Oil/air coolers type OAC
Cooling systems

High-performance cooling of applications with hydraulic and lubricating oils

A compact and high-performance cooler series comprising twelve sizes was developed for high-performance cooling of hydraulic and lubricating oils.

Applications

- Construction machines
- Agricultural machines
- Rail technology
- Machine tools
- Hydraulic power packs
- Wind power
- Hydraulic presses
- Iron and steel industry etc.

Applicable for cooling of:

- Hydraulic oil
- Gear oil
- Lubricating grease
- Water-glycol (min. 40 % glycol)

Structure

- Cooler core (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Fan 12 V/24 V IP68, 230V/400V, 400V/690V, IP55
- Fan with hydraulic drive

Marine design:

- Refrigerating grid coated via KTL immersion process
- Frame, fan cover, protection grid coated by KTL
- Electric motor with special painting and protection IP56

ATEX design:

- Electric motor in ATEX design Ex II 2 G Exell T3
- Special fan

Accessories, protective grid, TSC

- Thermal bypass valves, oil temperature valves OTV, see page 26/27

The OAC coolers should be protected from direct solar radiation.

Selection system

To select the suitable cooler you need to know the following details:

Q [kW]	Heat to be dissipated
V [l/min]	Oil flow
T_{oil} [°C]	Inlet temperature of oil into cooler
T_L [°C]	Inlet temperature of ambient air into cooler

Example of calculation

Details given:

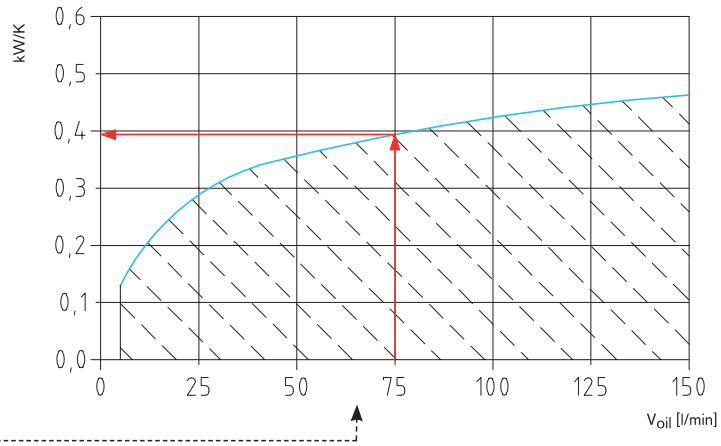
Q = 12 kW

V = 75 l/min

T_{oil} = 65 °C

T_L = 30 °C

Performance diagramme OAC 400



Calculation of specific cooling capacity

Inlet temperature difference ETD [°C] = TOil - TL

Specific cooling capacity required $P_{requ.}$ = Q/ETD

The specific cooling capacity required must fall below the performance curve! ➔ 12 kW/(65°C - 30°C)= 0.34 kW/°C

The following was selected: OAC 400

The actual cooling effect of the cooler is 0.39 kW/°C x 35°C = 13.65 kW

Calculation of pressure loss

The pressure loss in the curves of the different data sheets is based on a viscosity of 30 cSt

The effective pressure loss is calculated as follows:

Pressure loss (from curve) x factor = effective pressure loss

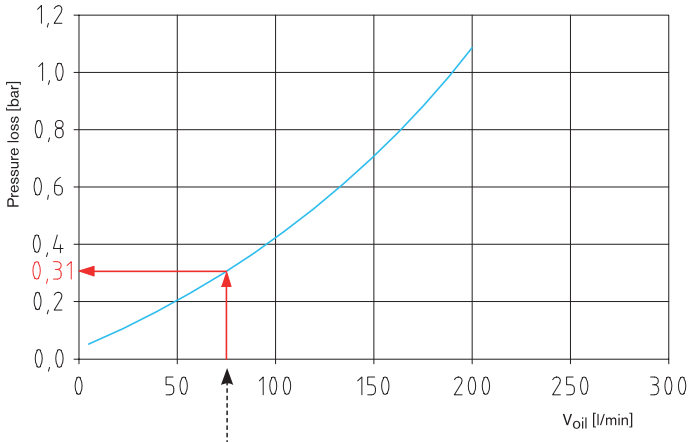
Example

V_{oil}: 75 l/min

Viscosity: 20 cSt

➔ 0,31 bar x 0,75 = 0,233 bar

Pressure loss 30 cSt



Conversion factor pressure loss

cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Type code of industrial coolers oil/air

OAC 200 M - 03 B - 4 - A - 0 - 0

Size of cooler

100	700
200	800
300	850
400	900
500	1000
600	2000

Type
No specification = standard
M = Marine (seawater resistance)
ExG = ATEX (gas-protected area)
ExD = ATEX (dust-protected area)
M-ExG = Marine & ATEX (gas)
M-ExD = Marine & ATEX (dust)

Motor
00 = Without motor
01 = Direct current 12V
02 = Direct current 24V
03 = Alternating current
04 = Hydraulics
09 = Special

Effective direction
Sucking = standard (no specification required)
Pressing = B

Number of poles or displacement
0 = Not applicable
2 = Number of poles
4 = Number of poles
6 = Number of poles
8 = Number of poles

6 = Displacement
8 = Displacement
11 = Displacement
14 = Displacement
19 = Displacement

Voltage
To be omitted if not applicable
A = 230/400V 50Hz
B = 400/690V 50Hz
C = 230V 50/60Hz (single-phase)
Z = Special voltage*

*Please specify special voltage in plain text

Bypass
0 = Without bypass
TB6 = Thermal bypass (6 bar / 50°C)
DB6 = Pressure bypass (2, 4, 6 bar)

Protective grid against stones
0 = No
1 = Yes