Hot Runner can increase profit

1. Why hot runners become popular in the world?
2. What is hot runner?
3. HEATLOCK product?
4. How to use HEATLOCK to achieve the advantage?

First, let’s take a look at cold runner
Cold runner

1. Long flow length, use more material
2. Need manual labor to remove gate mark, low efficiency.
3. Cooling the thickest parts long cycle time.
4. Product surface rough.
5. Recycle the sprue, manual labor and cost for regrinding.

Conclusion: Low productivity, Low automation, High part price.
Can hot runners be the solution?
Hot runners technology is a relatively new injection moulding technology.

Simplified you can say hot runners is an extension of injection moulding machine’s cylinder. In case of direct gating on part, we don’t need to remove the wasted cold sprue every cycle.
Advantage of Hot runners
1. With only one hot sprue bushing, Runners can be made shorter. Flow length in cold steel has been reduced by 38%.

2. With two sprue bushes and a manifold, Flow length in cold steel has been reduced by 68%.

3. With eight sprue bushes and a manifold, Direct gating, The flow length in cold steel is totally eliminated.
The diagram shows an example of time needed in different phases of the cycle.
Reduce cooling time

Cooling time depends greatly on cross section.

But

Cold sprue is thicker compared with part cross section.
Reduce cooling time, hot runner will help?

Cold runner, wait for cooling thick sprue

Direct gate hot runner, no need to wait for long and thick sprue

Hot runner together with mould design for hot runners can reduce cooling time effectively.
Case study

- Product: Keyboard box  Weight: 285g  Material: ABS

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<th>Hot runner</th>
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<td>2s</td>
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Save 10.5s

Example: An order needs 300,000 keyboards
One injection machine
Cold runner will cost 98 days
Hot runner will cost 66 days
It will save 32 days of machine time apart from energy consumption
3. Improve the quality of the part:
Melt temperature

Control of hot runner temperature is good. The melt in the whole injection molding systems will be within melt window of resin down to the gates.
4. Improve the quality of the product from: pressure

When hot material flow in cold runner, outer layer cools down. Reducing actual melted flow channel, increasing pressure drop

Melt flow through hot runner directly into a cavity, reduce pressure loss, less pressure can fill the cavity, reduce stress and product defects, ensure the quality of products.
Conclusion

Benefits

• Reduce material cost
• Better melt flow
• Better part quality
• Shorter cycle time
• Less energy consumption

Investments

• More complex design
• Higher price of mould
• Hot Runner investment
• Surrounding ancillaries
• Higher maintenance cost

Result:

Lower part cost!