MAKING MODERN LIVING POSSIBLE

The C-range. A new design for chillers

Micro Plate Heat Exchangers – MPHE™

REFRIGERATION & AIR CONDITIONING CONTROLS

Core savings and a cleaner environment

As the global trendsetters in heat exchangers for chiller systems, we are the ideal partner to help you meet the world's climate and energy aspirations.

Our drive for energy conservation puts the focus on high-performance heat exchangers. With our new Micro Plate Heat Exchangers (MPHE™s) at the heart of your chiller systems, you can design completely new solutions. Our ingenious new technology is a major advance in heat transfer. More than just a different way of doing the job, it is a way better route to improved performance and a reduced environmental impact. It is the advance you have been waiting for to help you meet the environmental and economic challenges you face.

Clear route ahead for chiller manufacturers

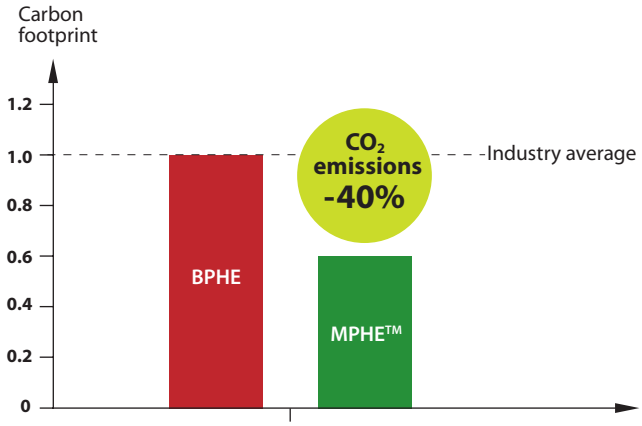
Micro Plate technology enables us to focus totally on the customer and the chiller market's needs. The ingenious design gives us a new freedom to optimise each model to precisely match the demands of tomorrow's chiller systems: efficient heat transfer, energy conservation and environmental responsibility.

Minimise environmental impact

Brazed plate heat exchanger (BPHE) technology has been stalled since the late 1970s. The innovative new Micro Plate technology in our MPHE™s delivers big savings on raw materials and minimises the use of refrigerants. With MPHE™, Danfoss is opening up totally new possibilities for greener applications.

The greener solution

We bring you greener solutions with smaller CO_2 footprints overall. Compared with a chevron-type BPHE, an MPHE™ has a 40% smaller CO_2 footprint. The MPHE™'s smaller hold up volume also means a lower refrigerant charge, saving money and further contributing to a reduced CO_2 footprint.



THE GREEN COMPARISON *In the MPHE™, improved heat transfer is accompanied by reduced carbon footprint. This is captured here for the MPHE™ and BPHE technologies as the function of their refrigerant charges and carbon dioxide equivalents.*

Maximise energy conservation

Micro Plate technology enables stronger, lighter and slimmer heat exchangers that transfer heat more efficiently. Our Micro Plate technology is always a better choice, and the smarter way to respond to the climate challenge.

Drive system efficiency

Naturally, the better heat transfer in our MPHE™s gives a clear advantage in chiller systems aiming for higher COPs, and hence higher and more desirable seasonal efficiency – the benchmarks for tomorrow's successful energy products. This increased efficiency is equally obvious to end users in the quicker recovery of their investment costs.

Solutions for improved chiller performance

Our C-range is designed specifically for air-cooled and water-cooled chiller systems. We offer complete coverage of the 3-550 kW capacity range, with 32 products based on just a six-model platform that enables you to make your product development and production leaner. Each model is available fully optimised not only for different refrigerants but also for the function, e.g. condenser or evaporator duties.

With our MPHE™s you can easily overcome the challenges of close temperature approaches under both full or part load conditions. The C-range products are the ideal complement to variable speed compressors.

Smarter MPHE™ solutions for air-cooled chillers.

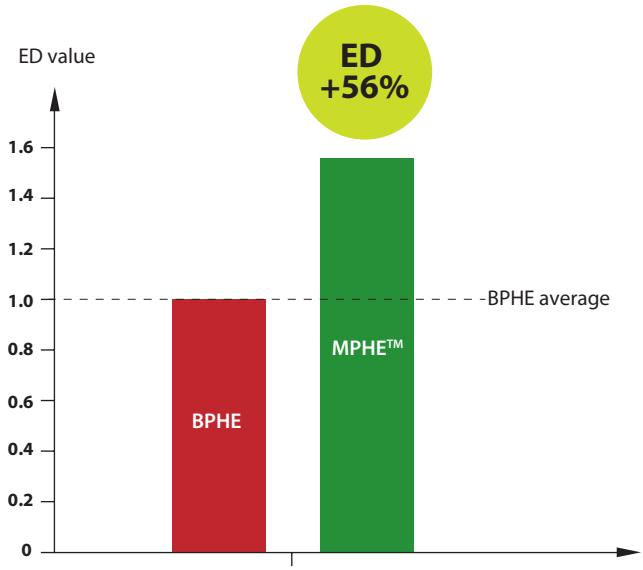
Adapted heat exchangers for water-cooled chillers with Turbocore compressor.

Resolve the chiller dilemma

We know the chiller sector is under increasing pressure from consumers and market regulations to deliver more efficient, greener and more economical solutions. The new Micro Plate technology in our C-range MPHE™s brings the core values you need to meet and exceed the market's expectations.

Overcome the challenges

Our innovative Micro Plate technology allows us to design heat exchangers specifically for evaporator and condenser duties in chiller applications, enabling you to overcome the many technical challenges you face. Compared with traditional BPHEs, our MPHE™s have an Energy Density (ED) value up to 56% higher under the same working conditions. The ED advantage is even greater over older technologies such as Shell-and-Tube or Coaxial heat exchangers. Combine that with the MPHE™'s remarkably small footprint and you have a chiller solution that saves you space, energy and money.



THE ED VALUE *The ED value captures a heat exchanger's overall ability to conserve energy. The value is a function of three key factors: heat transfer, pressure drop and raw material usage.*

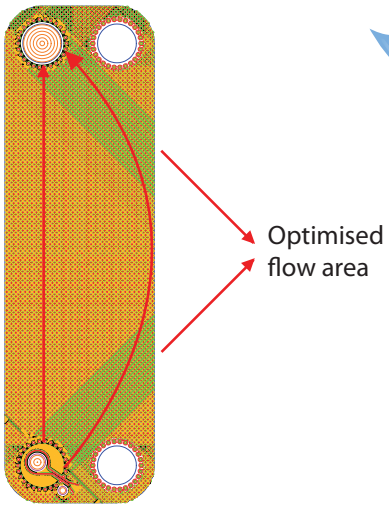
Improved COP

Our design improves the flow across the plate and utilisation of the surface area for better heat transfer. Due to the more favourable ratio between the maximum and minimum flow velocities, the new MPHE™ will be able to operate with close temperature approaches. In addition, it will require less pump power for a given duty, hence boosting the overall system efficiency.

Better seasonal efficiency

Chiller systems must also handle duties that vary with the seasons. Our innovative MPHE™ products improve seasonal efficiency by operating with high performance at full or part load, for example with variable speed compressors. Optimised for their specific functions, our MPHE™s lower energy costs. Furthermore, the reduction of mist in the superheat area ensures stable operation at low superheat.

Distribution with integrated injector



Carbon footprint -40%

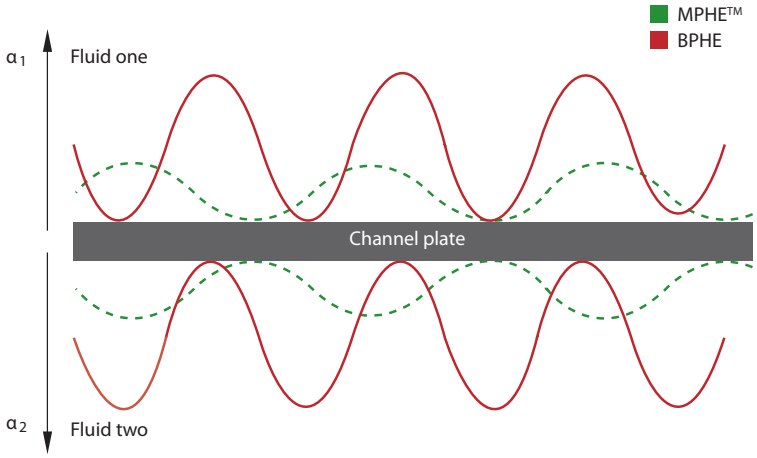
Optimised solution for R407C, R410A and R134a

Well proven manufacturing processes

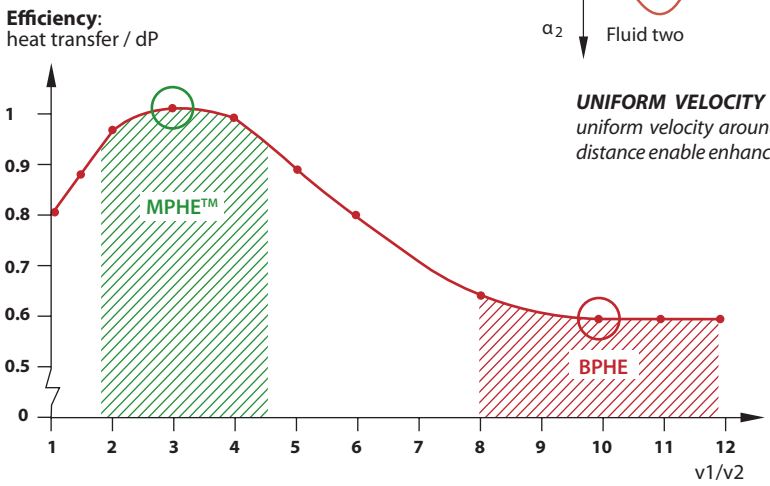
ED value 56% better

High material utilisation

Tight temperature approach



UNIFORM VELOCITY - ENHANCED HEAT TRANSFER: *An MPHE™ allows a more uniform velocity around the brazing points on both sides of the channel plate. The equal distance enable enhanced heat transfer along with a lower pressure drop.*

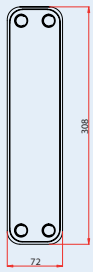


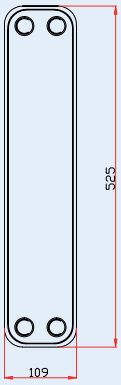
IMPROVED FLOW CHARACTERISTICS *In an MPHE™, the flow around the brazing points is more uniform than in a BPHE, with a ratio between maximum and minimum velocities only one third of that in a BPHE. Furthermore, the flow is optimised for high turbulence and low frictional losses. The improved heat transfer increases the overall ED value.*

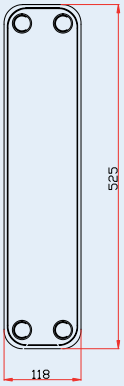
Complete programme for chiller applications

C-range for Chiller applications

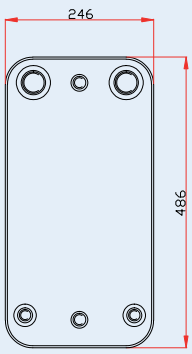
R407C	**Evaporators**	**C22-E**	**C55-E**	**C62-E**
	Capacity, kW	3-30	20-65	30-90
	Design pressure, max	30/16 bar	30/16 bar	30/16 bar
	Condensers	**C22-C**	**C55-C**	**C62-C**
	Capacity, kW	3-30	20-65	30-90
	Design pressure, max	30/16 bar	30/16 bar	30/16 bar
L-line for R410A	**Evaporators**	**C22 L-E**	**C55 L-E**	**C62 L-E**
	Capacity, kW	3-30	20-65	30-90
	Design pressure, max	45/16 bar	45/16 bar	45/16 bar
	Condensers	**C22 L-C**	**C55 L-C**	**C62 L-C**
	Capacity, kW	3-30	20-65	30-90
	Design pressure, max	45/16 bar	45/16 bar	45/16 bar
N-line for R134a	**Evaporators**			
	Capacity, kW			
	Design pressure, max			
	Condensers			
	Capacity, kW			
	Design pressure, max			

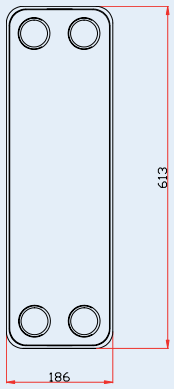


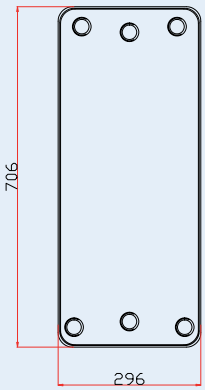




C117-ED	C118-E	C212-E/-ED
100-250	70-200	200-550
30/16 bar	30/16 bar	30/16 bar
C117-CD	**C118-C**	**C212-C/-CD**
100-250	70-200	200-550
30/16 bar	30/16 bar	30/16 bar
C117 L-ED	**C118 L-E**	**C212 L-E/-ED**
100-250	70-200	200-550
45/16 bar	45/16 bar	45/16 bar
C117 L-CD	**C118 L-C**	**C212 L-C/-CD**
100-250	70-200	200-550
45/16 bar	45/16 bar	45/16 bar
		C212 N-E/-ED
		200-550
		45/16 bar
		C212 N-C/-CD
		200-550
		45/16 bar







Your demand, our supply

The C-range offers a complete programme of optimised evaporators and condensers along with single- and dual circuit solutions. All products are fully compliant with regulations such as PED and UL, guaranteeing consistently high performance, reliability and safety. A special prototype accessibility programme makes it even easier for you to do business with us.

Closer. Easier.

Our dedicated customer focus means it is easy to do business with us. All our products are thoroughly tested and verified in our fully equipped laboratories in Asia and Europe, which enable us to challenge the boundaries and establish innovative new trends. Our production plants are ISO 9000/14000 certified, so we can guarantee the durability, sustainability and safety of all our products. And our global Danfoss representation ensures we are always there to support you and help increase your sales wherever you are.

A NATURAL CHOICE – HEAT EXCHANGERS

We can now offer the heat exchangers that our customers have always asked for. Our Micro Plate technology, along with our market-oriented approach, simplifies life for every customer. At the same time, our innovative technology promises clear, core savings and a cleaner environment. Our sharp focus on customer solutions enables us to help our customers grow, and to make a difference wherever energy efficiency and the climate challenge are critical issues.

Address

520H4209 DKQB.PB.000.R1.02