SECESPOL

OIL COOLERS
For mobile and industrial applications

LET'S EXCHANGE

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OIL COOLERS |

OIL COOLERS

For mobile and industrial applications

SECESPOL brazed plate heat exchangers are specifically designed for hydraulic oil cooling applications.
They provide efficient heat transfer and high flow velocity for viscous fluids.

Product Features

Brazed plate heat exchangers are built of stainless steel corrugated plates brazed with copper. Vacuum brazing technology eliminates the need for seals and thick frame plates.

The plates are sealed together at the contact points ensuring optimal efficiency and pressure resistance. Special plate stamp pattern ensures turbulent flow which enhances optimal heat transfer and self-cleaning effect. The plates are designed to achieve maximum possible lifetime with lower maintenance costs.

Benefits

High heat efficiency allows smaller compact units which are easy to install where space is limited.
Brazed plate heat exchangers have no gaskets; therefore they are suitable for applications where temperature and/or pressure is high.

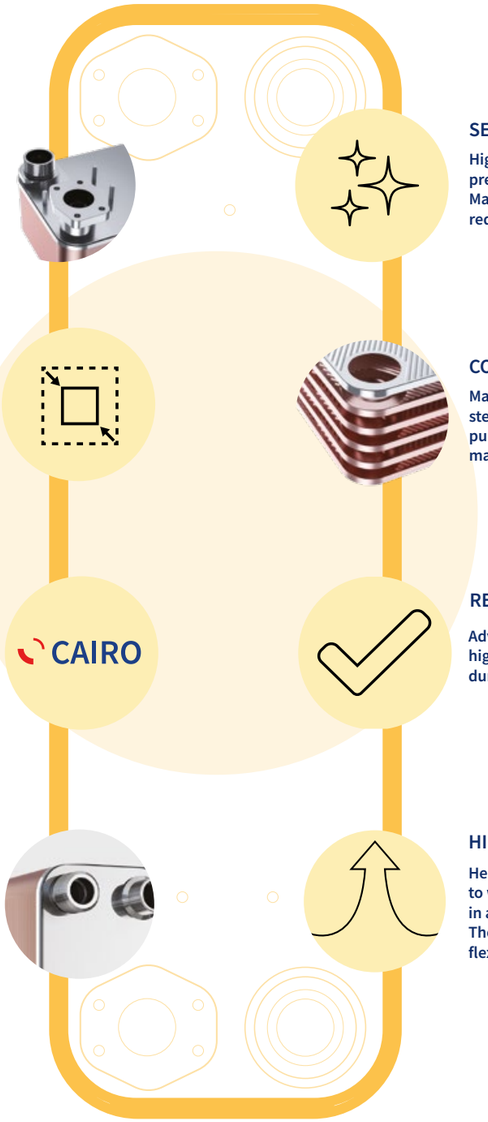
L-line heat exchangers work as high-efficiency oil coolers that contribute to long, maintenance-free life span for hydraulic power pack cooling systems or lube oil systems.

There is a wide range of different oil connections to be chosen, such as BSPP, SAE and flange connections.

BENEFITS

Of using Brazed Plate Heat Exchangers

SECESPOL offers a complete portfolio of compact oil coolers specially designed to withstand the rigors of the toughest hydraulic systems.



SAE O-RING & FLANGED CONNECTIONS
Leak-proof and easy to assemble.

SELF-CLEANING
High turbulent flow prevents fouling. Maximum lifetime and reduced maintenance.

SMALLER FOOTPRINT
Takes up to 60% less space than comparable shell & tube HE and less space than other oil coolers. It also generates lower investment costs.

CORRUGATED PLATES
Made of 316L stainless steel and brazed with pure copper or stainless material.

EASY SELECTION
with user-friendly CAIRO Selection Software.

RELIABILITY
Advanced technology and high-quality materials offer durability and reliability.

CERTIFICATES AND STANDARDS
Manufactured in accordance with ASME, PED.

HIGH PERFORMANCE
Heat exchangers are designed to work very efficiently in a wide range of applications. They guarantee compact and flexible solutions.

Operational Conditions

Temperature range PED:	from -195°C (-319°F) to 230°C (446°F) copper brazed from -195°C (-319°F) to 200°C (392°F) stainless brazed (LUNA)
Temperature range ASME:	from -150°F (-101°C) to 445°F (229°C) copper brazed from -150°F (-101°C) to 392°F (200°C) stainless brazed (LUNA)
Working pressure PED/ASME:	up to 30 bar (435 psi)

Media

- Hydraulic oil, lubrication oil
- Mineral oils: HL & HLP
- Water–oil emulsion
- Mixture of water and ethylene or propylene glycol

Materials

- **Plates & Connections:**
  Stainless steel 1.4401 (AISI 316L)
- **Brazing material:**
  Copper (standard), Stainless (LUNA)

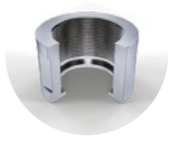
Optional features

- Double wall system (SafePLATE)

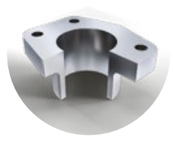
Accessories

- **Installation:**
  Mounting brackets and bolts on the front and rear plate (optional)
- **Insulation:**
  Polyurethane foam covered with aluminium (APFI)
  Expanded polypropylene (EPPI)

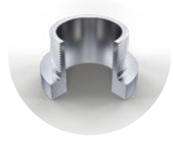
Connections



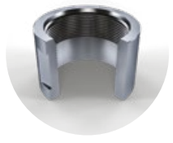
SAE O-Ring
Connections (ASME)



SAE Flanges
(PED and ASME)



External Thread
(PED and ASME)



Internal Thread
(PED and ASME)

	Mark	Type of connection	ASME	PED
Oil side	△	SAE Flanges according to ISO 6162-1 (SAE J518)	UNC bolts according to ASA B 18.3	Metric bolts according to DIN 912-8.8 (ISO 4762-8.8)
	★	SAE Straight Thread O-ring (O-Ring Boss), SAE J1926-1	Internal and external thread	-
	⬡	British Standard Pipe Parallel (BSPP)	-	Internal and external thread
Water side	⏢	National Pipe Straight Mechanical (NPSM)	Internal and external thread	-
	⬡	British Standard Pipe Parallel (BSPP)	-	Internal and external thread
	▱	Flange connection	Class 300 Flanges ASTM A182 / ASME SA182 – B16.5 (welded neck)	Welding neck flange EN 1092-1

Type	Connections																			
	3/8''		1/2''		3/4''		1''		1 1/4''		1 1/2''		2'' (DN50)		2 1/2''		3'' (DN80)		4'' (DN100)	
	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side	Oil side	Water side
LA12*	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡														
LA14	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡														
LA22	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡														
LA34	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡														
LH40*					★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡												
LB31					★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡										
LB47					★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡										
LB60					★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡										
LM110													★ ⬡ △	⏢ ⬡						
LC110							★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡ △	⏢ ⬡ ▱	★ ⬡ △	⏢ ⬡ ▱*				
LC170							★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡	⏢ ⬡	★ ⬡ △	⏢ ⬡ ▱	★ ⬡ △	⏢ ⬡ ▱*				
LD235																	★ ⬡ △	▱		
LE400																			★ ⬡ △	▱

*PED certified only

For specific dimensions or information about other types of connections, please contact your SECESPOL sales representative.

TECHNICAL DRAWING

Standard location of connections

1-pass heat exchanger

K1/K4 - inlet/outlet hot side
K2/K3 - inlet/outlet cold side

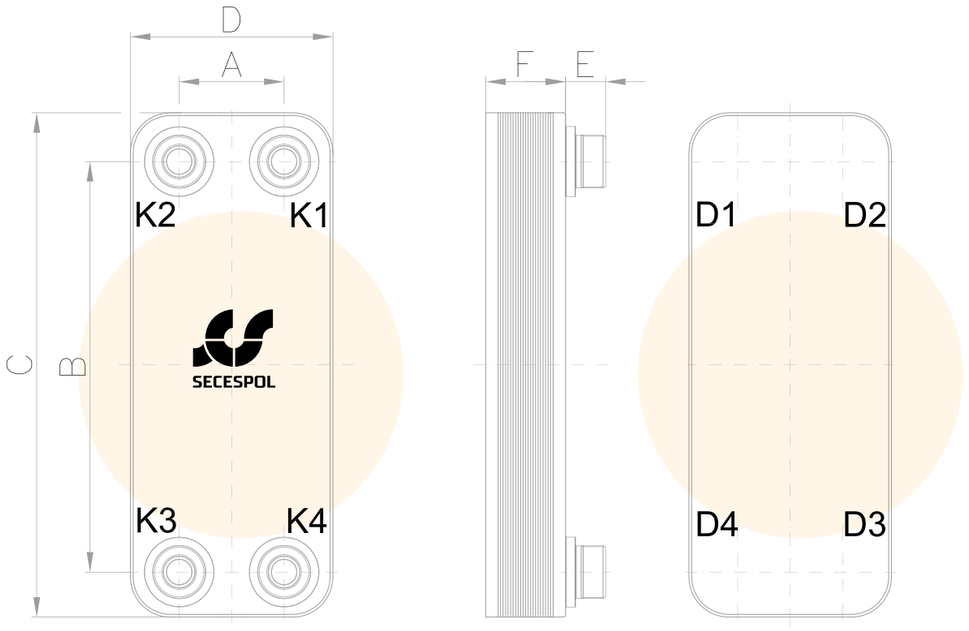
2-pass heat exchanger

D4/K4 - inlet/outlet hot side
K3/D3 - inlet/outlet cold side

2-pass with 6 connections

additionally

K1 - vent connection/inlet
K2 - vent connection/inlet



Technical Parameters

Dimensions of products examples typical for oil cooler applications.

PED

Type	A		B		C		D		E		F		max. no. of plates
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
LA14	42	1.65	164	6.46	203	7.97	81	3.19	16/20	0.63/ 0.79	9+2,30*NP	0.35+0.09*NP	60
LB31	68	2.68	232	9.13	286	11.26	123	4.84	28	1.10	10+2,35*NP	0.39+0.09*NP	150
LB60	68	2.68	480	18.90	538	21.18	123	4.84	28	1.10	10+2,35*NP	0.39+0.09*NP	150
LM110	91	3.58	520	20.47	619	24.37	190	7.48	48	1.89	10+2,60*NP	0.39+0.10*NP	200
LC170	170	6.69	600	23.62	688	27.09	258	10.16	28/38; 100	1.1/1.5; 3.94	11+2,40*NP	0.43+0.09*NP	200

NP- no. of plates
dim. F+/-3%

ASME

Type	A		B		C		D		E		F		max. no. of plates
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
LA14	1.65	42	6.46	164	7.97	203	3.19	81	0.63/ 0.79	16/20	0.35+0.09*NP	9+2,30*NP	60
LB31	2.68	68	9.13	232	11.26	286	4.84	123	1.10	28	0.39+0.09*NP	10+2,35*NP	150
LB60	2.68	68	18.90	480	21.18	538	4.84	123	1.10	28	0.39+0.09*NP	10+2,35*NP	150
LM110	3.58	91	20.47	520	24.37	619	7.48	190	1.89	48	0.39+0.10*NP	10+2,60*NP	200
LC170	6.69	170	23.62	600	27.09	688	10.16	258	1.1/1.5	28/38	0.47+0.09*NP	12+2,40*NP	200

NP- no. of plates
dim. F+/-3%

All dimensions and technical data are approximate only and may be changed without further notice.

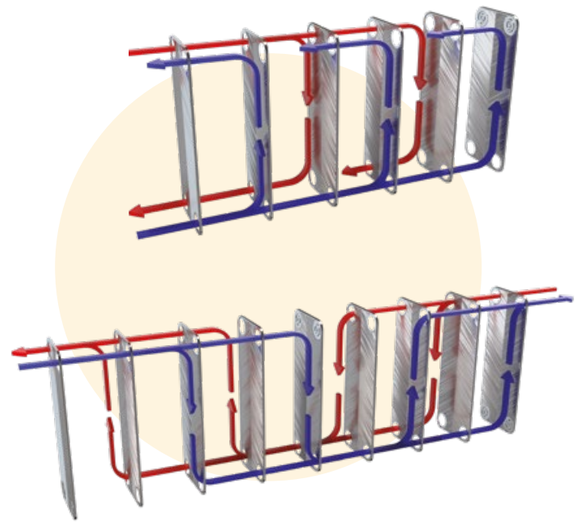
Pass Arrangement

One-pass

Channels are paralleled

Two-pass

Plates divided into two groups which are connected in series



Other configurations are available upon request.

Applications

Railways

Gearboxes

Pulp & Paper

Industrial

Mobile Hydraulic Systems

Power Generation

Automotive

Construction

Steel/Heavy Industry

... and many more

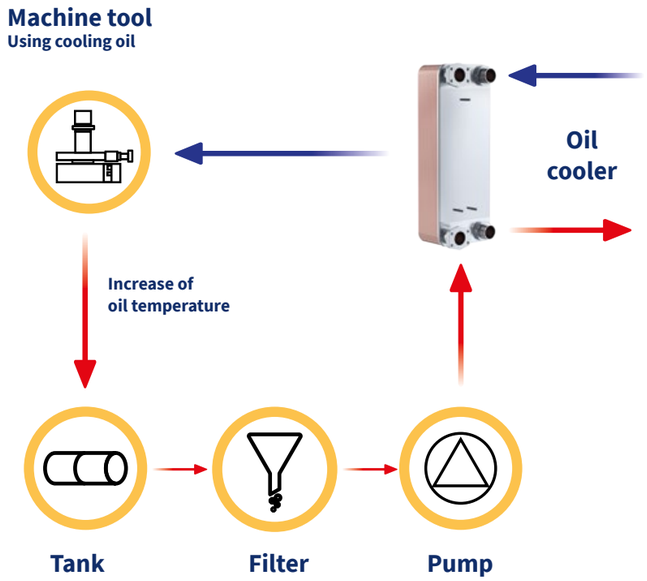
Examples of Application

SECESPOL oil coolers can be used in a variety of different industries and applications.

CNC Milling Machines

In machining processes, tool cooling plays an essential function. The coolant's main role during machining is to reduce and eliminate heat accumulation in the cutting area and workpiece, provide lubrication to reduce friction between tools and chip removal, wash away chips and small abrasive particles from the work area and prevent corrosion.

The use of an effective cooling system increases the cutting tool's durability by reducing the cutting forces and thermal load. Maintaining the correct operating temperature for the coolant has a significant effect on the whole process.

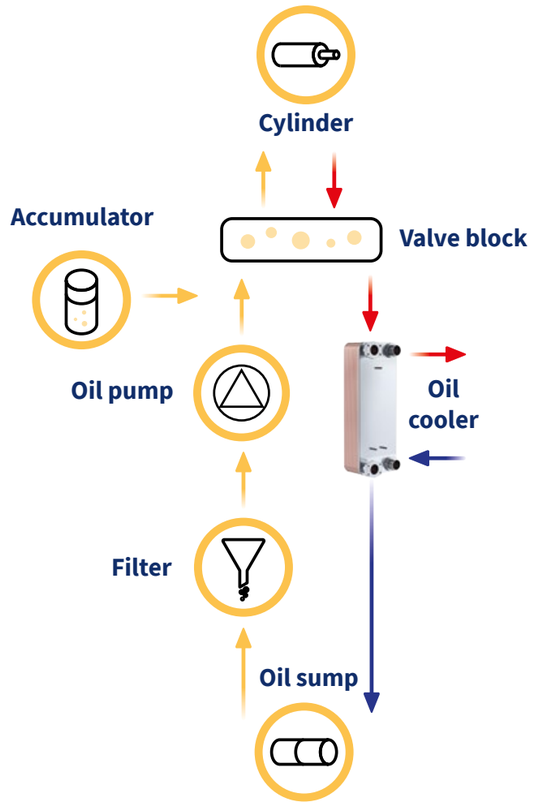


Hydraulic systems

Hydraulic systems are comparatively easy to install and maintain. Overheating, over-pressure, contamination, and other conditions are typical causes of hydraulic system failure. One of the most critical reasons for system malfunction and hazards is temperature.

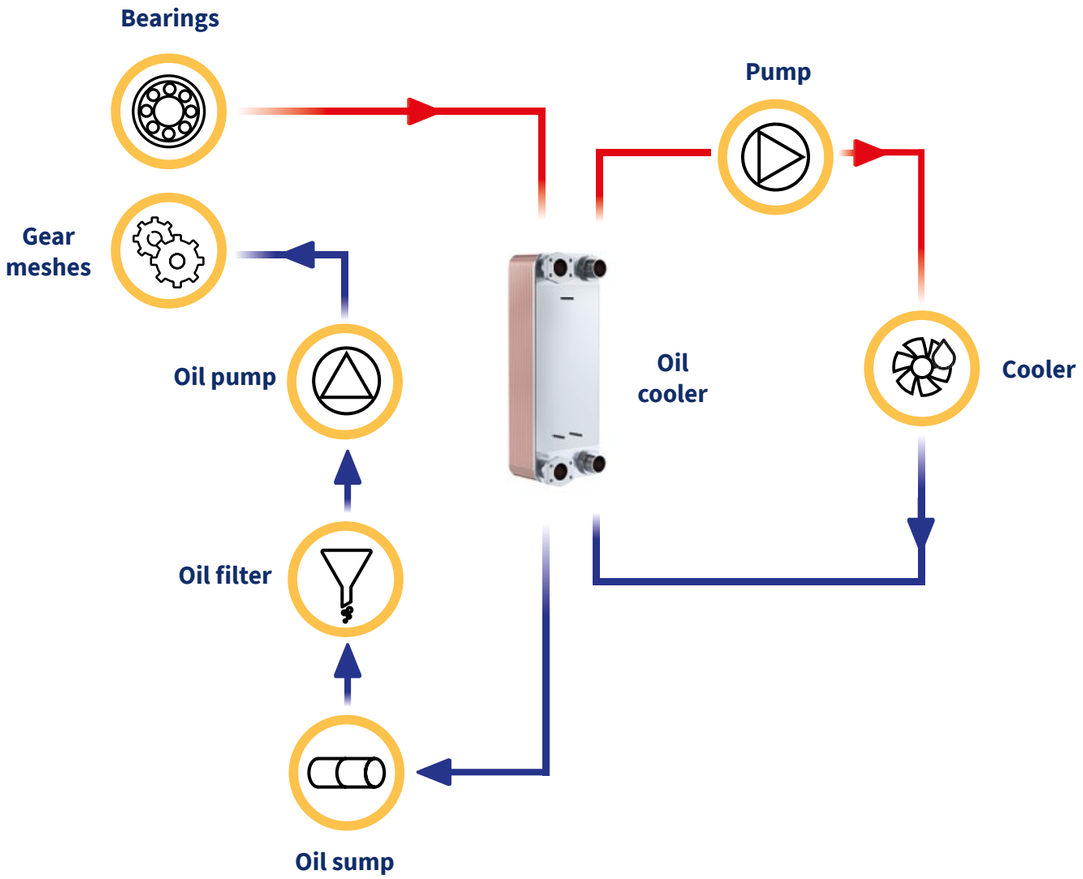
The oil temperature rises due to the constant flow of oil through the system, friction between system elements, long-term operation, etc. This elevated temperature will affect oil viscosity, increase device wear, degrade the lubricative film, increase the risk of cavitation, internal leakages, and shorten the system's lifetime.

Most of these hydraulic system overheating issues can be solved by choosing an effective cooling system. A system equipped with an oil cooler can be operated for an extended period effectively without overheating. It is essential in machines for the paper industry, hydraulic presses, hydraulic power packs, etc.



Gearboxes

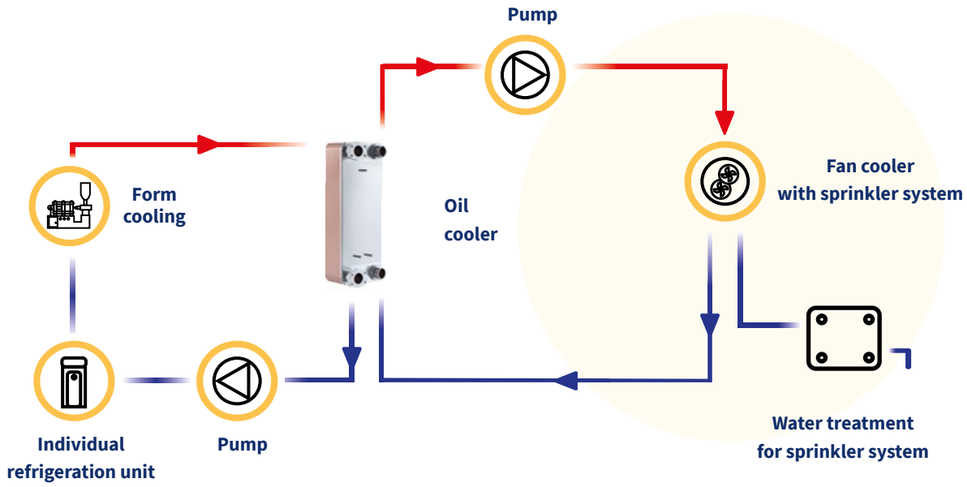
Many wind turbines are equipped with a transmission system between the rotors and generator. To ensure efficient operating conditions, they should be equipped with oil cooling systems. In the gear unit, heat is generated from friction and stress. Therefore, it is essential to keep the gear oil at set working temperature to ensure optimum lubrication.

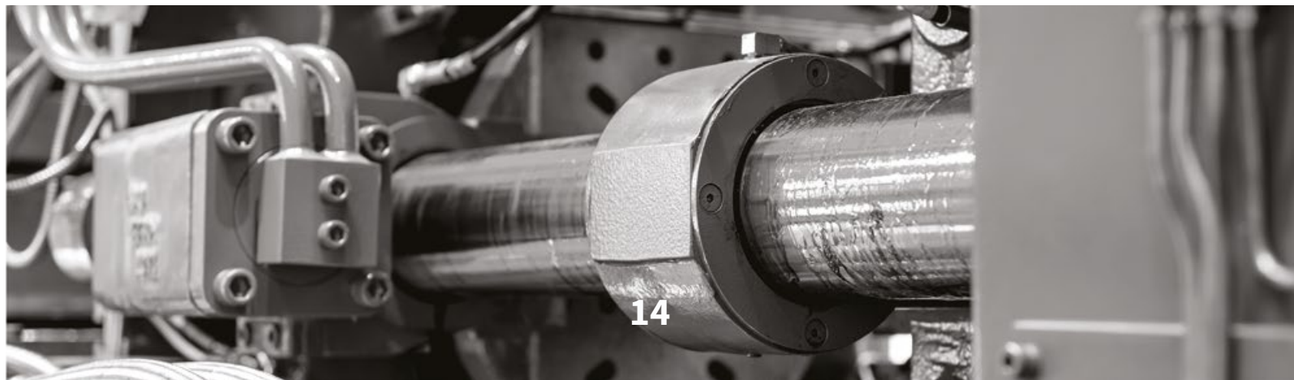


PLASTIC

Injection molding machines

Plastic injection molding machines are equipped with a hydraulic system which needs to provide reliable performance throughout continuous manufacturing cycles. While the temperature of hydraulic oil must be controlled to keep the hydraulic system working properly, specific cooling solutions are needed to reduce molding temperature as quickly as possible without causing excessive shrinkage. If the plastic is cooled too quickly, it can separate from the molding cavity, resulting in a substantial decrease in the heat transfer rate. As cooling occupies the majority of the time in the injection molding process, this makes thermal performance one of the top priorities.



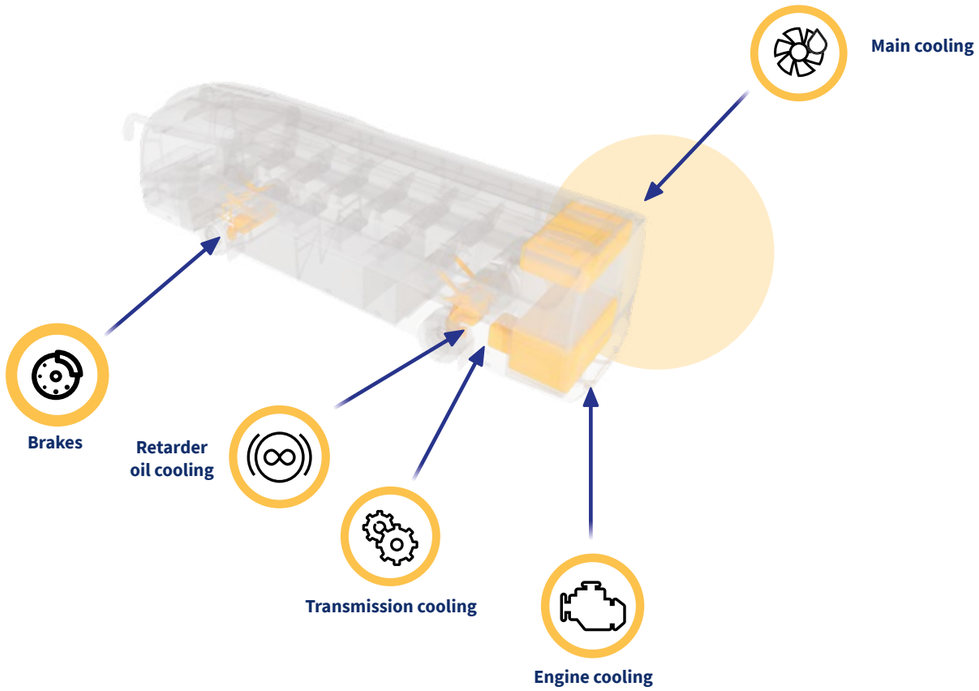


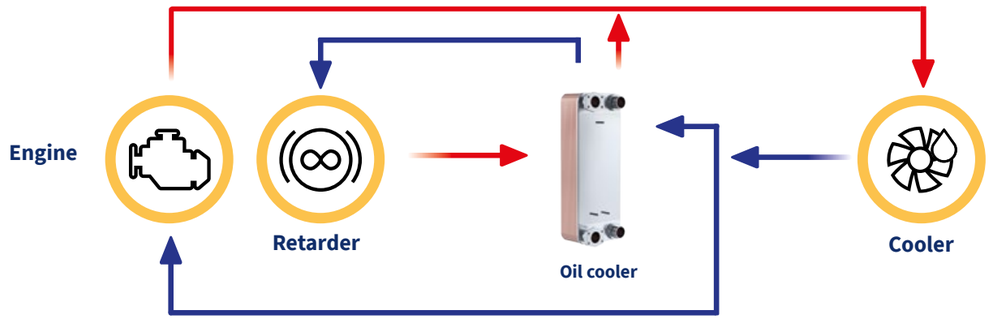
Transportation

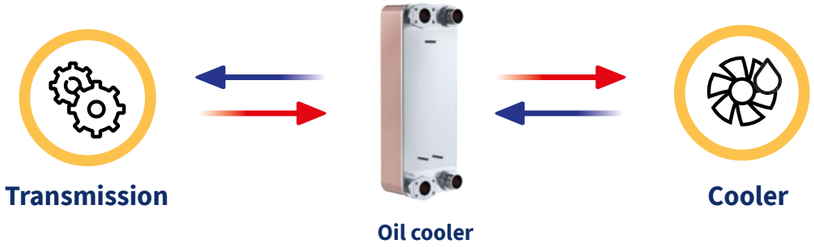
Aside from the traditional braking system, modern vehicles for cargo and public transport have additional braking mechanisms in the form of an electrodynamic brake, an engine brake, or a hydraulic brake.

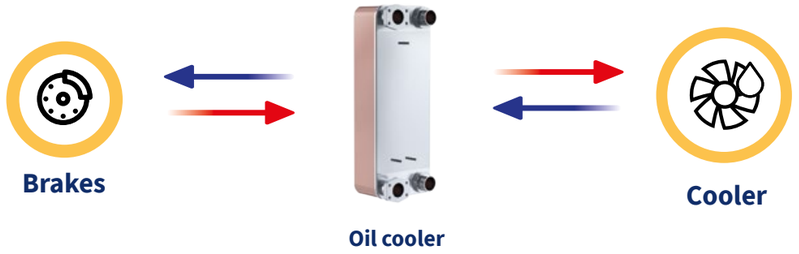
Hydraulic retarders, commonly used in commercial vehicles, are auxiliary devices that can reduce vehicle speed by converting the vehicle's mechanical energy into heat energy absorbed by the retarder's working medium that is oil. When retardation is required, oil is pumped into the retarder's chamber. Flowing through the chamber, the oil gets to the stator's stationary blades, where its flow is re-directed and led back to the rotor. As a result of the rotor blade circulation, torque is generated, which counteracts the rotor's direction of motion and is transferred to the driveline via the step-up gear. As a result of which the vehicle starts to slow down.

Correct thermal control of vehicle's systems can help reduce pollution and fuel consumption significantly. SECESPOL provides customized cooling solutions for a variety of applications, including trams, subway trains, buses, trucks, etc.









Performance curves

Cooling capacity is calculated with the following conditions: oil type – ISO VG 32, oil inlet temperature 100°C (212°F), water inlet temperature 21°C (70°F). For other flow conditions, type of fluids, or temperature, please contact SECESPOL Technical Sales Support Department.

The cooling capacity of the heat exchangers depends on the oil viscosity class.
In order to make an accurate calculation the following details are required:

- type of oil
- required outlet temperature of the oil
  or necessary cooling capacity
- inlet temperature of the water and maximum water flow rate
- maximum allowable pressure drop
- required working conditions

CAIRO Selection Software

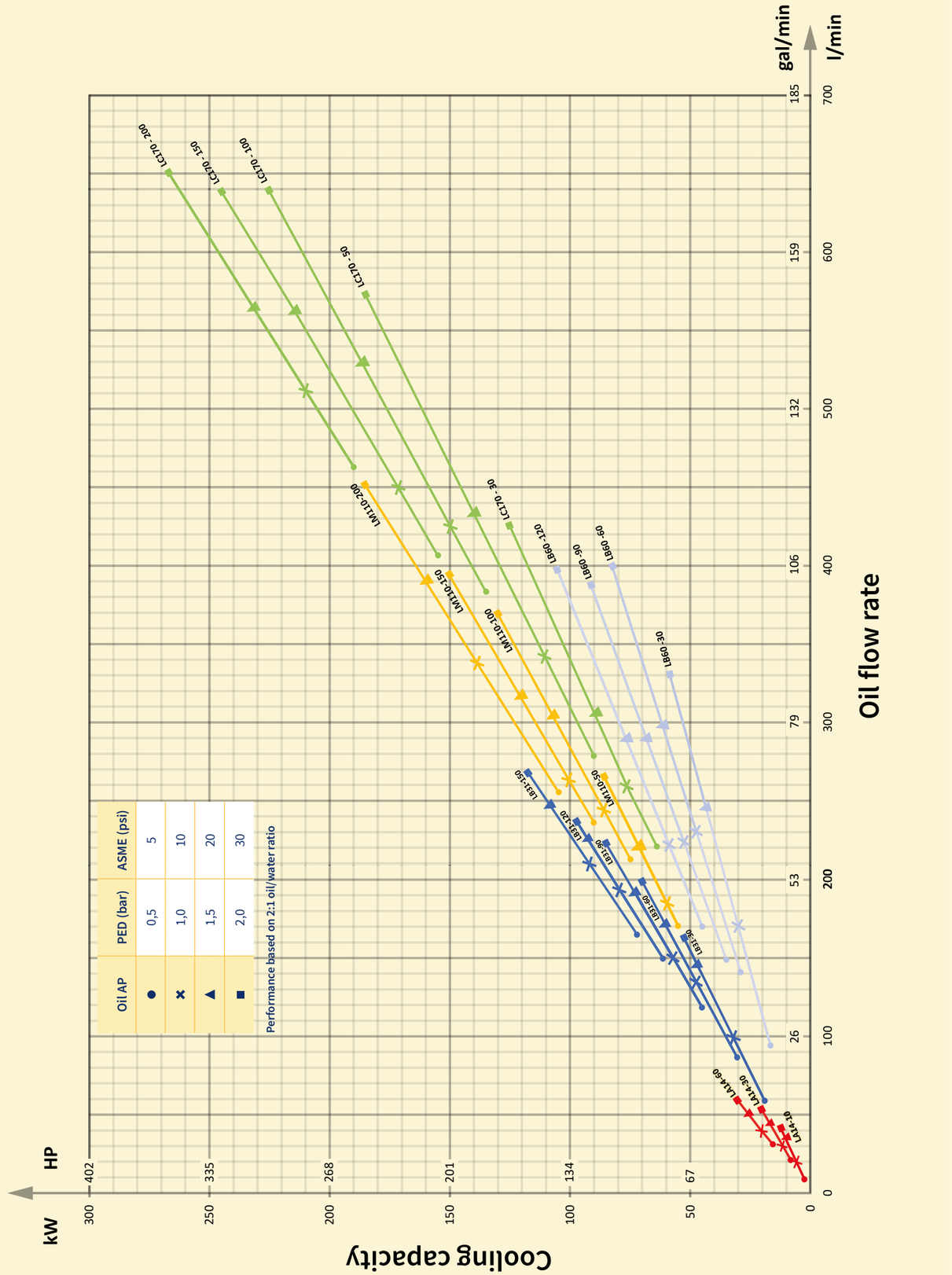
CAIRO Selection Software is a user-friendly tool to calculate the correct heat exchanger size. In case of nonstandard operating data, please contact SECESPOL Technical Support Department.

Selection chart

Exchanger type	Cooling capacity range PED (kW)	Cooling capacity range ASME (HP)	Oil connection PED		Oil connection ASME	
			OIL SIDE*	WATER SIDE	OIL SIDE**	WATER SIDE
LA14	2-30	3-40	SAE 1/2” (flange)	BSPP 3/8” (internal thread)	SAE 1/2” (flange)	NPSM 3/8” (internal thread)
LB31	19-117	25-157	SAE 1 1/4” (flange)	BSPP 1” (internal thread)	SAE 1 1/4” (flange)	NPSM 1” (internal thread)
LB60	16-105	22-141	SAE 1 1/2” (flange)	BSPP 1 1/4” (internal thread)	SAE 1 1/2” (flange)	NPSM 1 1/4” (internal thread)
LM110	55-185	73-248	SAE 2” (flange)	BSPP 1 1/2” (internal thread)	SAE 2” (flange)	NPSM 1 1/2” (internal thread)
LC170	64-267	85-358	SAE 2 1/2” (flange)	BSPP 2” (internal thread)	SAE 2 1/2” (flange)	NPSM 2” (internal thread)

Heat exchangers with higher cooling capacity and performance are available upon request.

SAE Flanges according to ISO 6162-1 (SAE J518), * metric bolts according to DIN 912-8.8 (ISO 4762-8.8), ** UNC bolts according to ASA B 18.3
External threaded or SAE o-ring connections are also available. The type of connections should be consulted with SECESPOL Technical Support Department.



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