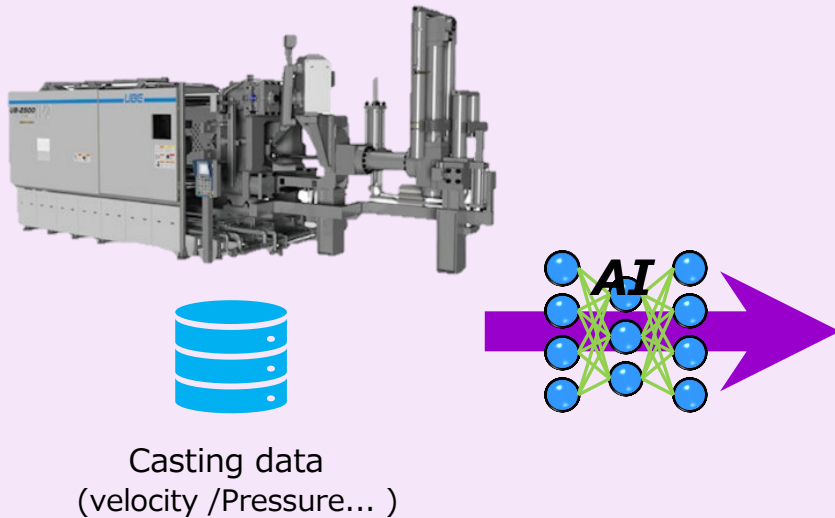
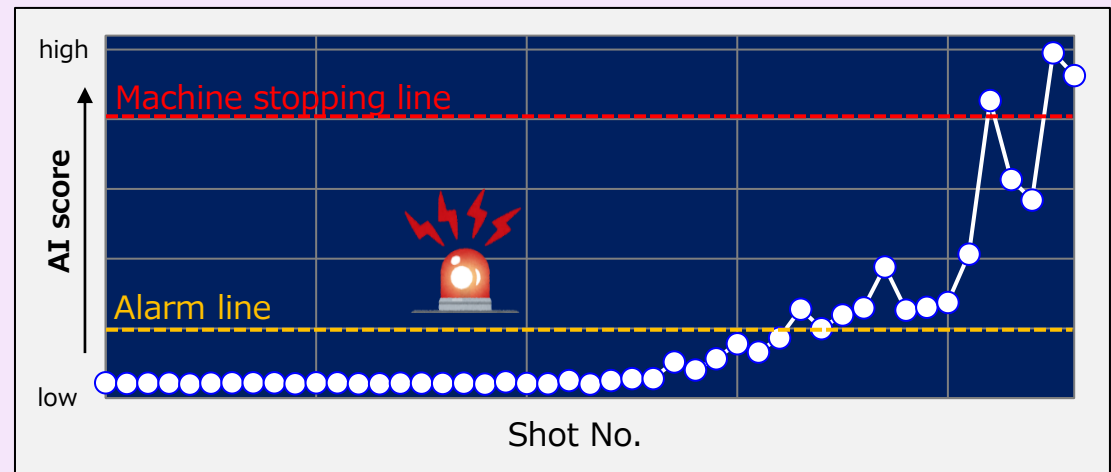


Anomaly and warning system Dsupport-AEye

AI (Artificial Intelligence) **detects anomalies from slight changes** in die-casting machine conditions and production status.



Quantitatively evaluate the degree of anomalies for each shot



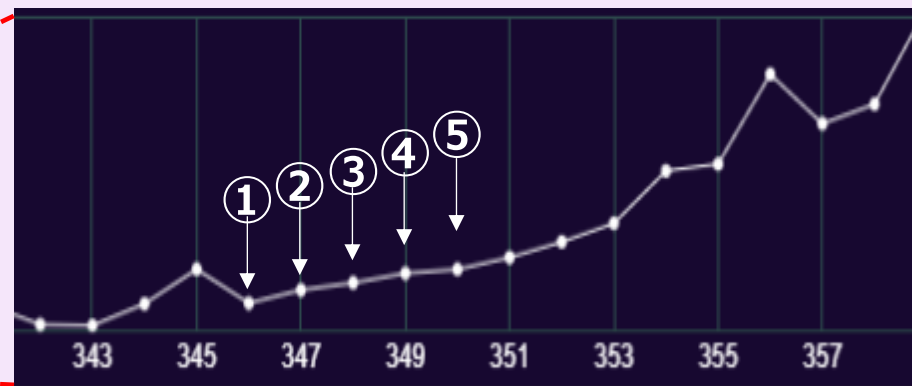
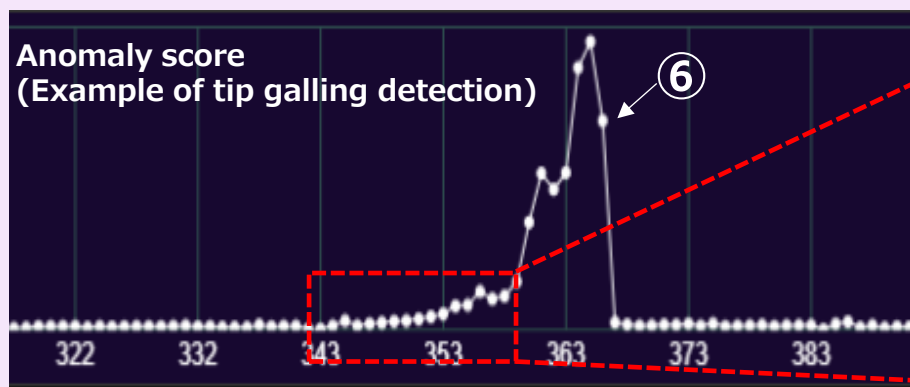
AI-powered diagnostic technology **specialized for die-casting machines and casting processes.** **Early detection** helps reduce unexpected downtime and maintenance costs, leading to improved productivity. When values exceed predefined thresholds, the system can trigger **alarms or stop the die-casting machine.**

Anomaly and warning system Dsupport-AEye

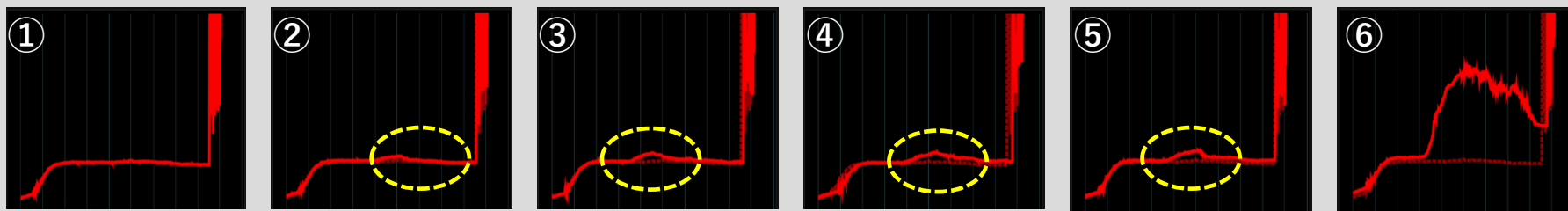
AI analysis

AI analysis enables **early detection** of **even subtle changes** that are difficult for humans to notice.

During production, the anomaly score gradually increases, and abnormal noise occurs at point ⑥. On the following day, frequent backflash occurs, leading to tip replacement.



Changes in casting pressure profile

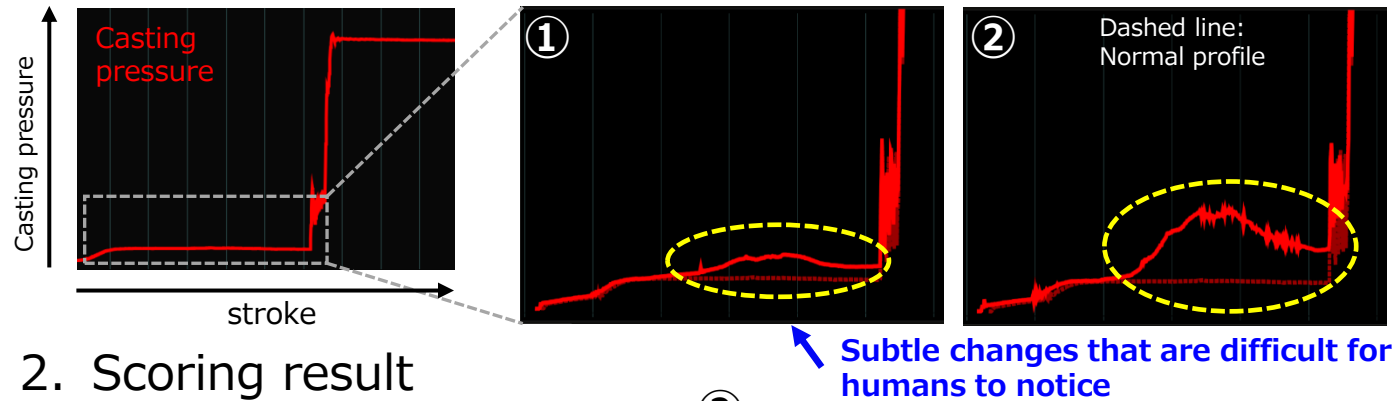


■ Do you have any of these problems?

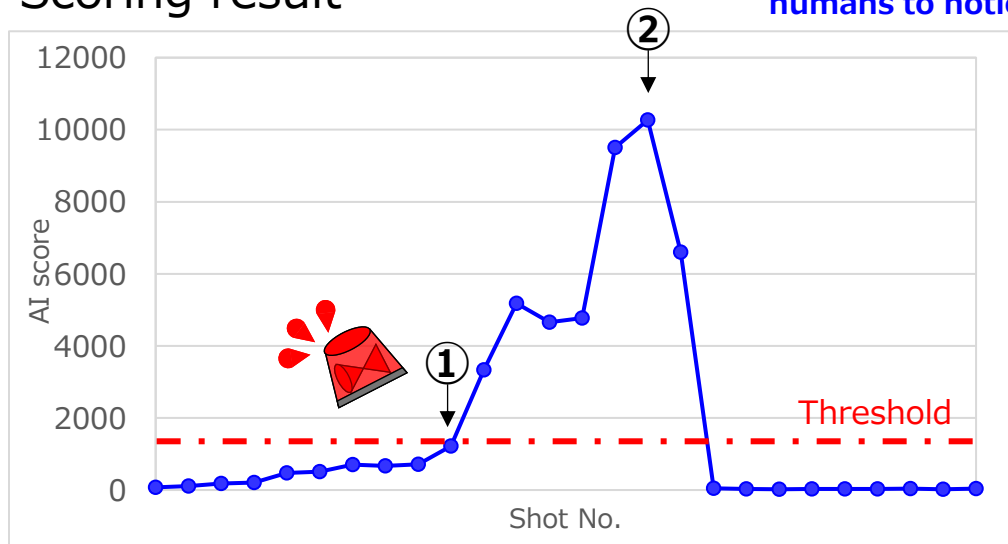
- ☑ Tip galling occurs, causing an unexpected production stop.
- ☑ By the time it is noticed, casting quality has already deteriorated.

■ Use of Dsupport-AEye

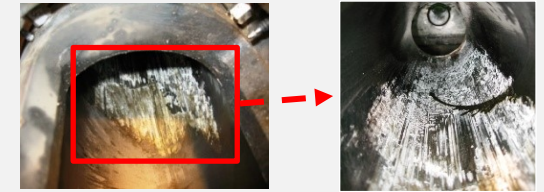
1. AI analysis target ⇒ Casting pressure profile



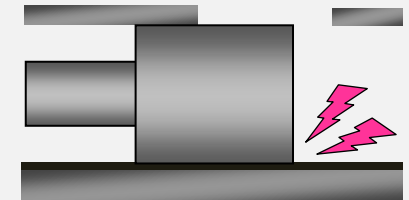
2. Scoring result



◆ Factors of tip galling(excerpt)



Aluminum sticks inside the sleeve



Insufficient tip lubricant

[Effects of Application]

Evaluate the level of vibration in casting pressure.

- Early detection before unexpected downtime occurs !
- Prevent deterioration in casting quality before it happens !

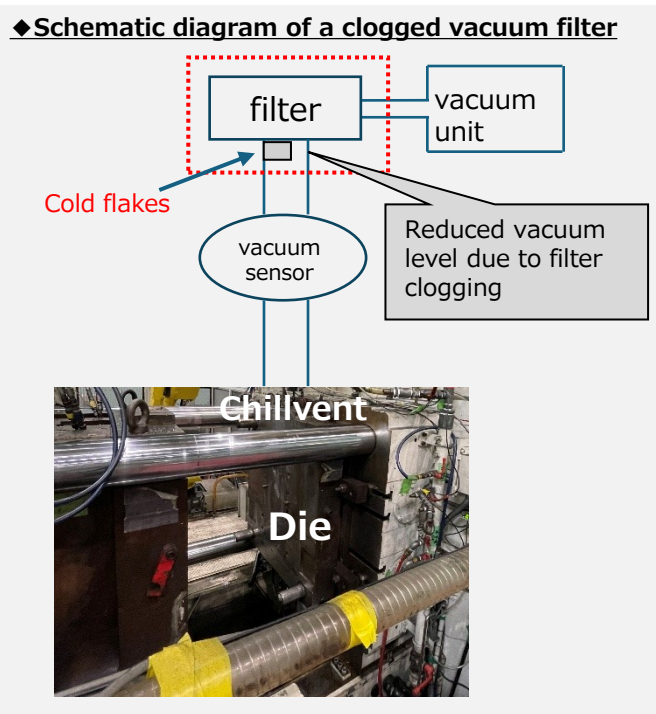
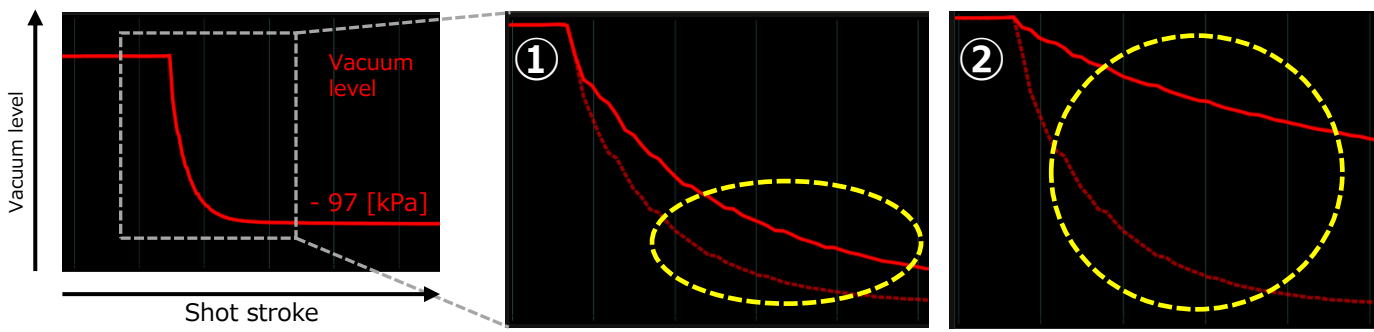
Case: Vacuum filter clogging

■ Do you have any of these problems?

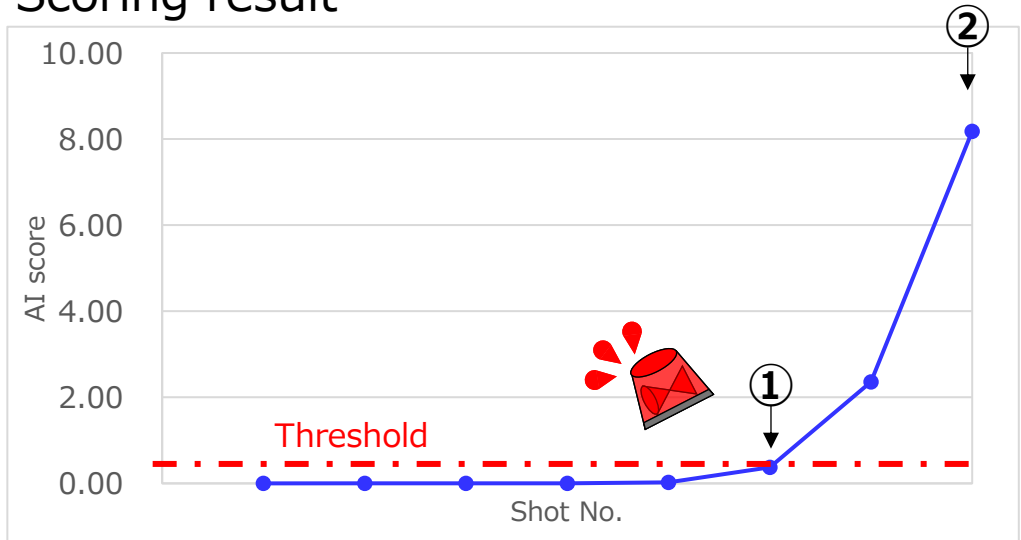
- ☑ Aluminum clogging in the filter leads to a decline in casting quality.
- ☑ When clogging occurs, filter cleaning takes time.

■ Use of Dsupport-AEye

1. AI analysis target ⇒ Vacuum profile



2. Scoring result



[Effects of Application]
Evaluate the slope of the vacuum profile.

- Early detection of clogged vacuum filters !
- Enable planned maintenance !

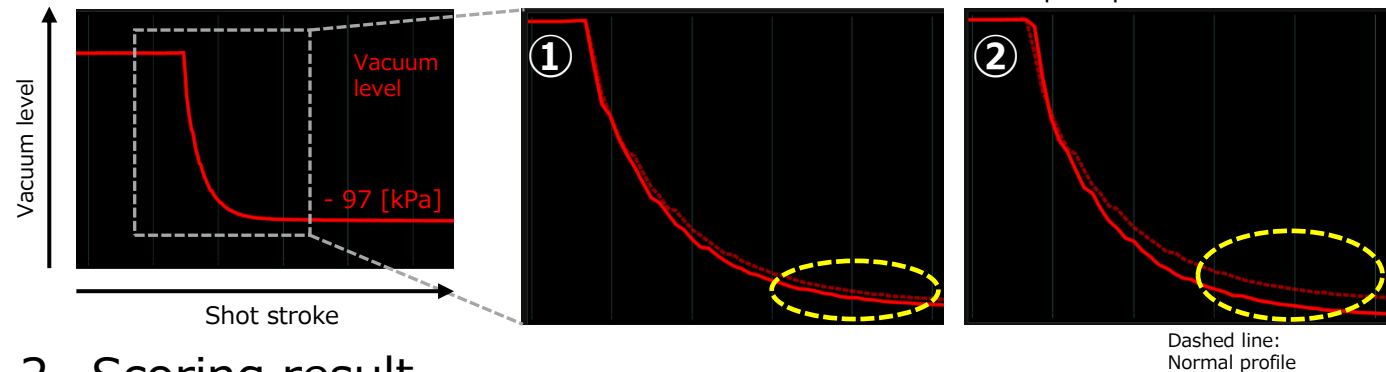
Case: AL clogging in the chill vent

■ Do you have any of these problems?

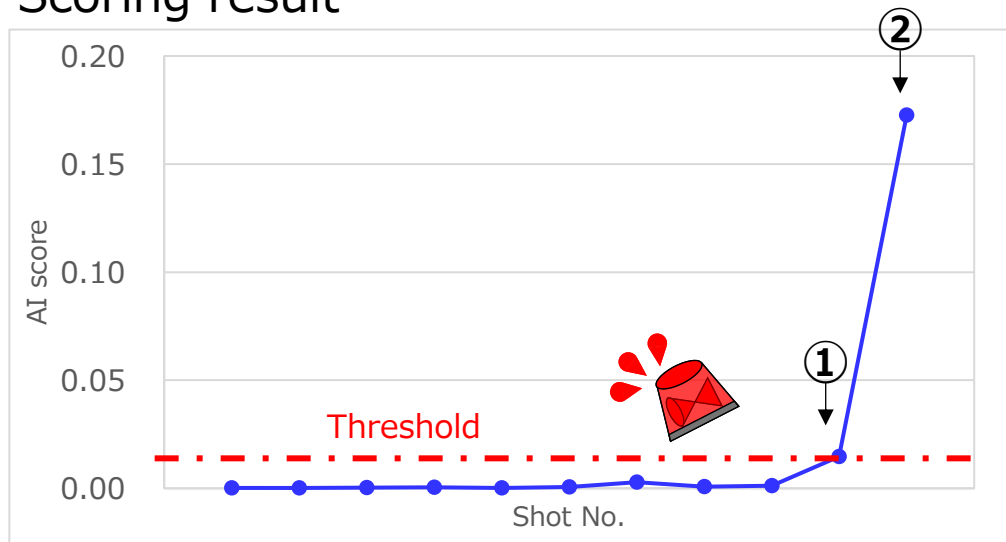
- ☑ AL clogging in chillvent, leading to a decline in casting quality.
- ☑ When clogging occurs, filter cleaning takes time.

■ Use of Dsupport-AEye

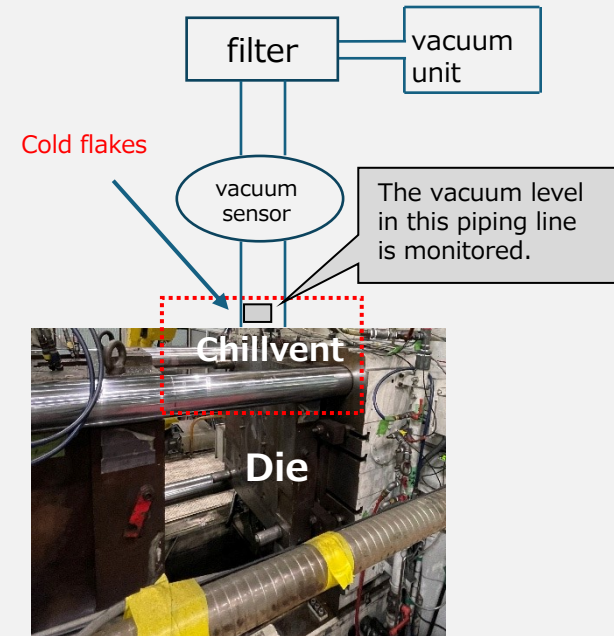
1. AI analysis target ⇒ Vacuum profile



2. Scoring result



◆ Schematic diagram of a clogged vacuum filter



[Effects of Application]

Evaluate the slope of the vacuum profile.

- Early detection of clogged chill vent !
- Enable planned maintenance !

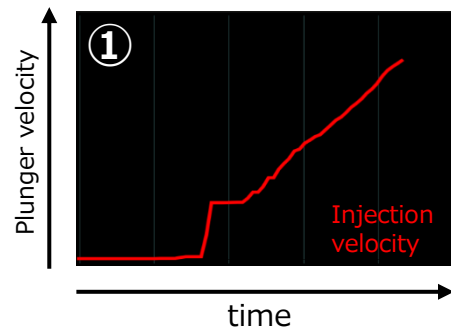
Case: Adhesion of the parts to the fixed die

■ Do you have any of these problems?

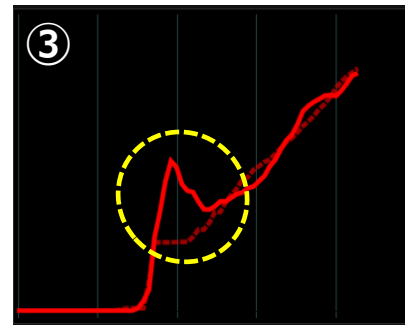
- ☑ By the time it is noticed, the parts has already adhered to the fixed die.
- ☑ The parts distortion occurs due to soldering and die opening

■ Use of Dsupport-AEye

1. AI analysis target ⇒ Parts plunger velocity

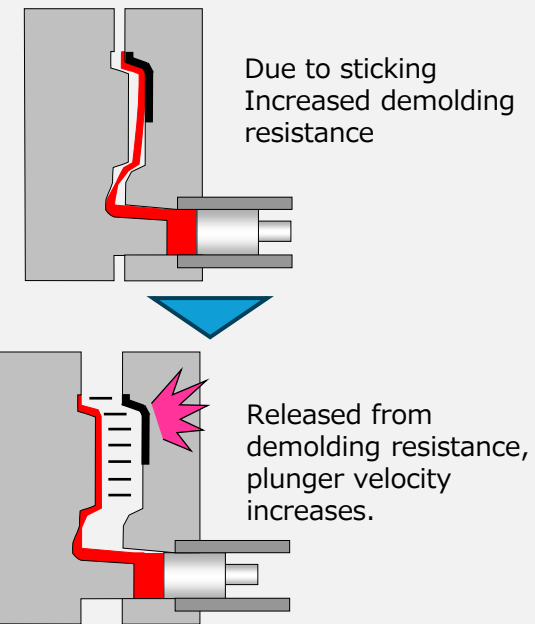


* When parts sticking occurs, the tip suddenly plungers due to demolding resistance.

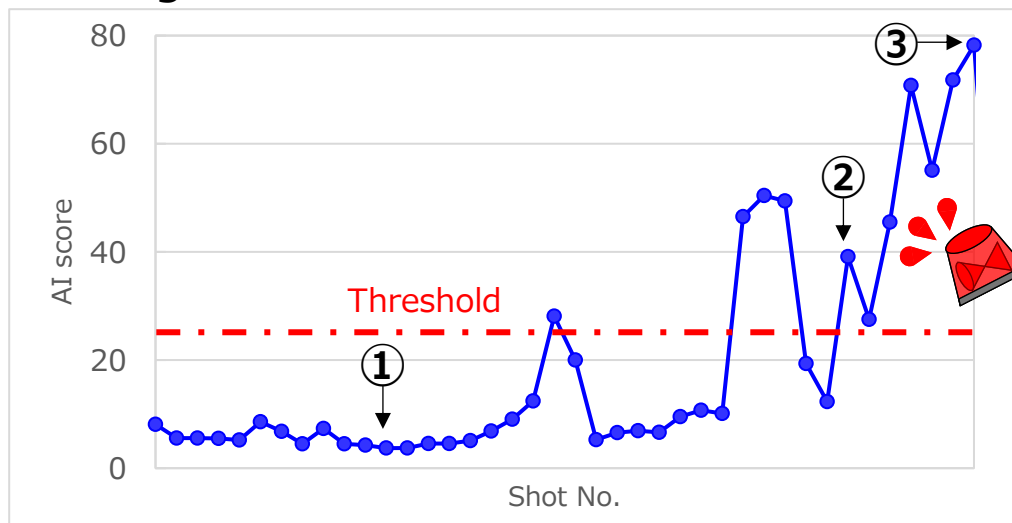


Dashed line:
Normal profile

◆ Schematic diagram of parts adhesion principle



2. Scoring result



[Effects of Application]

Evaluate sudden increase in injection velocity during parts plunger.

- Planned control of die lubricant application amount and die temperature!
- Prevent parts sticking and distortion !

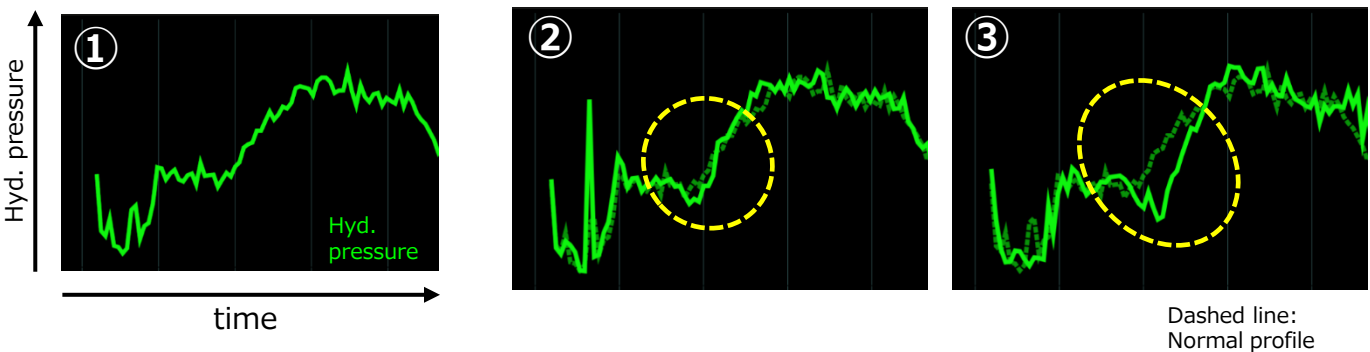
Case: Adhesion of the parts the movable die

■ Do you have any of these problems?

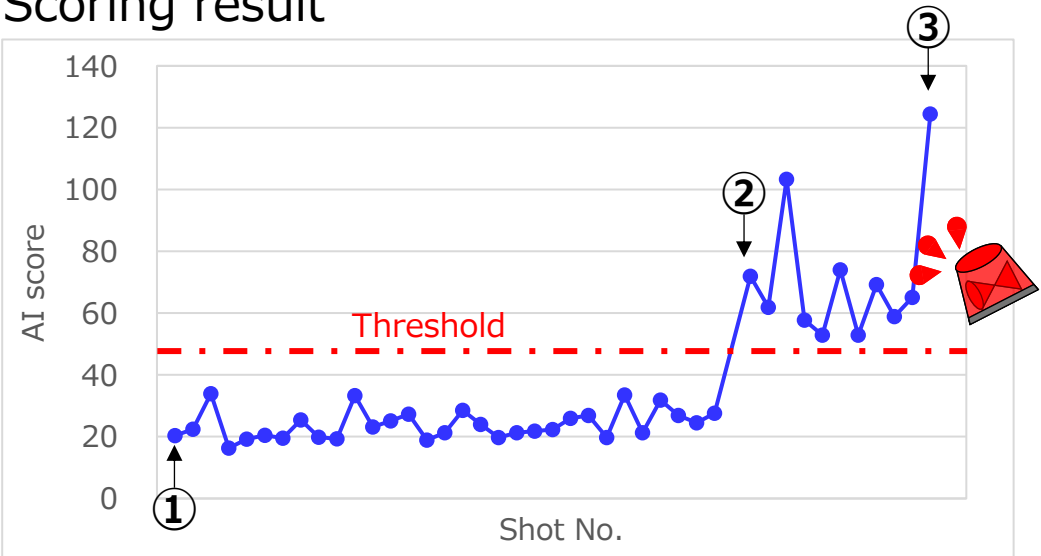
- ☑ Before I knew it, the product was stuck to the movable part.
- ☑ The product is experiencing distortion due to seizing or issues arising during the mold release process.

■ Use of Dsupport-AEye

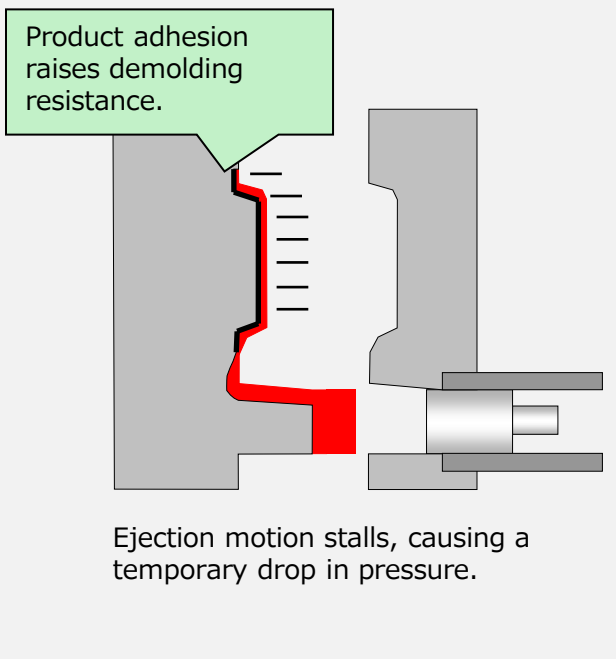
1. AI analysis target ⇒ Hyd. pressure of ejector cylinder



2. Scoring result



◆ Schematic diagram of parts adhesion principle



[Effects of Application]

Evaluate hydraulic pressure of ejector cylinder.

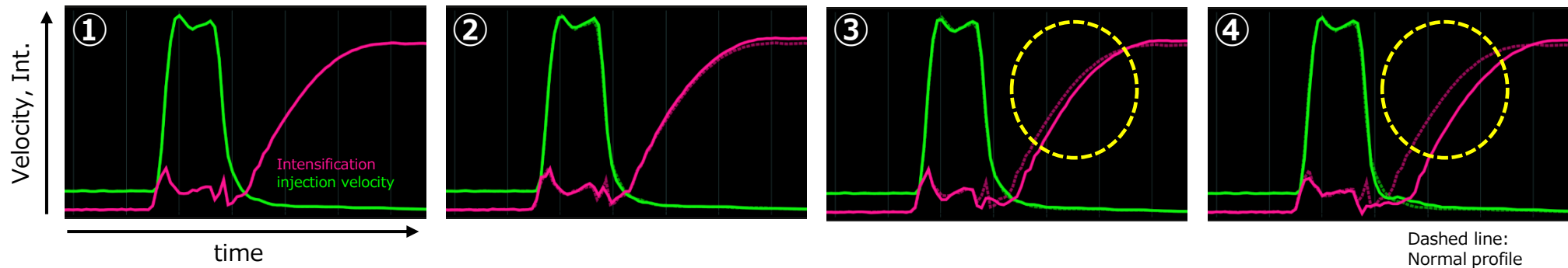
- Planned control of die lubrication amount and die temperature !
- Prevent parts sticking and distortion !

■ Do you have any of these problems?

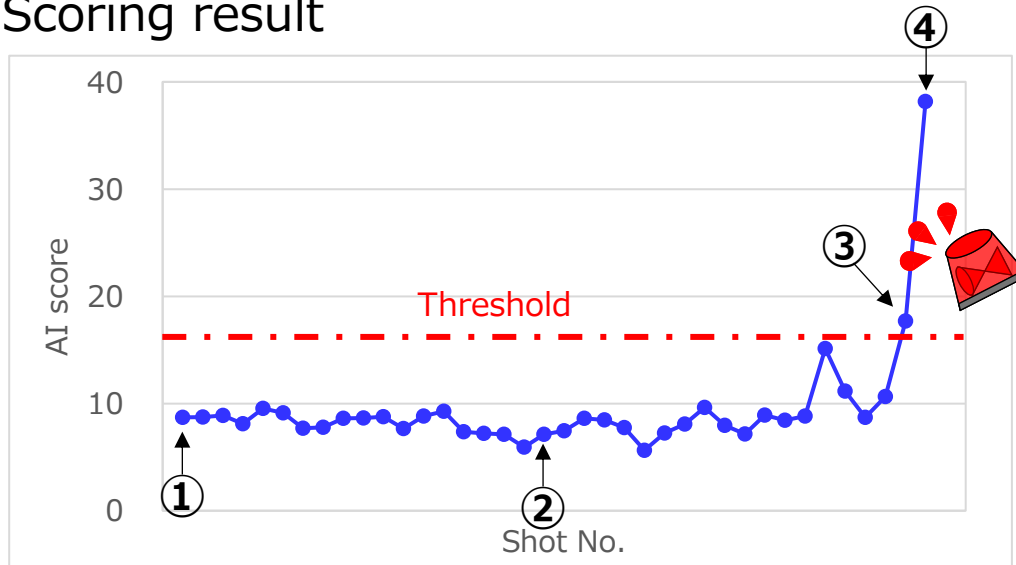
- ☑ It's not possible to immediately determine if the machine is operating normally based on the profile.
- ☑ After noticing, the intensification profile has become slower, resulting in the occurrence of porosity.

■ Use of Dsupport-AEye

1. AI analysis target ⇒ Intensification profile



2. Scoring result



[Effects of Application]

Evaluate the stability of intensification profile.

- It is able to see the repeatability of profile at a glance !
- If intensification build up time is slow, it can be instantly detected as an anomaly !

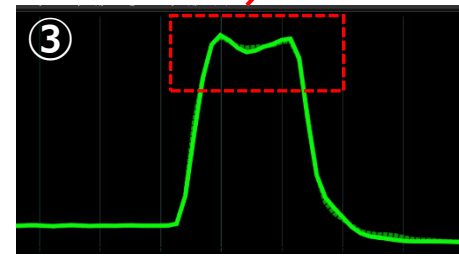
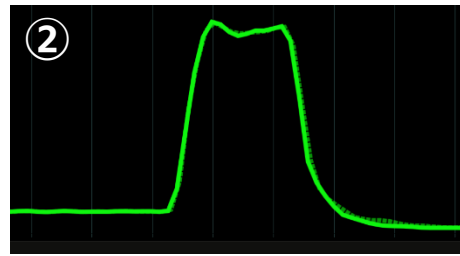
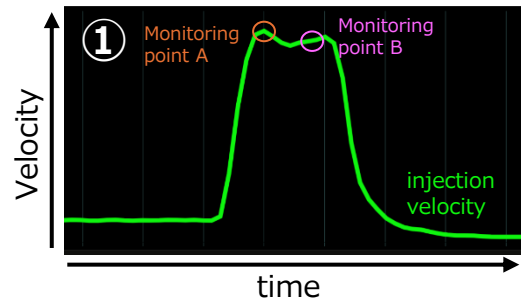
Case: Stability in high speed shot

■ Do you have any of these problems?

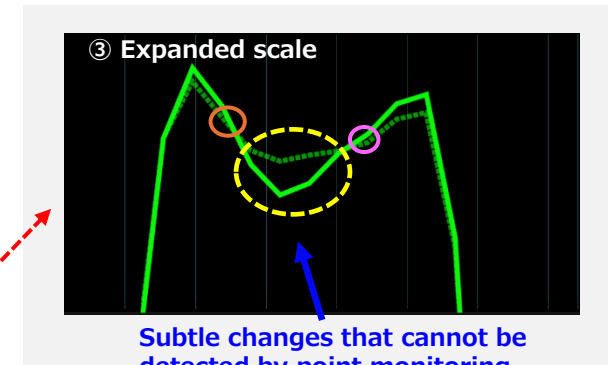
- ☑ It's not possible to immediately determine if the machine is operating normally based on the profile.
- ☑ After noticing, the injection velocity profile has become unstable, resulting in the occurrence of casting defects.

■ Use of Dsupport-AEye

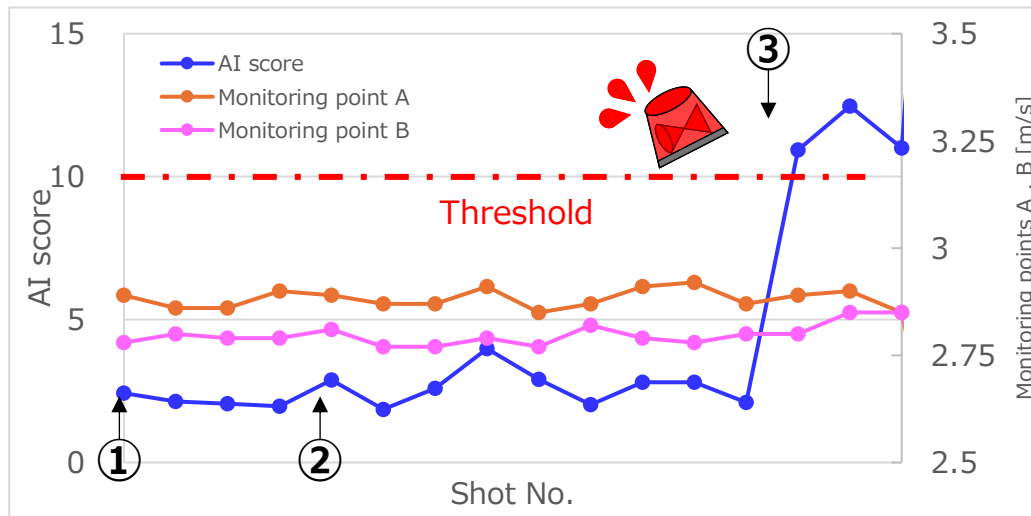
1. AI analysis target $\Rightarrow$ Injection velocity profile



Dashed line:
Normal profile



2. Scoring result



[Effects of Application]

Evaluate the stability of the injection velocity profile in the high-speed range.

- It is able to see the repeatability of profile at a glance !
- Subtle changes can be detected as anomalies.

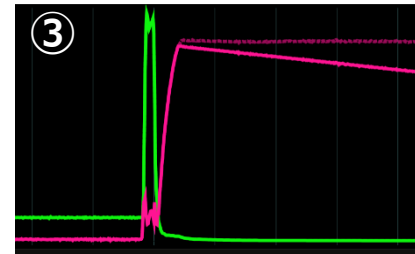
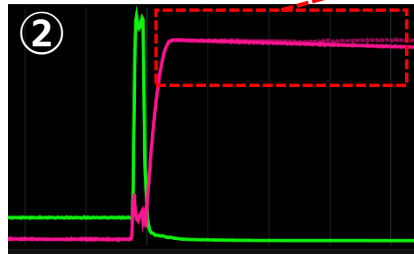
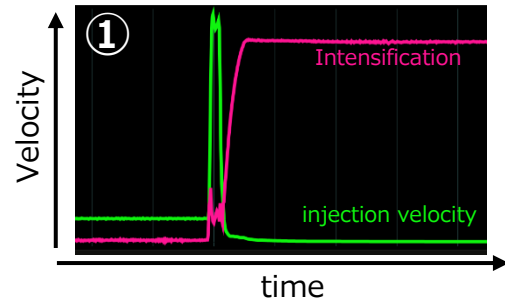
Case: Wear and damage of packing

■ Do you have any of these problems?

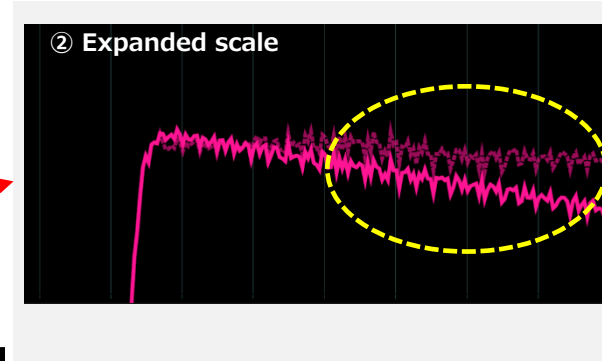
- ☑ After noticing, injection cylinder packings had already worn or failed.

■ Use of Dsupport-AEye

1. AI analysis target ⇒ Intensification profile



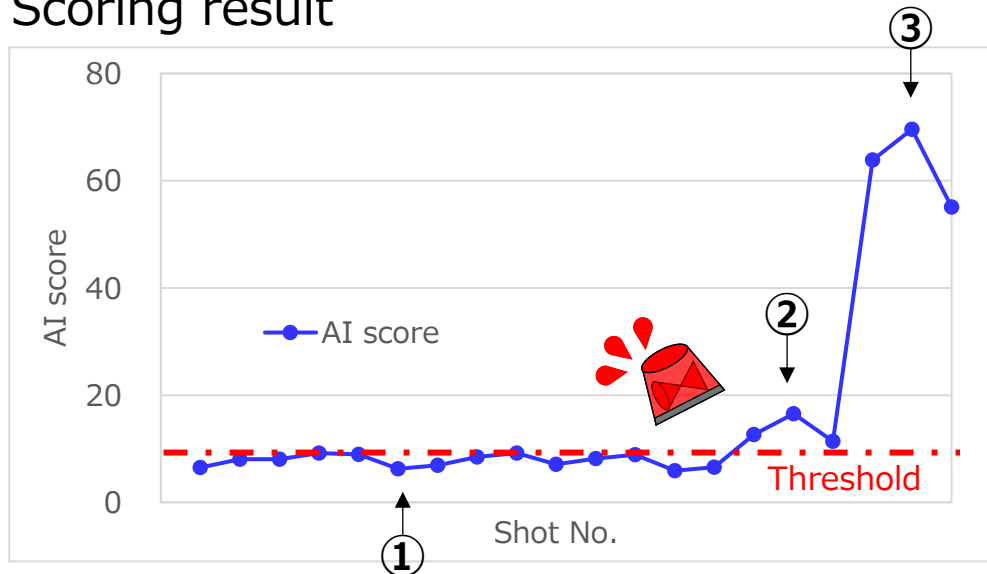
Dashed line:
Normal profile



Profile ③

Damage to the injection cylinder packing causes hydraulic oil leakage on the head side, resulting in a gradual decrease in casting pressure after building up of intensification.

2. Scoring result



[Effects of Application]

Determining the degree of decrease in casting pressure after increasing pressure.

- Early detection before gasket damage occurs!
- Planned maintenance is possible!