Quality Improvement Highlights for 2024

Kaori encourages all employees to participate in making persistent improvements and promotes quality awareness as a way to unite and motivate employees. An incentive program called “Quality Improvement Proposal” has been implemented to guide and encourage employees toward innovative thinking. The program invites all employees to contribute new ideas on ways to improve quality and business management, whether in terms of processes, products, or the organization, so that the organization can strive toward excellence and ensure continuity.

Brazed Plate Heat Exchanger Department

In 2024, a total of 9 improvements were made.

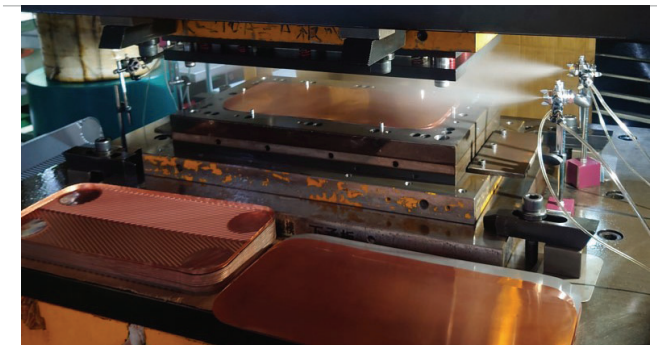
Improvement Highlight (1): Automatic Oil Spraying System for Stamping Machines

Purpose Process optimization to reduce motion waste, which is one of the seven wastes in production, and to standardize operations for improved quality.

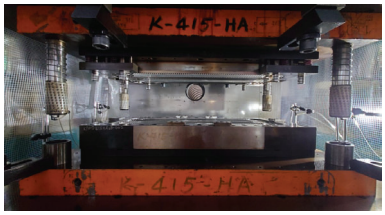
The status before improvement

Manual oil spraying using a hand-pressed oil can

- Inconsistent oil spray position and volume tolerance, resulting in longer operation time
- Oil spray position is limited due to single-side operation by personnel at the stamping machine



↓ Ongoing improvement ↓



The result after improvement

Automatic oil spraying by equipment

- Oil spray position and volume are both quantifiable and controllable, improving quality.
- Shorter operation time, enhancing equipment utilization rate.

Ongoing improvement

Added oil mist recovery device

- Oil mist is generated during the spraying process; therefore, an optimized recovery mechanism was added.
- The addition of a protective cover helps reduce dust contamination on the stamping machine. (Complies with 5S cleaning standards and prevents contamination)
- Recovered oil mist can be reused, promoting environmental friendliness and contributing to energy saving and carbon reduction.

Improvement Highlight (2): Load Limit Alarm for Vacuum Furnace Pressing Machine

Purpose Error-proofing, labor-saving, and quality enhancement.

The status before improvement

Manual visual inspection used to determine total furnace load,

- Different equipment has different weight limits, previously judged manually by visual inspection to determine whether overweight.

The result after improvement

Warning lights indicate when the load exceeds the limit

- Reduces the risk of human error
- Easy to read and ergonomically designed, eliminating the need to bend over.

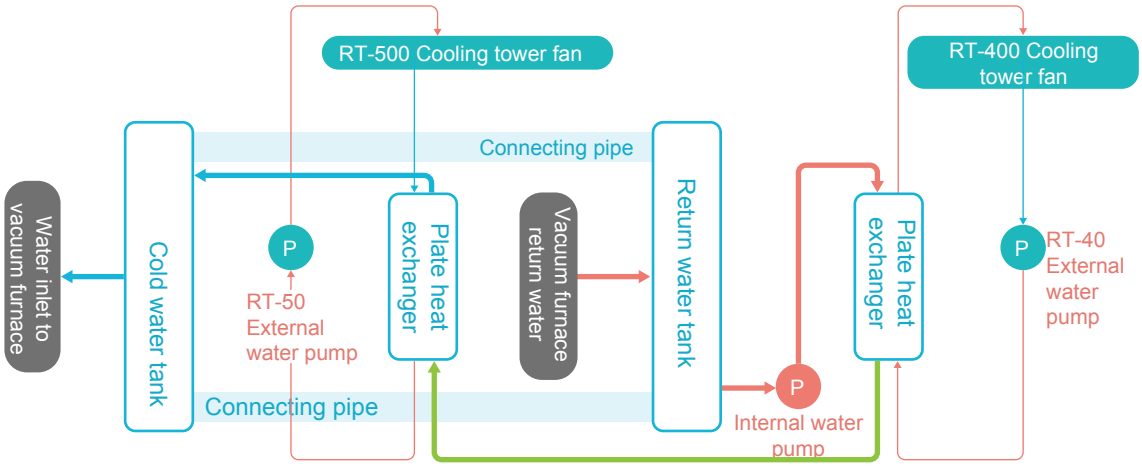
Improvement Highlight (3): Energy Optimization Proposal for the New Water System of Vacuum Furnace VA16-23

Purpose Environmentally friendly, energy-saving, and carbon-reducing measures to lower costs and enhance competitiveness.

The status before improvement

Continuous operation upon startup

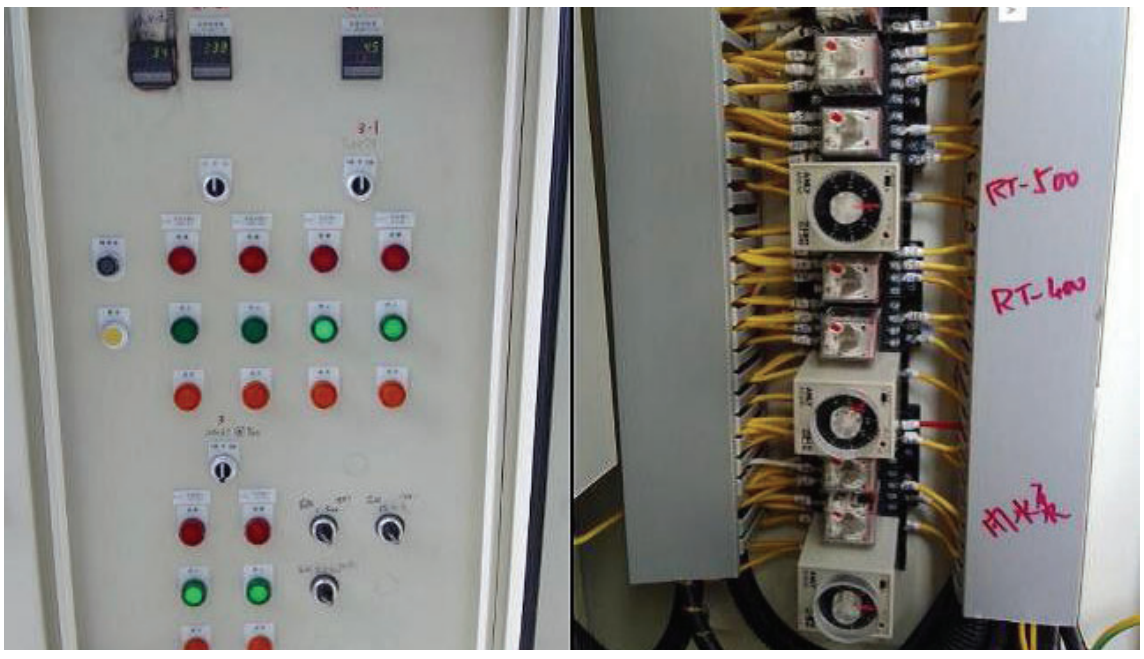
- The water circulation system for the auxiliary equipment of the vacuum furnaces was originally triggered as long as any one of VA16 to VA23 was activated.
  - Pumps began running immediately upon system startup
    - Internal water pump 75HP 55KW*1 • External water pump 75HP 55KW*1
    - Cooling tower circulation fan 15HP*222KW*1



The result after improvement

Automatically operates only when the temperature reaches 38°C

- Uses water tank temperature to control the start and stop of internal and external water pumps.
- Non-continuous operation enables power saving and reduces equipment wear.



Fuel Cell Business

In 2024, a total of 25 improvements were made.

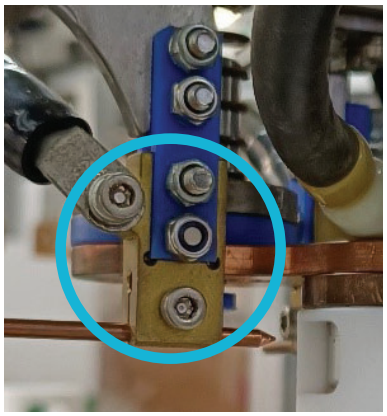
Improvement Highlight: Automated Assembly Machine - Desoldering Issue Improvement

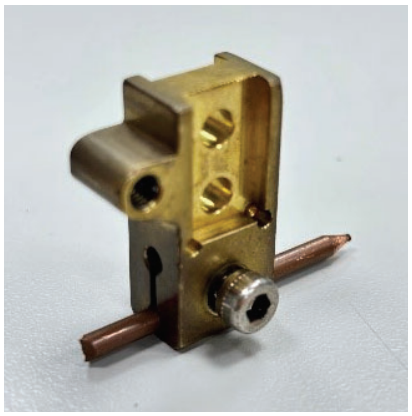
Purpose

1. To reduce defect rates and improve production efficiency.
2. To address two of the seven major production wastes: 1. Motion waste and 2. Waiting waste.

The status before improvement

- The clamping arm of the copper rod fixture was too short to secure the rod effectively, resulting in a welding defect rate of approximately 10% to 30%.
- Copper rods required frequent replacement and calibration, approximately every 200 pieces produced, with each replacement taking about one hour.





The result after improvement

- Improved fixture design by extending the lever arm to effectively secure the copper rods. Among nearly 70,000 products, the defect rate due to abnormal desoldering dropped to 0.76%.
- Replaced the original fastener with a butterfly screw tightened from bottom to top. This allows for quick replacement of worn copper rods in confined spaces without the use of tools.