter-out)



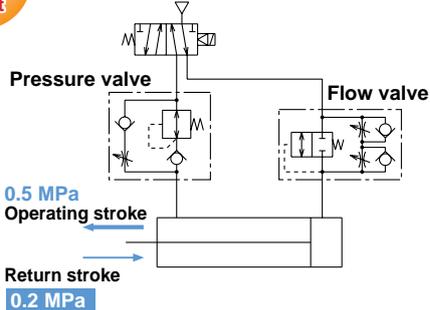
Effect of Energy Saving Improvement

Air consumption



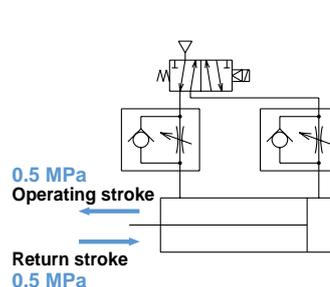
After Improvement

Pressure regulation on the return stroke side



Before Improvement

Same pressure during operating and return strokes

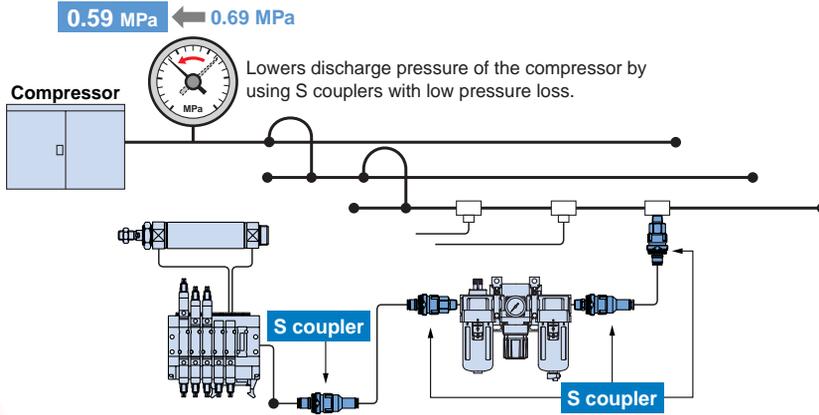


Example  
**5**

## Lower Pressure in the Piping Line

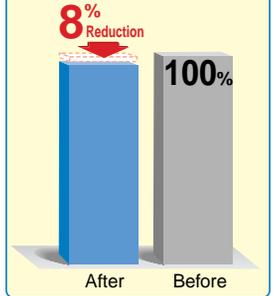


Reduces compressor power consumption by reducing pressure loss in the piping line.



Effect of Energy Saving Improvement

Electric power consumption



Example  
**6**

## Low Power Consumption



Reduces power consumption by using low-wattage devices.

5 port solenoid valve  
*Series SY*  
**0.35 W/0.1 W**  
(Standard) (with power saving circuit)



2 port solenoid valve  
*Series VXE*  
**1.5 W to 3 W**  
(Reduced to one-third compared to existing models)

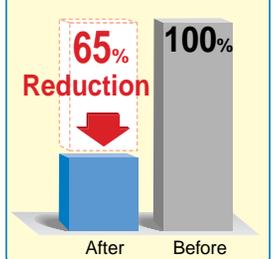


Temperature control equipment  
Refrigerated thermo-chiller  
Double inverter type  
*Series HRZ*  
**1.1 kWh/h**  
(Reduced by 82% compared to existing models)  
Operating conditions: -10°C, 0 kW load 50%, 2 kW load 50%



Effect of Energy Saving Improvement

Electric power consumption



Example  
**7**

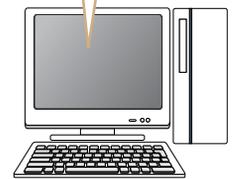
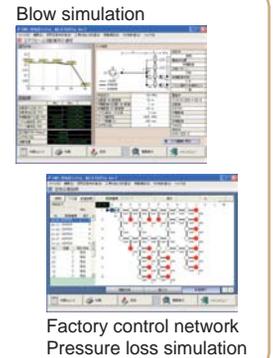
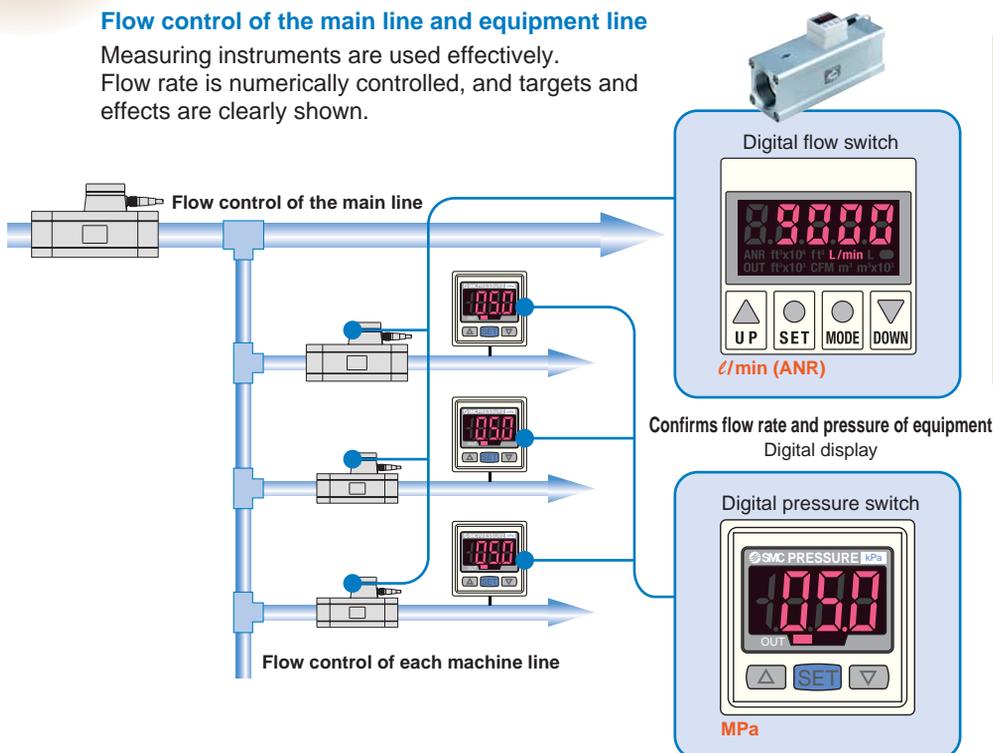
## Air Line Maintenance



Improves control and visibility of pressure and flow rate.

Flow control of the main line and equipment line

Measuring instruments are used effectively. Flow rate is numerically controlled, and targets and effects are clearly shown.



Energy saving program  
PC simulation of energy-saving effects

## 1 Air Blow

## 2 Blowing by Air Gun

## 3 Air Purge/Air Leakage

■ Blow Gun ..... *Series VMG*



■ Nozzles for Blowing ..... *Series KN*



<Related Equipment>

■ Compact Manometer ..... *Series PPA*



■ Regulator ..... *Series AR*



■ Direct Operated Precision Regulator ..... *Series ARP*



■ Pilot Operated 2 Port Solenoid Valve ..... *Series VXD*



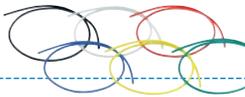
■ S Couplers ..... *Series KK*



■ Non-contact Sensor for Workpiece Placement Confirmation/Air Catch Sensor ..... *Series ISA2*



■ Wear-resistant Tubing ..... *Series TUZ*



<Environmentally-resistant Products>

■ Brass One-touch Fittings ..... *Series KQB*



■ FEP Tubing (Fluoropolymer) ..... *Series TH*



■ Water Resistant Cylinder ..... *Series TH*



■ Finger Valve ..... *Series VHK*



■ Residual Relief 3 Port Valve ..... *Series VHS*



■ Hand Valve ..... *Series VH*



■ 3 Port Solenoid Valve Pilot Operated Poppet Type ..... *Series VP*



## 4 Actuators

■ Air Saving Valve ..... *Series ASR/ASQ*



■ Non-rotating Double Power Cylinder/ Double Power Cylinder ..... *Series MGZ*



■ Valve Mounted Compact Cylinder ..... *Series CVQ*



<Related Equipment>

■ Miniature Regulator ..... *Series ARJ*



■ Compact Manifold Regulator ..... *Series ARM*



## 5 Lower Pressure in the Piping Line

■ S Couplers ..... *Series KK*



■ S Couplers ..... *Series KK130*



## 6 Low Power Consumption



### 5 Port Solenoid Valve



Series SY

### Energy Saving Type 2 Port Solenoid Valve



Series VXE

### Refrigerated Air Dryer



Series IDF□E

### Refrigerated Thermo-chiller



Series HRZ

## 7 Air Line Maintenance



### Digital Flow Switch for Air



Series PF2A

### Digital Flow Switch for Water



Series PF2W

### 2-Color Display Digital Flow Switch



Series PFM

### 2-Color Display High-Precision Digital Pressure Switch



Series ISE30A

### Compact Digital Pressure Switch



Series ISE10

### 2-Color Display Digital Pressure Switch



Series ISE80

### <Static Electricity Elimination Equipment>

#### Ionizer



Series IZS31

#### Electrostatic Sensor



Series IZD10/IZE11

#### Ionizer/Nozzle Type



Series IZN10

## SMC pneumatic system energy saving program, downloadable version

This program was developed to enable quantitative tracking of multiple conditions (consumption volume, flow rate, pressure, humidity, etc.) from the air source through the final piece of equipment. (It can be downloaded from the SMC Web site.)

**SMC Pneumatics System Energy Saving Program Ver. 3.1a, Downloadable Version**

**Description and features of upgrade from Ver. 2 to Ver. 3.1a**

1. Multi-language support  
The following eight languages are supported: English, German, French, Italian, Spanish, Chinese, Korean and Japanese.
2. Individual units customizable  
The unit for each input and output item can be individually set to match the conventions of the country where the equipment will be used. The currency unit is also selectable. Note that the initial default after installation is SI units.
3. Addition of HTML format output function  
A function has been added that allows outputting of all calculation results as an HTML file that can be distributed electronically.
4. Database update  
A database of new products has been added.
5. Addition of other useful functions  
Conductance synthesis: Direct input to a list is supported.  
Air tank selection: Selection only by discharge has been added.  
Conductance search: Flow characteristics are now displayed for each flow passage.  
Database update: When new products are added, the data can be downloaded from the Web and the database is automatically updated.

**Downloading**

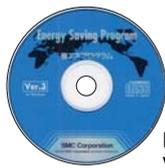
A new version (Ver. 3.1a) of the Energy Saving Program has been posted. We recommend always using the latest version.

**Multipart download**

- Download Energy Saving Program, part 1 (approx. 9.9 MB)
- Download Energy Saving Program, part 2 (approx. 9.9 MB)
- Download Energy Saving Program, part 3 (approx. 9.9 MB)
- Download Energy Saving Program, part 4 (approx. 9.9 MB)
- Download Energy Saving Program, part 5 (approx. 4.5 MB)

1. Download all five files and save them to the same folder.
2. Double-click EnergySavingVer3.1aJP part01.exe to run the unarchiver.
3. Click the Install button at the bottom of the window.
4. Open the "EnergySavingVer3.1aJP" folder created by the unarchiver.
5. Double-click setup.exe and follow the instructions on the screen.

A CD-ROM version is also available.



Energy saving program  
Ver.3.1

## SMC pneumatic model selection program, Web version

This program can be used to automatically select the pneumatic cylinder drive system component equipment. (It can be downloaded from the SMC Web site.)

**SMC Model Selection Software Ver. 3.00 Web Version**

This is the online page of the pneumatic model selection software.

Please note that this site may be sometimes inaccessibility due to maintenance of the server.

[Run Model Selection Software Ver. 3](#)

Click the alternate link below if you use a computer on corporate networks.

[Run Model Selection Software Ver. 3.00 \(SSL-1195\)](#)  
[Run Model Selection Software Ver. 3.00 \(SSL-1196\)](#)

**How to connect**

Click the above link "Run Model Selection Software Ver. 3" and "ICA Plug Client" will be automatically installed only for the first time. After that a screen of the Model Selection Software will be shown in a separate window. Click the "Go" button in the screen of the program in order to terminate the program.

**Notes**

This program is compatible with Internet Explorer 6.0 or later. Internet Explorer will automatically install required "ICA Plug Client". To connect our server, this program will be done only once.

**In case of failure**

If the Model Selection Software will not be shown even if you use Internet Explorer, install "Win32-bit ICA Client". First and click the link again. Just click "Yes" or "No" for all steps in the installation.

[Click here to download Win32-bit ICA Client](#)

Click the link below to see how to setup ICA Client for the persons who cannot connect to our server through corporate networks.

[If our server is not accessible through corporate networks](#)

You cannot use our program if the required ports are blocked in your network for the security purpose in that case.

A CD-ROM version is also available.



Pneumatic model  
selection program  
Ver.3.00

# SMC Corporation

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