Quality Heat Exchangers

FUNKE

FUNKE Hydraulics

With partnership into the future

FUNKE is a leader in the development and production of quality heat exchangers with a heat transfer area of up to 2 400 m². The range of products comprises shell-and-tube heat exchangers, bolted and brazed plate heat exchangers as well as oil / air cooling units and electrical oil pre-heaters. Thus, as one of the few producers worldwide, FUNKE offers solutions with optimum thermodynamic designs for different industries and virtually all applications.

FUNKE focuses on customer orientation, highest quality standards, flexibility and advisory skills – important benefits a company of just the right size is able to offer.

FUNKE – tailor-made solutions for your hydraulic application

For more than 40 years FUNKE develops and produces heat exchangers and coolers for different industries and applications. Especially in the hydraulic sector FUNKE has a high reputation as a competent and reliable partner for cooling or warming of hydraulic fluids and lubricants.

With FUNKE's large and comprehensive product range and many years of experience it is possible to offer standard products as well as client-specific individual solutions. These include

- Shell-and-Tube Heat Exchangers for standard and marine applications or safety types
- Brazed Plate Heat Exchangers (brazed with cooper, nickel or stainless steel)
- Bolted Plate Heat Exchangers (stainless steel, titanium, etc.)
- Oil/Air Coolers with three-phase current, direct current or hydraulic motor or protected acc. to ATEX 94/9/EG
- Electric Oil Pre-heaters

FUNKE is able to find the optimum solution for every application – not only for stationary units in industrial hydraulics but also for mobile hydraulic systems and motor cooling. Typical examples of use are:

- industrial gear units
- hydraulic presses
- test rigs
- machine tools
- food industry
- lastic machines
- compressors
- construction machines
- agricultural machines
- offshore crane units
- oil supply systems
- drive and control technology

With any application the focus is on quality and reliability of the heat exchangers.

Shell-and-Tube Heat Exchangers

Series TDW, BCF, CCF/SSCF, Safety Heat Exchangers SSWF (SWF/SWP)

Technical Data

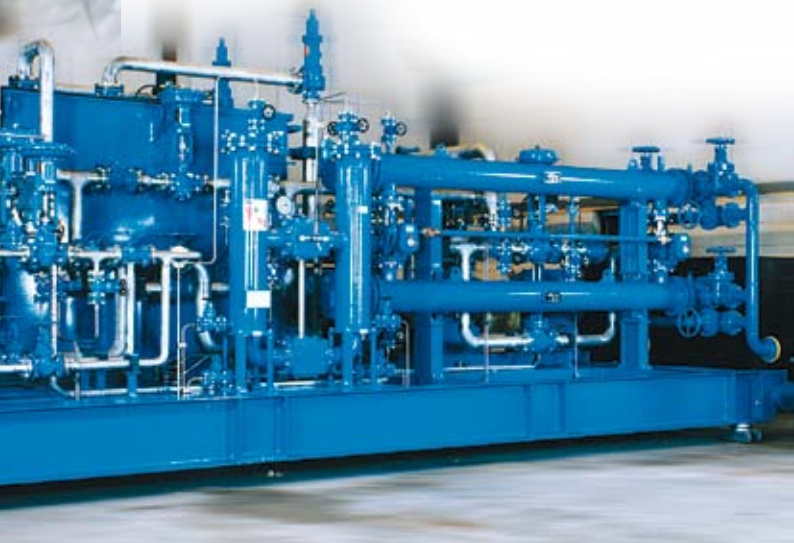
Material: acc. to type steel, stainless steel, non-ferrous steel
Max. design temperature 150 °C

Media

Applicable with hydraulic lubricants and substitution fluids

Benefits

- very good price-performance ration with very short lead times
- modular design
- high efficiency due to narrow manufacturing tolerances creating only small bypass flows
- compact design
- large variety of materials
- useful material combinations possible e.g. for operation with seawater (CuNi-materials and brass chambers)
- fixed or removable tube bundles, acc. to design



UNIVEX series

Technical data
Cooling performance up to 3.5 kW/K
Max. throughput up to 260 l/min

Media
Cooling of oils, fluids and lubricants for hydraulic units, transformers, cutters, hydraulic liquids, water/glycol. Cost-effective cooling by use of industrial water or seawater.

Benefits
- favourable price-performance ratio
- high operational safety
- high specific heat transfer by means of compact tube bundle
- easy to clean by removable tube bundle
- secure tension free expansion of tube bundle

Bolted Plate Heat Exchangers (PWT)

Technical data

Exchange area / plate: 0.04 to 3.0 m²
Max. operational pressure: 25 bar
Operational temperature: -20 to +195 °C

Media

For hydraulic oil (mineral or synthetic), thermal oil, crude oil, heavy oil, emulsions, hydraulic liquids

Benefits

- off-set embossing creates asymmetric flow channels for minimum-cost solutions
- low for investment, operation and maintenance costs
- highly efficient heat transfer (K-values on average 3-5 times higher compared to bare tube heat exchangers)
- exploitation of even the slightest temperature differences </= 1 K
- up to 75% less space required
- self-cleaning effect due to highly turbulence flow behaviour
- subsequent adjustment possible by addition of heat exchanger plates
- high safety against media mixing
- easy to open / clean
- low operating weight / low liquid content

Special design
Safety PHE FPDW
(double wall plates)
These plates provide a maximum protection against the mixing of the process media. Two plates embossed simultaneously and laser welded at the ports. In case of leakage the liquids can pour out at the rim of the plate pair.

Special equipment
PHE as double cooler including switch valve and temperature controller.

Brazed Plate Heat Exchangers Series PHE FPDW

Technical data
Exchange area / plate: 0.035 to 0.286 m²
Max. design pressure: 36 bar / TPLB 14 bar
Max. design temperature: -100 °C - +195 °C

Material
Heat exchanging plate
1.4401 / AISI 316
Solder: copper, nickel, stainless steel

Media
For media with various viscosities / pysical properties data (e.g., oil / water)

Benefits
- plane brazing instead of punctual brazing – higher resistance against pressure / pressure shocks / pulsations
- different turbulence installations – higher flexibility for technical design (thermodynamical and / or hydraulical requirements)
- longer end-plate – installation is more simple
- short delivery times due to in-house production and storage

Oil / Air Coolers

Technical data

OKAN 2.79 and OKAN A
Cooling performance 3.2 to 250 kW at ETD 40K
Max. throughput up to 700 l / min
All units comply with regulation EPR 2009 / 125 / EG

Media / specific issues

- cooling of oil, hydraulic liquids and emulsions by ambient air especially in machine and plant engineering as well as in manufacturing of constructions machines and special vehicles
- usable as additional cooler in times of excessive load (summer)
- usable in areas with no or only limited access to water

Benefits

- strikingly lower costs per kW heat dissipation
- robust, compact design matching highest quality standards
- consumer specific designs available
- low costs for installation and operation
- variable installation position
- long service-life
- almost maintenance-free

Special design

- acc. to ATEX 94 / 9 / EG
- increased corrosion protection for marine application
- on request including hydro or DC motor

Electrical Oil Preheaters

Technical data
Heating power 3 to 100 kW

Media / Special issues
Heating of oils, flame resistant liquids and emulsions by electrical energy, especially for outdoor machines and plants and on test stands which require defined oil temperatures.

Benefits
- reduction of plant wear by avoiding cold starts
- defects on plants and components avoided by reduction of start-up pressure
- plant and component design can be optimized by avoiding high start-up pressures
- plant accuracy enhanced by exactly controlled temperature
- maintenance-friendly design by removable heating rod bundles

FUNKE world wide

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Quality means safety. Each unit built by FUNKE is design and pressure tested. Additional approvals are also available in accordance with quality authorities such as:

- American Bureau of Shipping (ABS)
- Bureau Veritas (BV)
- Det Norske Veritas (DNV)
- Germanischer Lloyd (GL)
- Lloyds Register of Shipping (LRS)
- Technischer Überwachungsverein (TÜV)

as well as customers' test and inspection regulations.

FUNKE has been certified according to DIN EN ISO 9001:2008, DIN EN ISO 14001:2004 and is an approved manufacturer according to:

- EU Pressure Equipment Directive 2014/68/EU (PED), Module H / H1
- HP0 in connection with DIN EN ISO 3834-2
- ASME U-Stamp & ASME R-Stamp
- Custom Union (TRTS 032/2013)
- China Certificate

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