



Optimize



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Service product  
Redesign

Equipment  
Plate heat exchanger

Customer  
China Mobile  
Jinan Data Centre

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↑192

Free cooling hours

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↓10%

Electricity

Alfa Laval

# Plate redesign to enhance data centre efficiency



In the digital age, the development of new technologies such as 5G, artificial intelligence, and industrial internet is driving exponential growth in data demand. It is predicted that by 2025, without effective measures, the energy consumption of data centres will account for approximately 8% of the global total, with cooling servers alone making up for over 35% of a data centre's energy use.

PUE (Power Usage Effectiveness) value measures the ratio of total facility energy consumption to IT equipment energy consumption, indicating the efficiency of energy use. To bring down the PUE value it becomes essential to reduce the high energy consumption from cooling services, which is between 35-40%. At the China Mobile Jinan Data Centre, plate heat exchangers are crucial energy - saving equipment. Their performance significantly affects the energy consumption of the entire cooling system. There is an urgent need to reduce the energy consumption of chillers and improve the efficiency of plate heat exchangers to lower the PUE value overall.



### The challenge

After five years of continuous operation, onsite assessment showed a decline in the customer's heat exchanger performance, with the current end - difference exceeding 3°C and the pressure drop reaching 70 kPa.

Alfa Laval Redesign service is designed to enhance equipment performance. The key challenge lies in fully understanding the actual operating conditions of the heat exchanger. In-depth system analysis is needed to pinpoint existing problems and energy saving potential. This ensures reliable selection criteria for the Redesign and helps achieve energy conservation and consumption reduction.

### Our solution

Alfa Laval has delivered a targeted solution to enhance heat exchanger performance through plate redesign. By continuously monitoring and analyzing the performance data of the heat exchanger, Alfa Laval has gained an in-depth understanding of the system operation in Jinan Data Centre. This has enabled the provision of precise selection criteria and robust technical support for the Redesign service through specialized selection tools.

### Customer benefit

Through plate redesign, it added 178 plates to each heat exchanger, improving the efficiency while reducing the heat transfer temperature difference and extending the free cooling time by 192 hours. After optimization, the pressure drop on both sides of the heat exchanger have been lowered, thus reducing pump energy consumption and saving 10% of electricity.

Plate redesign to enhance data centre efficiency



### Optimize

Our Optimize services keep your equipment ahead of technological advancements, exceeding current standards and future needs. Whether enhancing quality, reducing energy use, or increasing capacity, our new upgrades boost sustainable performance and optimize operations for greater returns.

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