



# RICH

Heat & Cool molding system

RICH II

CHILLER



WATER PURIFIER



# RICH system (Rapid isolation cooling & heating)

## Unparalleled quality

Innovative level of quality : High glossy, No weld lines

## Groundbreaking productivity

Innovatively increasing productivity : Reducing cycle time, No coating, No Scratch

## Upscale precision

Best-in-class accuracy : precise injection molding of LCD light guide panel

### Applications

**High exterior quality parts**

**Parts not allowing weld lines**

**High cycle parts**

**To improve resin fluidity in other high cycle injection**



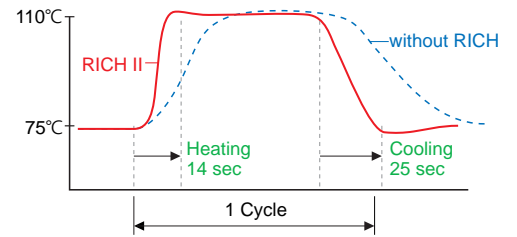
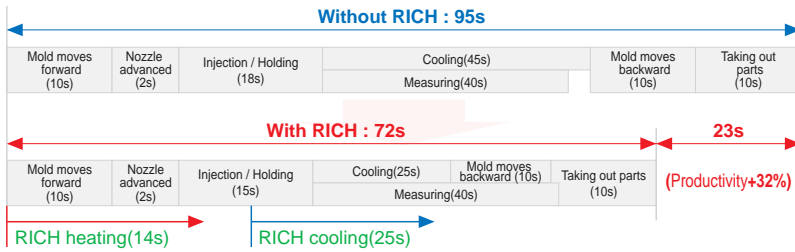
### Features

- Simplified inner structure and easy maintenance
- Triple safety device thoroughly prevents from danger of high pressure steam.
- The use of pure saturated vapor dramatically improves temperature distribution and thermal efficiency and lowers pressure.
- The well-designed channel configuration (diameter, position, number) and control reduce cycle time.
- There is no need to make major modifications to the molding equipment.  
(No modifications for sheathing cartridge heater and core parts)
- Certain range of injection condition allows chiller to be linked and controlled (option).
- Integration of steam boiler and control unit offers excellent portability.
- Order-made specifications are available.  
(Ex : Boiler 30 bar, Tank capacity 500 l, Separate temperature control of stationary and movable mold, etc.)

# Heating & Cooling performance

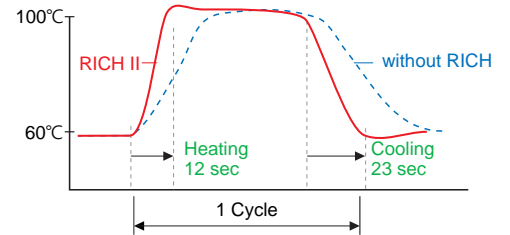
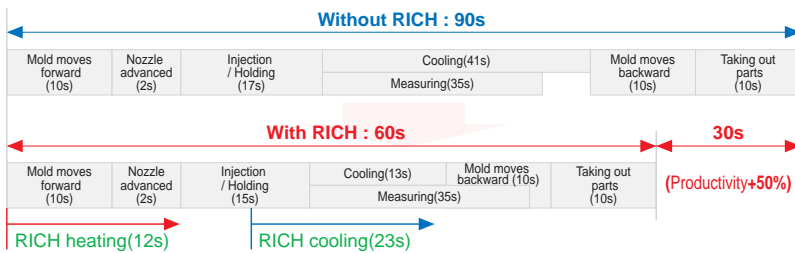
## 1. Model : 50" TV front Panel

- Cycle time : 95 sec (without RICH) → Cycle time : 72 sec (with RICH)
- RICH heating : 14sec / RICH cooling : 25sec



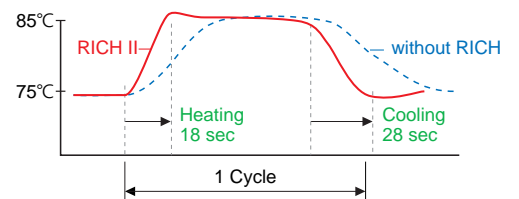
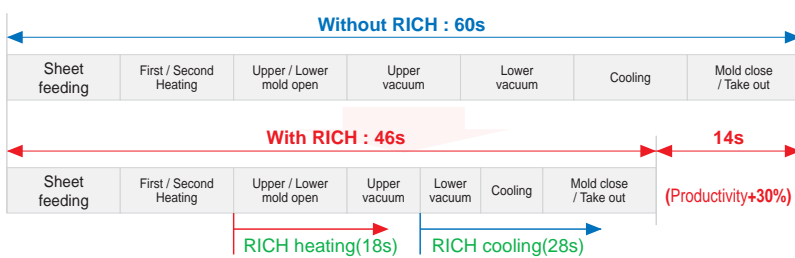
## 2. Model : 42" front cabinet

- Cycle time : 90 sec (without RICH) → Cycle time : 60 sec (with RICH)
- RICH heating : 12sec / RICH cooling : 23sec



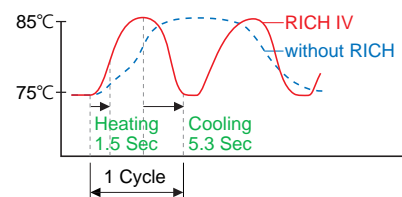
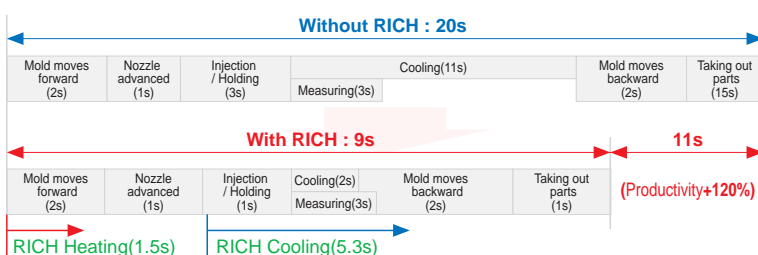
## 3. Model : Refridgerator inner case(vacuum forming) A)

- Cycle time : 60 sec (without RICH) → Cycle time : 46 sec (with RICH)
- RICH heating : 18sec / RICH cooling : 28sec



## 4. Model : Mobile phone cover

- Cycle time : 20 sec (without RICH) → Cycle time : 9 sec (with RICH)
- RICH heating : 1.5sec / RICH cooling : 5.3sec



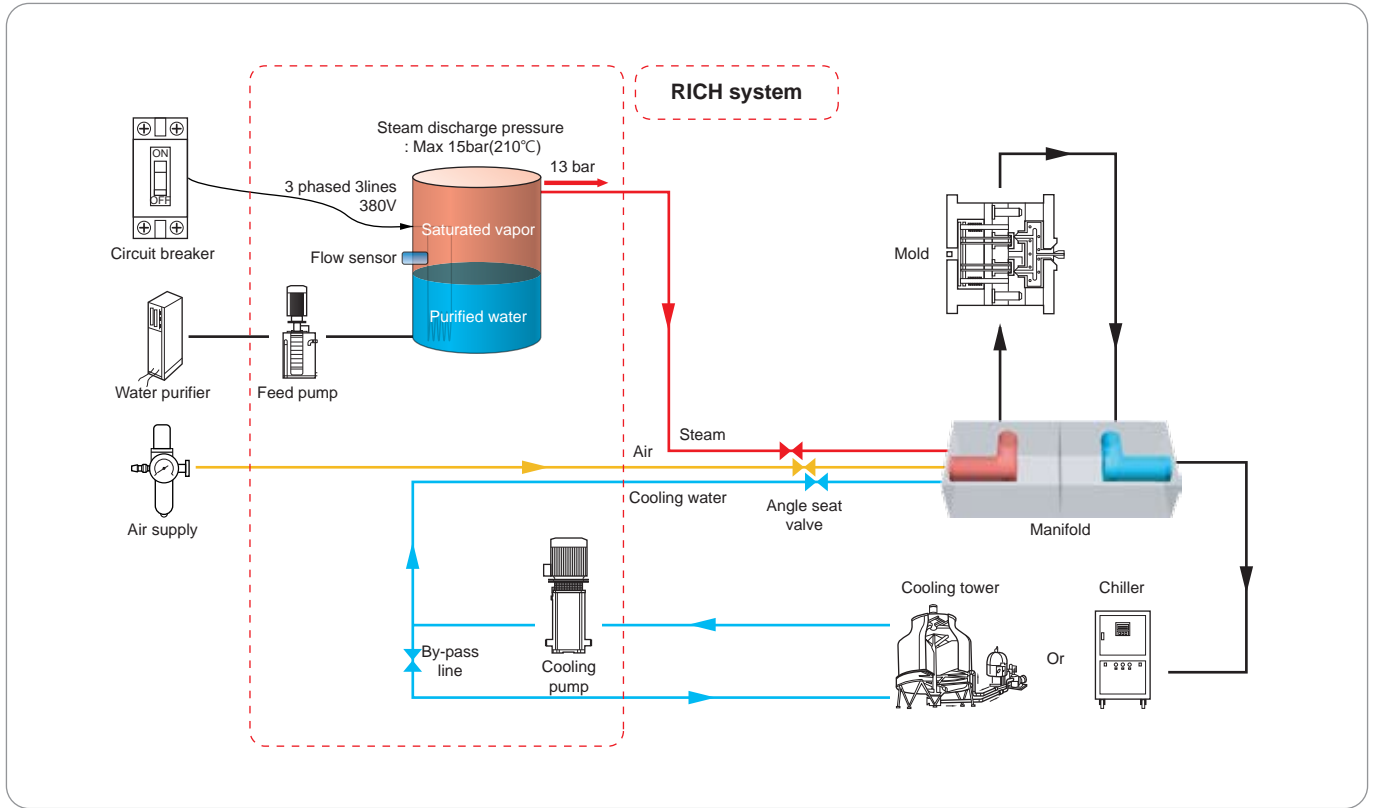
\* To increase mold temperature improves resin fluidity. Thus it reduces hold time.

\* The above cycle time varies with injection molding machines.

A) In consecutive production process, RICH rapidly heats up mold so reduces vacuum time. It cools down mold at proper time. Thus it reduces cooling time.

# STEAM CONTROLLER

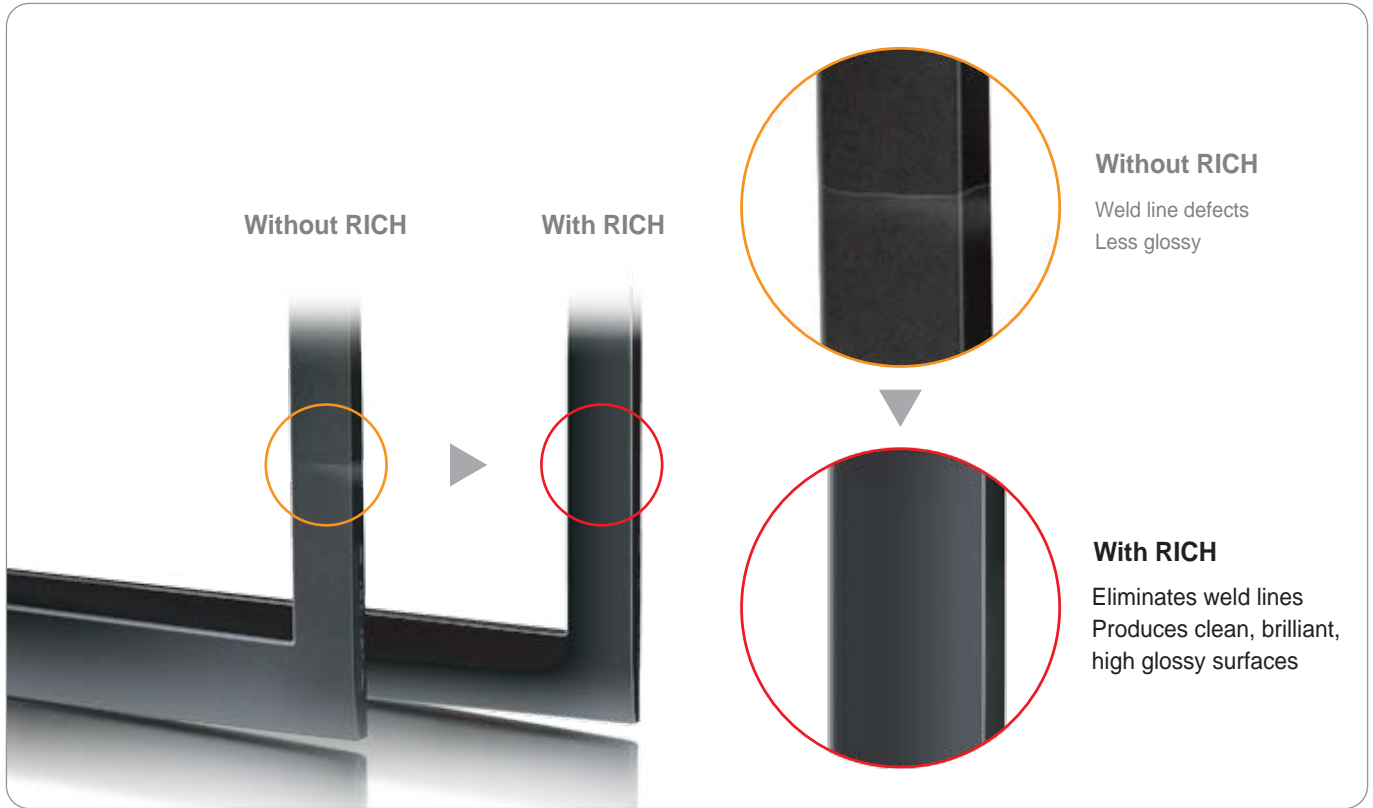
## Configurations



## Specifications

|                | Model                 | RICH II                                    | RICH IV                      | Special design (Separate type, Boiler + Valve unit)                                |  |
|----------------|-----------------------|--|------------------------------|--|--|
| RICH           | Max pressure          | 15 bar                                     | 15 bar                       | 15 bar   |  |
|                | Working pressure      | 13 bar                                     | 13 bar                       | 13 bar   |  |
|                | Max steam temperature | 210°C                                      | 210°C                        | 210°C  |  |
|                | Tank capacity         | 240ℓ                                       | 120ℓ                         | 500ℓ   |  |
|                | Electric capacity     | Heater                                     | 165kW (55kW x 3)             | 90kW (30kW x 3)  | 250kW (83kW x 3)   |
|                |                       | Feed pump                                  | 3kW                          | 3kW  | 4kW  |
|                |                       | Cooling pump                               | 3kW                          | 2.2kW  | 5.5kW  |
|                | Power                 | Voltage                                    | 380V 3phases 3lines          | 380V 3phases 3lines  | 380V 3phases   |
|                |                       | Main cable                                 | 150SQ 15M (3lines + Ground)  | 70SQ 15M (3lines + Ground)   | Boiler : 95SQ x 3(3lines + Gound)<br>Valve unit : 6SQ x 4C |
|                |                       | Circuit breaker                            | 300A                         | 200A   | 500A   |
|                | Compressed air        | Pressure                                   | 6~8 bar                      |  |  |
|                |                       | Discharge                                  | 1,000cc/cycle                |  |  |
| Boiler         | Piping                | 20A  |                              |  |  |
| size           |                       | 850(W) x 1,970(D) x 1,950(H)               | 600(W) x 1,200(D) x 1,300(H) | Boiler : 900(W) x 1,400(D) x 1,790(H)<br>Valve unit : 530(W) x 1,300(D) x 1,100(H) |  |
|                | Cooling water         | Pressure                                   | Min 5 bar                    |  |  |
|                |                       | Flux                                       | 200 lpm                      |  | 250 lpm  |
| Piping         |                       | Min 32A(in/out)                            | Min 25A(in/out)              | Min 40A(in/out)  |  |
| Water supply   | Water quality         | Purified water below total hardness, 20ppm |                              |  |  |
|                | Pressure              | 3~5 bar                                    |                              |  |  |
|                | Flux                  | 150 lpm                                    |                              |  |  |
| Water purifier | Piping                | Pure water below total hardness, 3ppm      |                              |  |  |
|                | Water quality         | Compulsory                                 |                              |  |  |
|                | Size                  | 700(W) x 1,350(L) x 1,600(H)               |                              |  |  |

**Example**



**Types of heating systems**

| Heating type                             | Gas steam boiler                   | Cartridge heater   | RICH II   |
|--|------------------------------------|--|---|
| Injection molding machine capacity       | 2,000 ton                          | 2,000 ton  | 2,000 ton   |
| Mold product                             | 42" Front cabinet                  | 42" Front cabinet  | 42" Front cabinet   |
| Mold                                     | General steam mold                 | General steam mold → Modify mold for using system (Embed heater in mold) | General steam mold  |
| material                                 | ABS(X599)--High glossy             | ABS+PMMA--High glossy  | ABS(X599)--High glossy  |
| Heating time                             | 30 sec                             | 19 sec   | 9 sec   |
| Cooling time                             | 60 sec                             | 37 sec   | 23 sec  |
| Cycle time                               | 96 sec                             | 73 sec   | 60 sec  |
| Exterior quality(Appearance)             | OK                                 | OK   | OK  |
| Daily production quantity (24days/month) | Daily 900 pcs (Monthly 21,600 pcs) | Daily 1,184 pcs (Monthly 28,416 pcs)                                     | Daily 1,440 pcs (Monthly 34,560 pcs)<br>Reducing cycle time and increasing productivity |

\* The above production refers to experimental data from "O"company in Korea.

\* The use of saturated vapor dramatically improves temperature distribution and thermal efficiency and lowers pressure.

\* More thermal efficiency than gas steam boiler and easy operation.

\* Cartridge heater system requires major mold modifications. Thus maintenance is difficult. More time to heat up due to limit of heater capacity.

# www.yudo.com

Any question? Access to <http://qna.yudo.com>



**Sustainable Quality**

**Organic Partnership**

**Click YUDO**

**Clip ANSWER**

**Value Creation**

**Near by You**