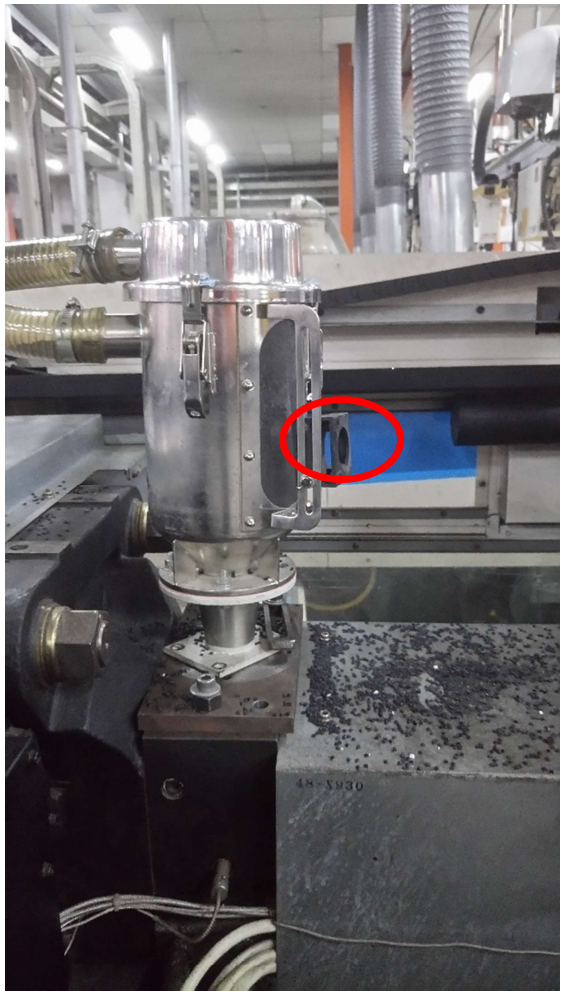
9-1～9-3

＜NOT USING SENSOR＞



PROBLEM

Some hopper doesn’t have sensor.

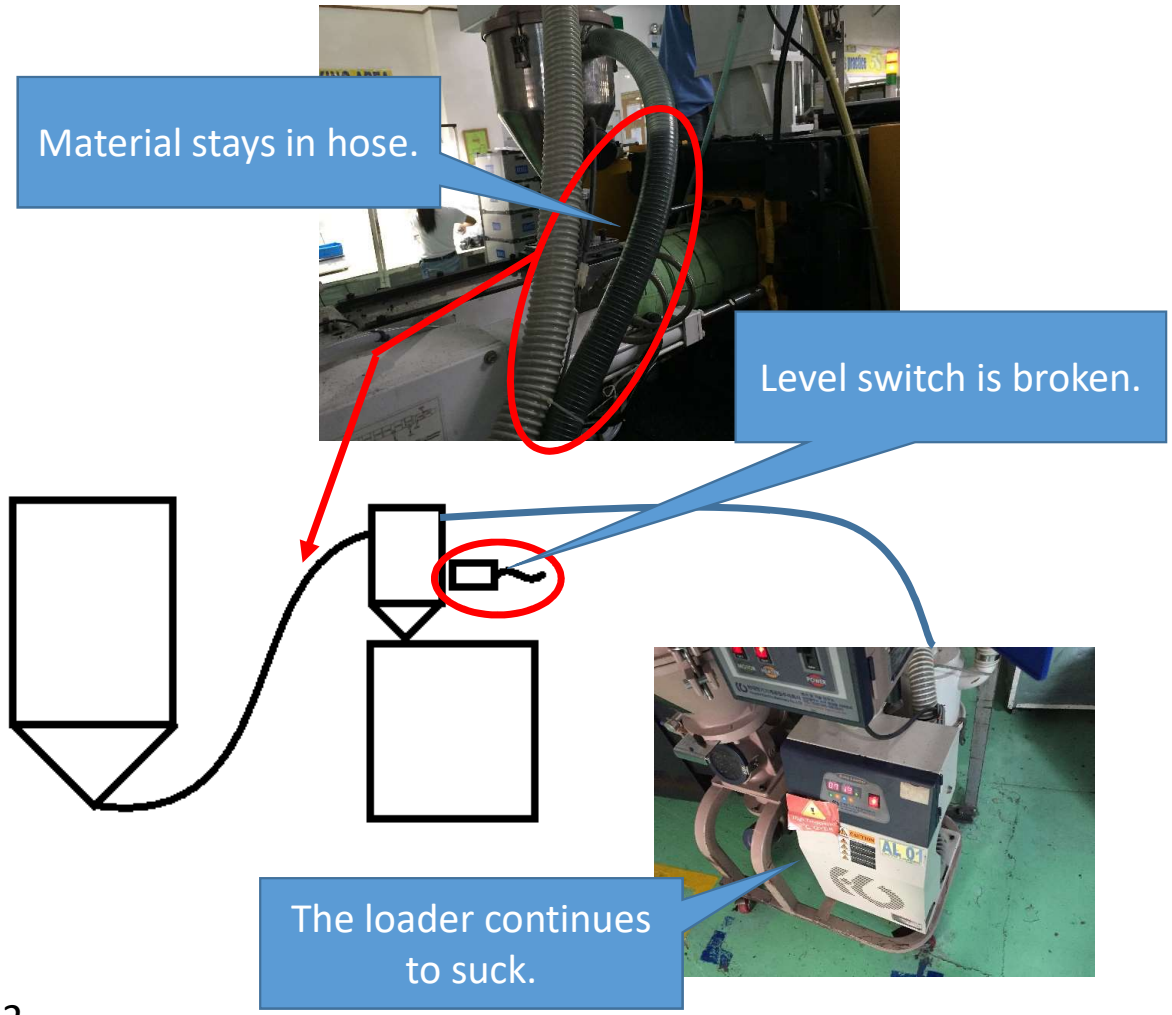
RISK

If there is not sensor, Loader continue to supply material.
→Loader don’t stop.(Electric Bill become expensive.)
If many materials stay In hopper for long time,
material may absorb a moisture again.

SOLUTION

To use a new sensor

<Material in Hose>



PROBLEM

Material stays in hose
because the level sensor is broken.

RISK

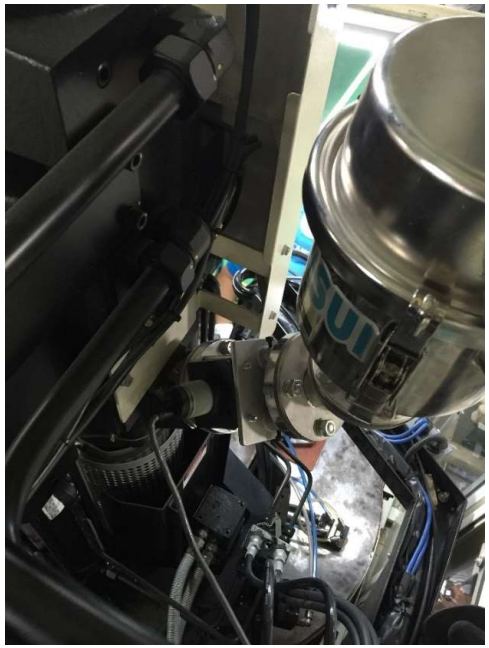
Material may absorb some moisture
while they stays in hose.
→Production quality may become bad.

SOLUTION

To change a new sensor

＜LEVEL SWITCH＞

The screw is broken.



PROBLEM

The screw is broken.

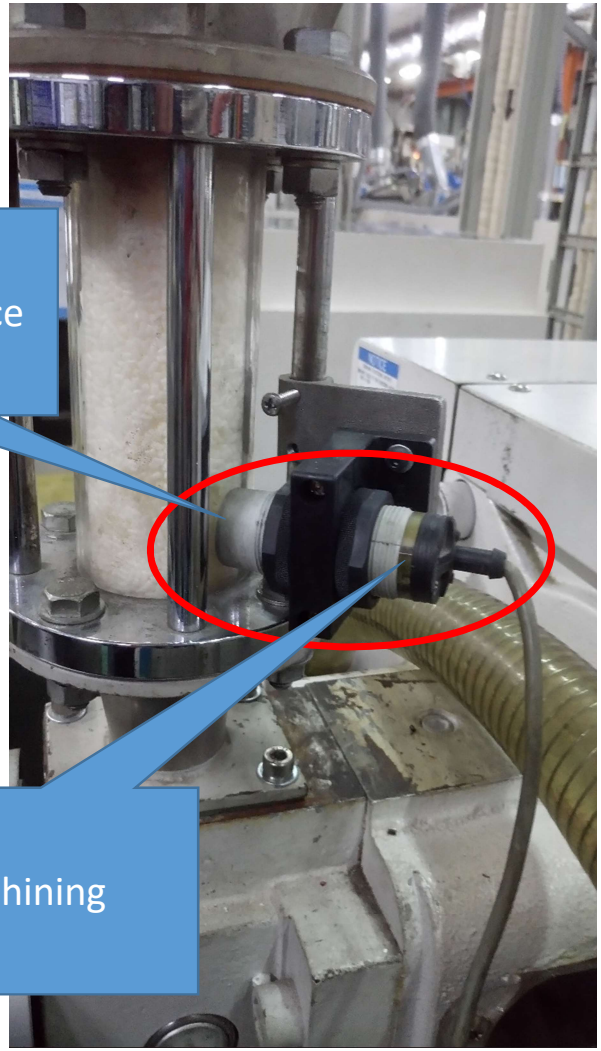
RISK

If there is not sensor, Loader continue to supply material.
→Loader don’t stop.(Electric Bill become expensive.)
If many materials stay In hopper for long time, material may absorb a moisture again.

SOLUTION

To use a new one

＜SENSOR＞



PROBLEM

Even though there is material in the glass pipe,
the lamp of sensor is not shining .

RISK

The sensor cannot detect the material inside glass pipe,

- The loader keep supplying material.
  →Waste of electrical
- Some material stay in the hose.
  →It might get some moisture again

SOLUTION

Please change the position of sensor
to detect the material.

10-1～10-10

＜Powder of Crushed Material＞

PROBLEM

There is a lot of powder around crusher.

SOLUTION

・If material go into Injection Molding Machine,
Material may stay in Products.
(Because it's difficult powder melt.)
・You need to clean around crusher.(Waste of time)

SOLUTION

We recommend you to use Slow Rotary Crusher.
It makes few powder.

＜CRUSH MATERIAL＞

PROBLEM

There are a lot of crush materials.

SOLUTION

＜Material cost＞

・You can reduce the cost if you use crush material

→Please make the new line for recycling.

(If you use a metal detector, some metal don't go into the production line.)

・You can reduce the runner and sprue.

→If you use the "mini runner".

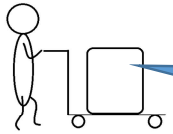
＜CRUSHER＞

・OLD ONE → NEW ONE

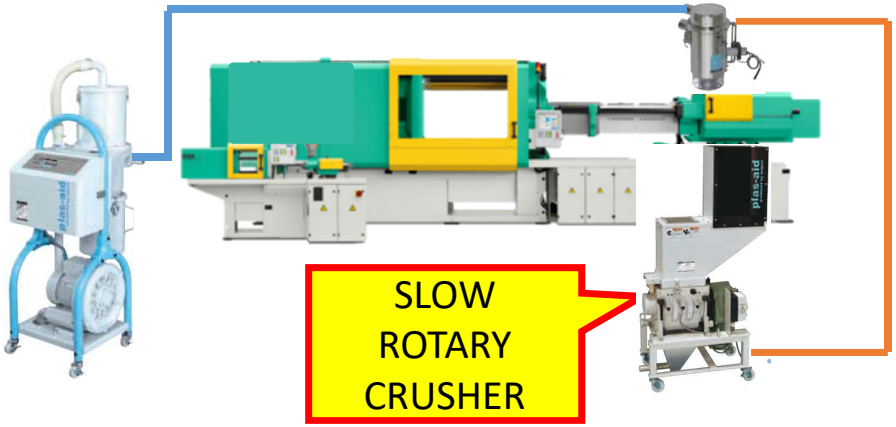
(You can make the same size crush material.)

＜Crusher Room＞

You have to manage them.



You have to deliver them.



PROBLEM

There is a Crusher Room in order not to put powder of crushed material in products.

SOLUTION

You need to delivery them.
You need to prepare a space to put crushed material.

SOLUTION

- To change Rapid Rotary Crusher to Slow Rotary Crusher.
→It doesn't make some powder.
- You can put crusher along Injection Molding Machine.
→You don't need Management, Delivery and Space.

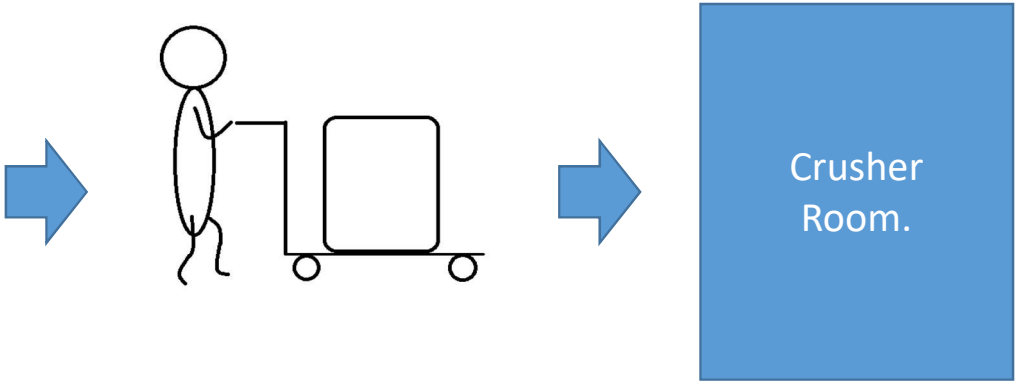
＜Runner (1)＞

PROBLEM

Runner stays along the Injection Molding Machine.

RISK

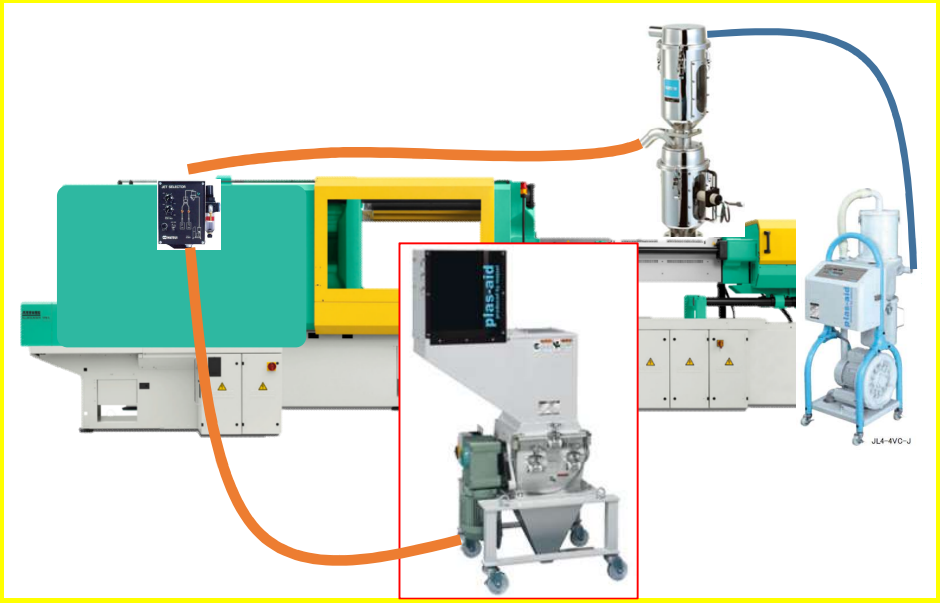
- You have to deliver runner to Crusher Room.
- You have to manage crushed material.



<Runner (2)>

SOLUTION1

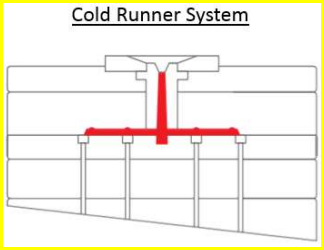
To change Rapid Rotary Crusher to Slow Rotary Crusher.
→It doesn't make some powder.

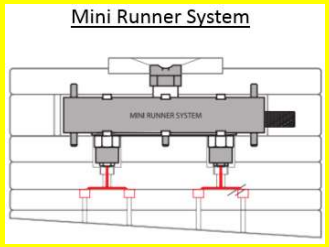


You don't need Management, Delivery and Space.

SOLUTION2

You want to reduce Runner size,





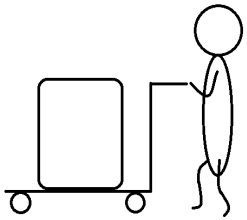
To install Mini-Runner
- You can reduce runner size.
- You can reduce cooling time.

Reducing Runner size → You can use Small Re-pelletizer.

＜Material Flow (1)＞

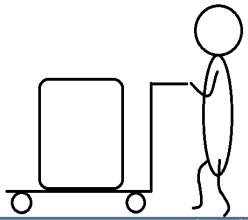
＜Recycle Flow Diagram (Example)＞

Mixed Material Drying

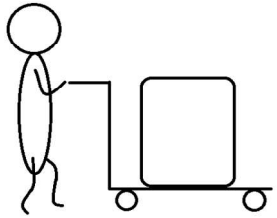


Move Mixed Material

Mixing



Move Grinded Material



Move runner

Grind runner

Problem

- Many people are working.
- Recycle process is long.

Risk

- Dirt enters easily. (Contamination)
- Hassle to manage the material grinding process

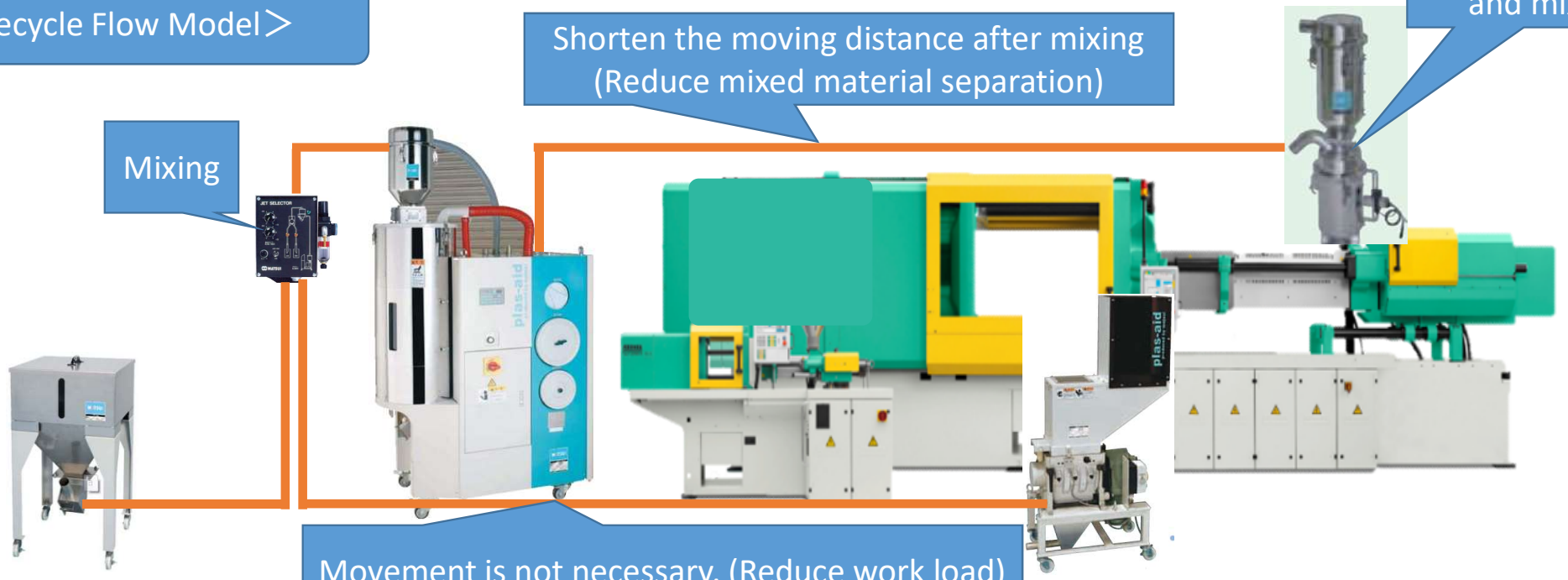
＜Material Flow (2)＞

＜Recycle Flow Model＞

Shorten the moving distance after mixing
(Reduce mixed material separation)

Powder removal
and mixing

Mixing



Movement is not necessary. (Reduce work load)

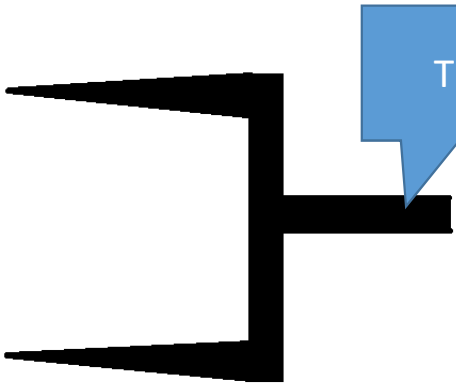
Solution

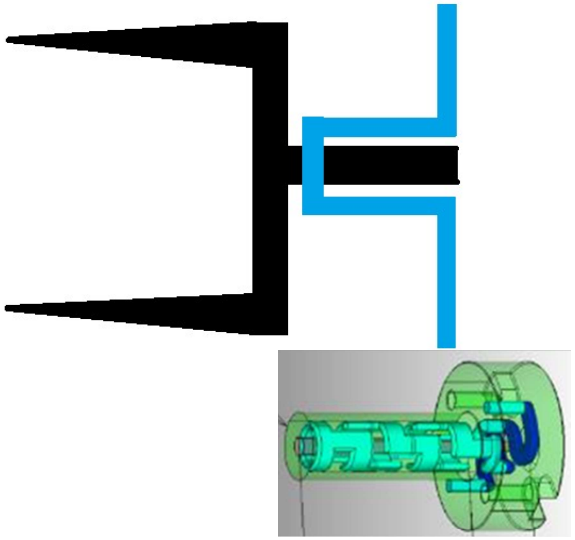
- New Conveying route →Shorten material convey route (Reduce Time)
  →Reduce contaminants after automation (Quality Improved)
  →Reduce work load after automation (Productivity Rise)

<Thick Sprue>

PROBLEM

Sprue is thick.





RISK

Sprue is thick.
→Cooling time become long.

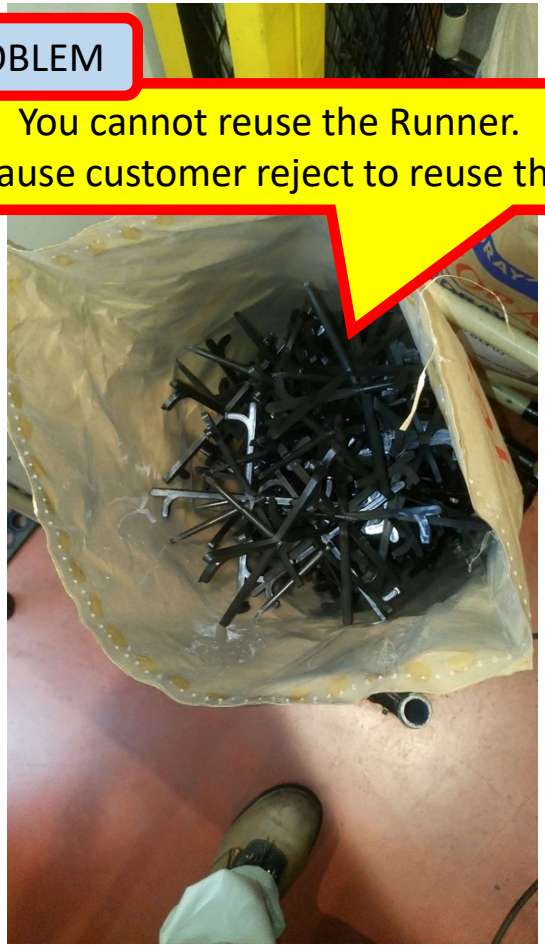
SOLUTION

Sprue Bush with Cooling Pipe
→You can make sprue cool early.
(You can reduce cycle time.)

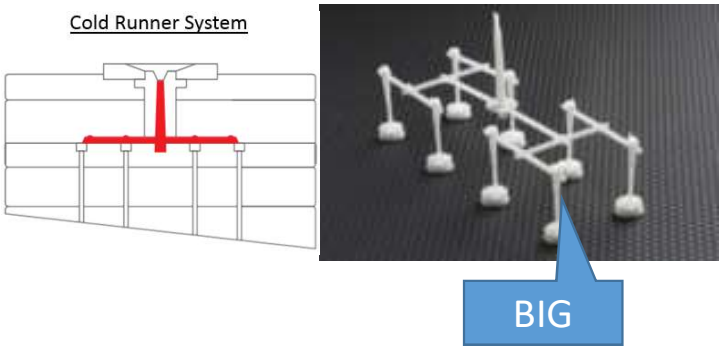
<Runner>

PROBLEM

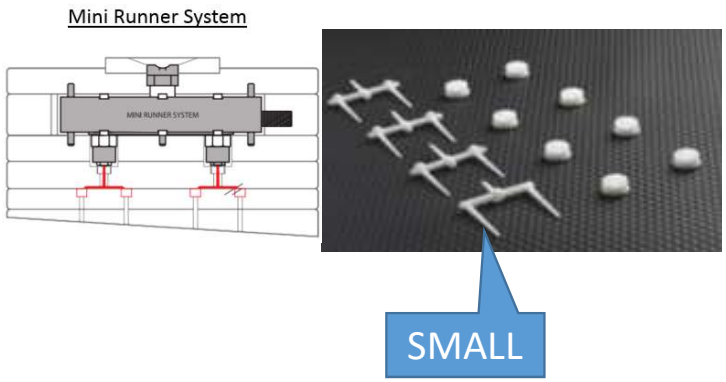
You cannot reuse the Runner.
Because customer reject to reuse them



<Cold Runner>



<Min Runner>



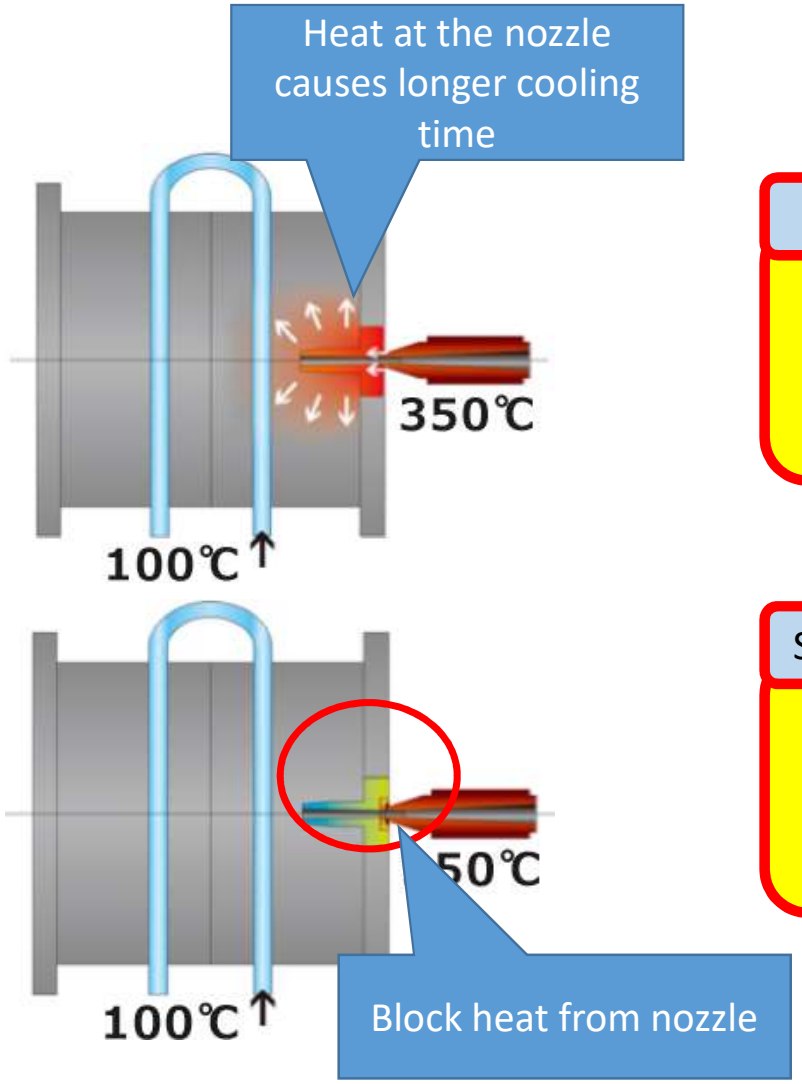
RISK

No recycle→Waste of material

SOLUTION

If you use Mini-Runner,
you can reduce runner.
(And you can reduce cycle time.)

<Threading>



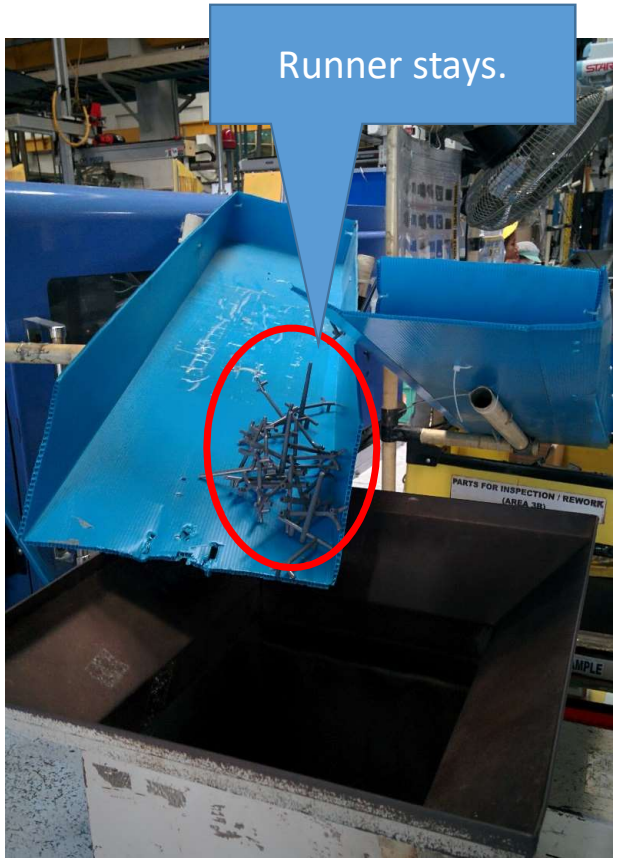
RISK

Too much time on cooling

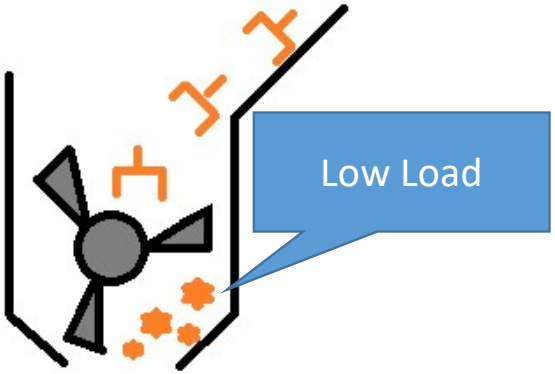
SOLUTION

Replace the insulation sprue bush (Cooling time shorten. Cycle shortening)

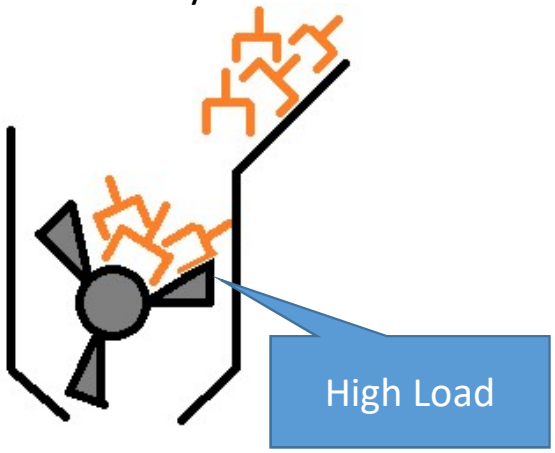
<Investing Runner>



<Invest One by One>



<Invest Many Runner>



PROBLEM

Many Runner is invested to crusher at the same time.

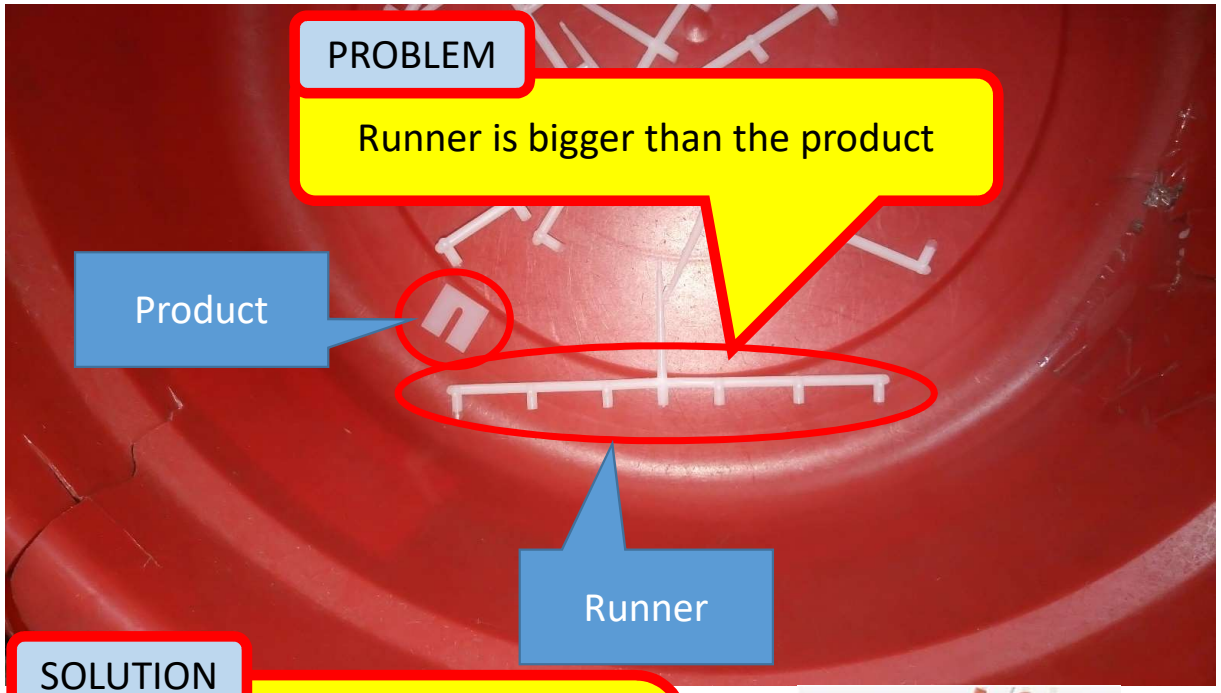
RISK

Loading becomes High.
→Crusher will stop suddenly.
(Perhaps. Blade may be broken.)

SOLUTION

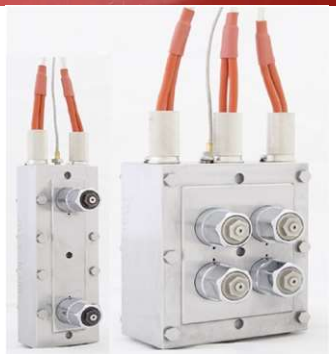
We recommend you to invest runner constant.

＜Weight of runner＞

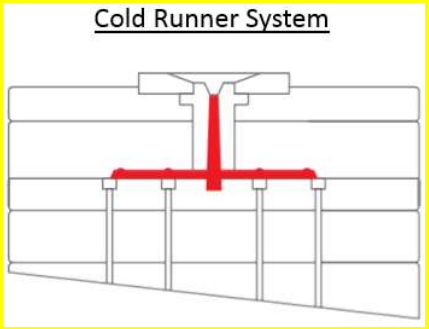


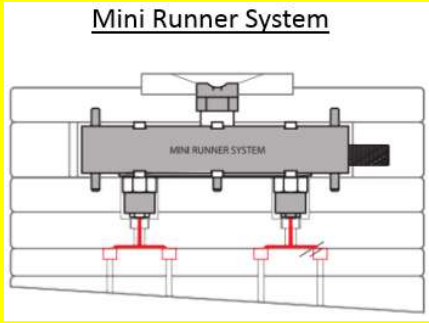
SOLUTION

・Reduce the cycle time by decreasing the weight of the runner. Also reducing the material to be used



＜Mini runner＞



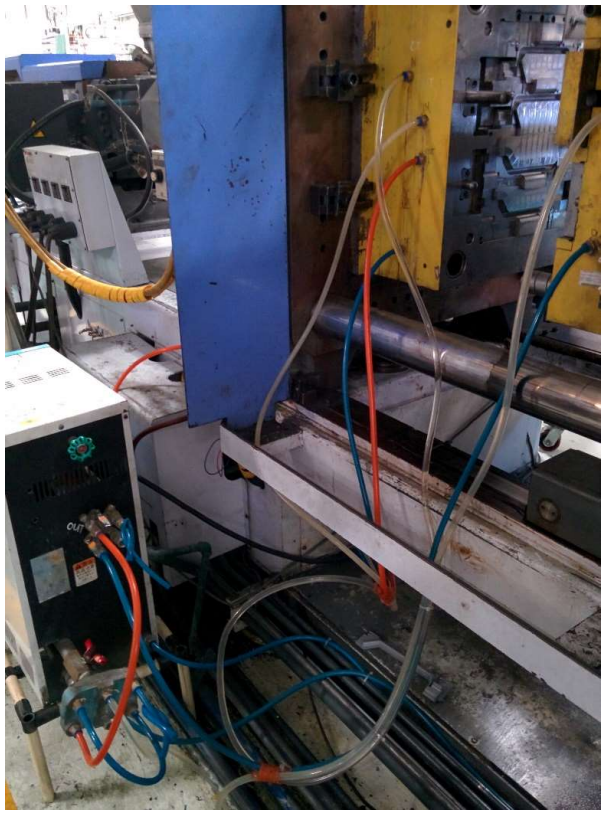


When mini runner is used:
・Decrease weight of the runn
・Decrease cooling time

Increase productivity

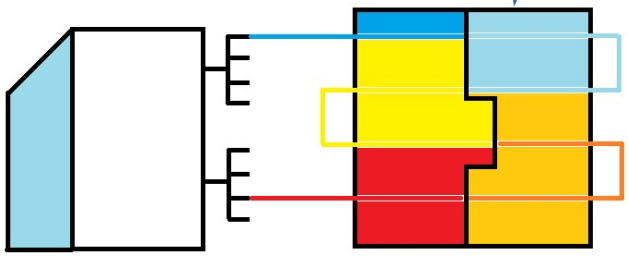
11-1～11-7

<Connecting Hose>

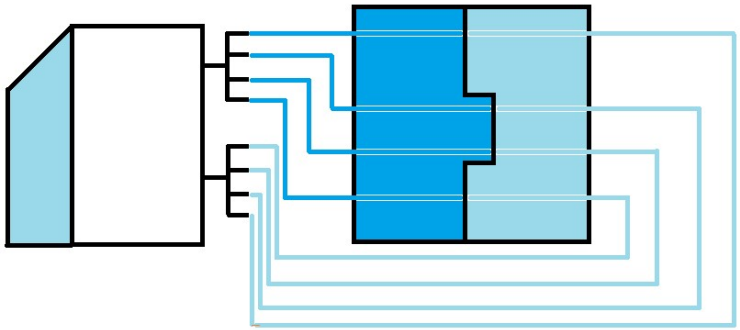


Non-uniform

<Connect by 1 Hose>



<Connect by 4 Hose>



PROBLEM

You connect MTC to MOLD by 1 tube.

RISK

The Temp is different depend on each part of mold.

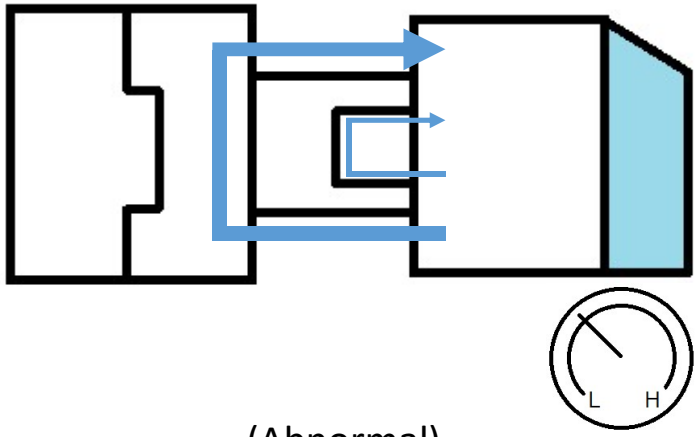
SOLUTION

We recommend you to connect by many hose as possible as you can.
→Temp of mold becomes uniform
(The cycle time may be short.)

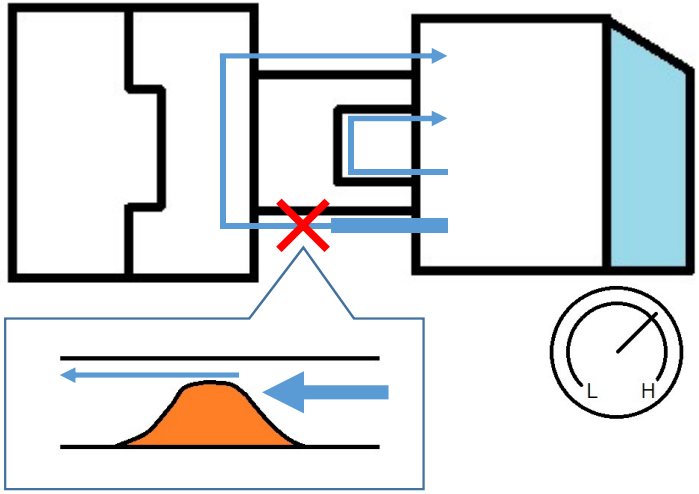
＜Pressure Gauge＞

<Importance of Pressure Gauge>

(Normal)



(Abnormal)



PROBLEM

The pressure gauge is broken.

RISK

You don’t know the pressure.
→You may not know whether water flow from MTC through Mold or not.

SOLUTION

We recommend you to change new one.

＜Dirty Water Filter＞

PROBLEM

Filter is dirty.

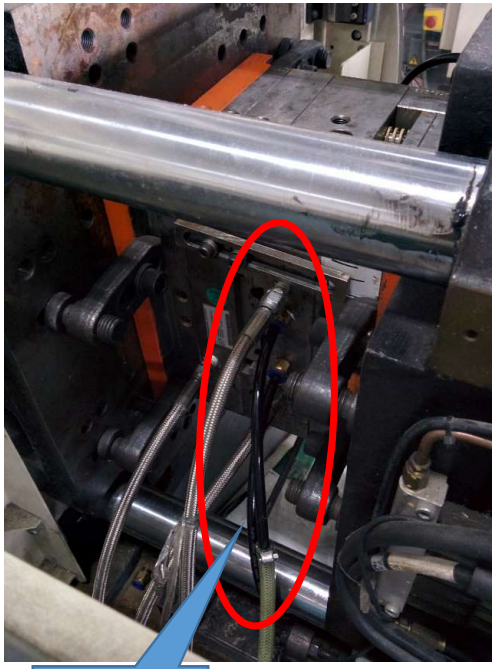
RISK

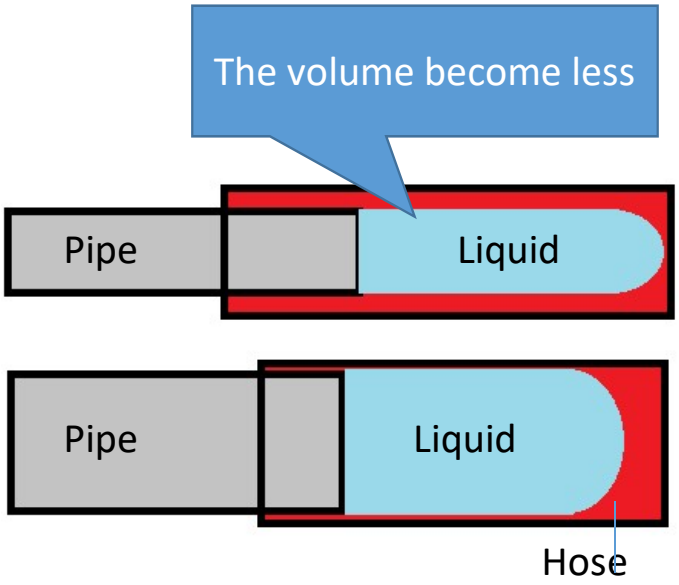
If water doesn't go into the MTC,
MTC may not adjust the temp. of water.

SOLUTION

- To change a new filter
- To improve the quality of water
- We recommend you to have a stock

<Hose Size>





PROBLEM

You use a thin tube.

RISK

Thin tube may make the volume of liquid to reduce.
→It may be not enough to adjust mold's Temp. .

SOLUTION

To use a big size hose.
If you use one touch coupler,
it's easy to change hose.

＜Oil-type Mold Temperature Controller＞

Setting Temperature＝135℃

11-5

Problem

You use Oil-type mold temperature controller.

Risk

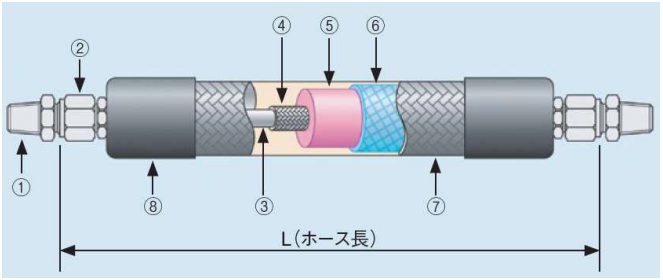
・Hassle to buy and change the oil
→ If oil is of bad quality, machine will spoil.
・Hassle to cleanup in case of spillage

Solution

・Change to water-type machine where its maximum temperature range is up to 160℃

＜Hose of MTC＞

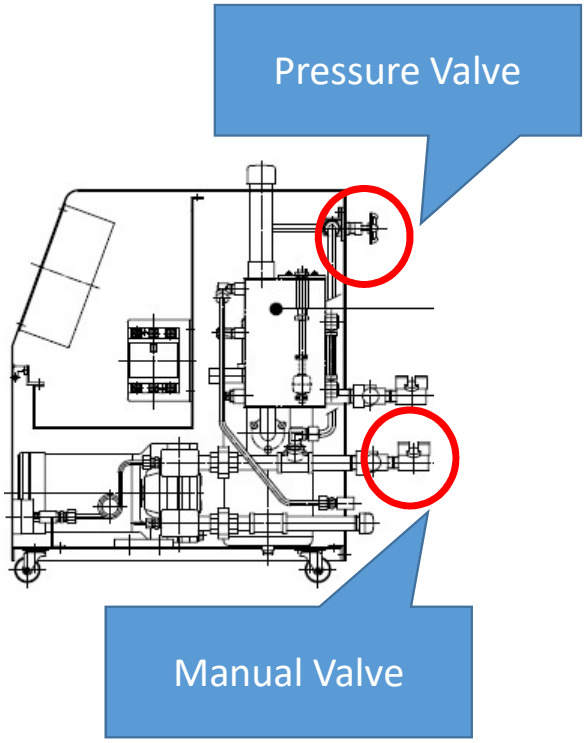
<Keeping Temp. Hose>



SOLUTION

If you use Keeping Temp. Hose,
You can keep the Temp. of Liquid in the hose.
→ The opportunity that heater run become less.

＜Water Pressure＞



PROBLEM

Water Pressure is low.

RISK

Water may go to bypass pipe Instead of Mold.
→MTC may not adjust the mold Temp..

SOLUTION

・To close Pressure Valve
(Good Pressure is about 0.4MPa.)