

# MACO®

## Compact Retrofit

Designed for ALL Injection Molding Machines Application Note



**The complete MACO Compact machine retrofit package is now available for all makes and models of injection molding machines!**

Eurotherm will install a new control system on your machine to replace the existing out-dated controls you now have.

### **A MACO Control retrofit pays off**

#### **Less cost for spare parts – long term reliability**

After upgrading your machine to the MACO Compact, you can enjoy improved availability and reliability of components (3 year warranty on control hardware), reduce the risk of machine downtime, improve machine performance, and have the latest in state of the art processing features.

### **MACO Compact Machine Control**

The MACO Compact retrofit package is the answer to providing molders with a very cost competitive solution to improved machine and processing control without the cost of total machine replacement. MACO Compact for Injection is an expandable system, available with different options to meet end-user application requirements regardless of machine make or model. And, at a price that provides the best ROI.

High performance ethernet communications can be provided for interfacing with the HMI or other devices. The controller also features built-in diagnostic and process monitoring for multiple shot monitoring, shot to shot data storage, "reference/signature" shot and "snap-shot" functions. Additionally, online RLD diagnostics allow troubleshooting logic and machine operation with web browsing capability via the internet, improving processing capabilities and performance.

**The basic retrofitting package includes the following;**

- Exchange of the complete control system
- Installation of the operator terminal and controller
- Implementation of the standard machine program screens

**Get the most from your process**

**Eurotherm®**  
by **Schneider Electric**

# MACO® Compact Retrofit

A total machine control system that can enhance the performance and productivity of your injection molding machine



**Display configuration tailored for injection applications**



**Compact Racks are available in 4, 6 and 8 slot configurations to meet all requirements**

## Why Upgrade?

- Better control
- Windows CE.net operating system
- Tightly integrated multiple processor architecture
- State of the art technology for high speed updates <1.0 millisecond)
- 16 bit analog I/O
- Patented and proven (IMPACT II) closed loop process control
- Large color touch screen with integrated push buttons
- SPC capability
- Microsoft compatible file formats for storage of process and mold data
- Reduced cycle time
- Consistent part density
- Fast start up
- Built-in diagnostics and process monitoring
- Support of existing functions and additional equipment
- 24Vdc powered
- USB memory stick for easy retrieval and loading of recipes and data files
- Improved process statistics with enhanced trending
- High performance Ethernet communications
- Multi-lingual screens
- Three year warranty on control hardware

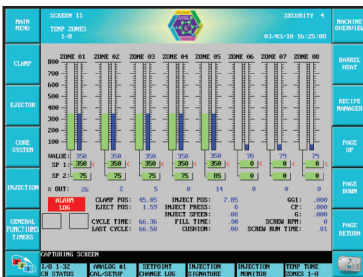
## What are the financial advantages of retrofitting?

An analysis was made of a molder's production levels and scrap rates to determine the return on investment of adding a new MACO Compact control system to a 700 ton machine. Using the same mold and material over a 12 month period, results show substantial savings based on increase to production and reduction of scrap.

### Part Specifications:

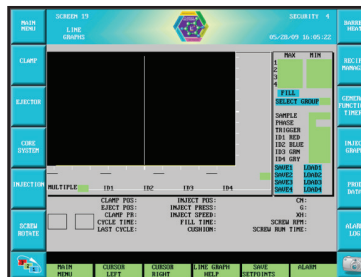
Material: Polypropylene @  
\$0.68/lb  
Weight: 0.72 lbs/part  
Number of cavities: 4  
Production schedule: 3 shifts; 5 days/week; 48weeks/yr

	Before Retrofit	After Retrofit	Results	
<b>Cycle Time:</b>	45 seconds	43.5 seconds	1.5 second reduction in cycle time	
<b>Annual Production:</b>	1,843,200	1,906,560	63,660 more parts	\$31,021.05
<b>Annual Scrap:</b>	110,592	38,131	72,461 fewer scrapped parts	\$35,476.90
<b>Scrap Rate:</b>	6%	2%	substantially reduced scrap rate	
<b>Total Savings:</b>				<b>\$66,497.95</b>
Cost of new control system:				\$31,498.00
ROI based on increased production only:				12+ months
ROI based on reduced scrap only:				10-1/2+ months
ROI based on increased production and reduced scrap:				5-1/2+ months



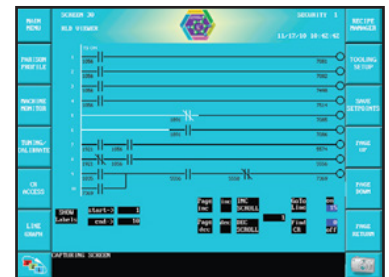
### Precise Temperature Control Made Easy

Auto & adaptive tuning of critical process parameters



### Analyze the Process - Increase Performance

SPC, trending, shot-to-shot monitoring, process snapshots – all aid in reducing cycle time and verifying consistency



### Live RLD Viewer Screen

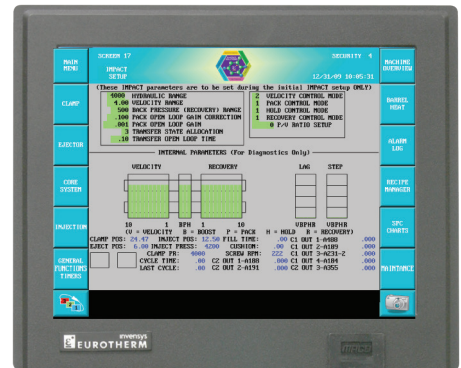
Live RLD is shown on a screen while the machine is operating for easy troubleshooting

# MACO® Compact Retrofit

## Standard Features

### IMPACT II – a vast improvement in processing for any molder

The MACO Compact supports either open or closed loop (IMPACT II) injection process control. Run the machine for a few cycles and IMPACT II creates a theoretical model of the process. It uses this model along with hundreds of rules to automatically optimize the process to compensate for short and long term deviations in the injection molding process. Injection control features velocity – or pressure-controlled fill with ramping for up to 10 steps. Transfer mode is user selectable and there are multiple steps of pack and hold, as well as synchronized back pressure and RPM control of up to 10 steps.



This is a standard feature on every MACO Compact.

## MACO Customer First Program with eWon

**This standard feature allows the ability to have remote access to monitor and troubleshoot processing machinery from a distant location.**

- Reduce service onsite time and travel costs
- Monitor with alarming and data logging
- Secure remote access to tweak the parameters
- Minimize technician on site visits
- Near real time equipment status updates

### Benefits of the MACO Customer First Program

- Increase machine availability
- Problems can be resolved much quicker
- Technical support can be more efficient
- Remote training can be provided
- Helps extend our limited technical resources

### Saves money

- These remote service calls are included in the contract price
- A typical paid onsite service call is \$3500 to \$5000 for EACH visit
- Requested changes to the program to add or change features are much less expensive

### Higher customer satisfaction

- Fewer unanswered questions
- More efficient training
- Much faster response regardless of who's issue it may be

"This is a valuable tool that saves time and money by not having to send a technician on site to make the changes locally."

## Available Option

### Remote Diagnostics

The remote diagnostics software allows a user to remotely access the MACO Compact machine controller. Setpoints, values, SPC graphs, and other system information can be examined by means of remote terminals (wired or wireless).

- Flexibility to grow from a single machine to an enterprise-wide system
- Data acquisition and direct machine control
- Complete access to plant data including intuitive interface machine and job status
- Real-time, usable information with an intuitive interface
- Production monitoring, records and reports

The use of standard hardware and software in an open architecture permits easy expansion when you're ready to grow the system.



# MACO®

## Compact Retrofit

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