

Cooling Solutions:

Agricultural
Applications



**COOL
MOVES**

On the farm or on the job, whatever you need to do, you can do it *cooler* with hydraulic oil coolers and diesel engine cooling systems from Thermal Transfer Products. Our cooling solutions support the demand for continuous power under extreme conditions—we help you excel in tough environments!

List the challenges—and face them all: pressure spikes, temperature extremes, dirt, sand, gravel, ice and snow. Whatever comes your way, you need to keep cool—so look for cooling solutions from TTP, the brand leader to keep you going strong.

Our hydraulic oil coolers and diesel engine cooling systems are engineered and manufactured to industrial strength standards in our state-of-the-art facilities in Wisconsin, New York and Alabama.

We build each unit with a commitment to quality and with the demands of your application in mind. Why settle for “one size fits all” when you have a tailored choice!



Cooling Systems Designed to Increase Ground-work Horsepower

Variable fan drives equal a 5-15% fuel saving over fixed fans

Less formation of core chaff

Pump drive options for both pusher and puller fans

Optimum variable or disengaged fan speed

Three core geometries to choose from—P, T or S-Bar

Quick fan speed modulation or speed control

Electric fan drive options for system integration

Welded or bolted combination cores—Radiator/Oil Cooler/CAC

Zero to low maintenance design

Accurate temperature control for extended radiator, oil cooler or CAC life

Water or debris fan options—pusher or puller (clockwise or counter-clockwise)

Drives for hybrid systems

Face or remote mounted diesel fuel coolers

Additional usable HP with performance cooling cores

Quicker fluids warm up

Controlled coolant temperature, fewer gasket issues

The majority of TTP agricultural cooling applications are born from products broadly grouped into foods, fibers and fuels. Specific foods include cereals (grains), vegetables, fruits, oils, meats and spices. Fibers include cotton, wool, hemp, silk and flax. Fuels are made from biomass conversion of living organisms from plants or plant-derived converted to convenient energy.



Why use systematic applied heat exchangers?

Benefits are many. Consider end game hydraulic performance as a result from heat generation:

Rapid boom movement

High flow valving (open-center and load sensing)

Small orifice fluid travel through proportional, precise and smooth movements

Nonstop flow through hose lines

Over applied equipment & loading

Heavy-duty hydrostatic transmissions

High cyclical actuation

Working equipment limits during high ambient conditions

Engine Cooling Optimized

TTP offers the design flexibility needed to fit your platform and to optimize an engine cooling package that meets performance and cost goals.

TTP Engineering provides the field expertise needed to work with modern mobile systems. Let us help you meet targets for reduced fuel consumption, noise abatement, lower emissions and maximum power with applied cooling solutions.

Make Hydraulic Systems Robust by Keeping Them Cool!

TTP's broad range of high performing, application driven heat exchangers are a perfect match to your critical AG equipment. Our goal—raise performance, reliability and durability with the right cooling solution from the premier designer and manufacturer.

A Design Team with Your Needs in Mind

TTP Engineers lay out compartment space claim, apply fan curve air flow measurements to reflect field conditions, and integrate the complete cooling package of radiator and heat exchangers.

System integration enables fan speed regulation with PWM or discrete controllers.

Combined Strengths—Yours and Ours

In a competitive environment, continuous technical innovation can play a vital part in improved cooling efficiency and optimized fluid circuits in agricultural equipment. TTP works with you as we bring proven experience in AG equipment installations. Look to us for engine cooling systems and auxiliary solutions to keep you cool and to keep you moving—return line oil coolers, off-line cooling circuits, hydraulic fan drive systems and brushless DC fan motors featuring various cyclical actuators and limited amp/power supplies. We can make the hard work easy with factory supplied temperature sensors and fan controllers.

Performance Validated

TTP stands behind the products and systems we offer. Our investment in a full materials test lab, test chambers and a calorimeter flow simulator reflects our commitment to bring you tested and proven cooling equipment. Ongoing investment in R&D state of the art performance analysis programs, positions TTP to bring you the best heat transfer solutions available. Proof is in performance!



ALUMINUM CORE

MA Series

Now available with Brushless DC Fan Motors (12V, 24V)

Bar and Plate Brazed Aluminum Core – P-Bar

Welded aluminum fittings/ports and manifolds ensure structural integrity

Air-side fin design minimizes fouling and static pressure ensuring long-term, reliable performance

Standard SAE ports – NPT and BSPP ports available

Optional temperature sensors

Heat removal up to 380,000 BTU/HR (111 KW) @ 100°F (56°C) ETD with oil flows to 165 GPM (625 LPM)



BOL Series

Bar and Plate Brazed Aluminum Core – P-Bar

Air-side fin design minimizes fouling and static pressure ensuring long-term, reliable performance

Welded fittings/ports and manifolds ensure structural integrity

Standard SAE ports – NPT & BSPP available

Low Noise option available

T-BAR core optional for high viscosity oils or other highly fouling fluids

Optional factory installed integrated bypass relief valve in the cooler tank inlet line (P-Bar).

Optional bypass valve with temperature control

Heat removal up to 850,000 BTU/HR (249 KW) @ 100°F (56°C) ETD with oil flows to 200 GPM (757 LPM)



OCA Series

High efficient, light weight, low fouling extruded core design

Rugged construction with a patented T-Bar brazed aluminum core

Ability to handle high viscosity fluids

High flow capacity with a flow range from 20-500 GPM (76-1,893 LPM)

Available in 7 standard sizes hydraulic motor with short, lean lead time

Heat removal up to 2,100,000 BTU/HR (615 KW)



PB2B Fan Controller Option

Compact Programmable Temperature Sensor



COPPER CORE

AOC Series

AC/DC motors, core filter

Low cost industrial duty for low flow rates

Heat removal up to 450,000 BTU/HR (131 KW) @ 100°F (56°C) ETD with oil flows to 200 GPM (757 LPM)

SAE connections

Single or Three-Phase 60/50 Hz Motors



AOHM/AOVHM Series

Heavy duty construction

Long life hydraulic motor

Adjustable louvers

NPT connections

Heat removal up to 420,000 BTU/HR (123 KW) @ 100°F (56°C) ETD with oil flows to 225 GPM (852 LPM)



DH Series / M Series

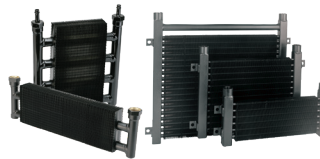
Excellent for face mounting

Steel or aluminum fin

Optional bypass

Heat removal from 200-300k BTU/HR (58-88 KW) @ 100°F (56°C) ETD & 1,000 SFPM (3,055 SMPM)

air velocity with oil flows from 100-165 GPM (379-625 LPM)



DF Series / MF Series

Same as DH and M with low amp 12 or 24 VDC fan motor (hydraulic option)

For rugged applications, steel manifolds, long life hydraulic motors with aluminum or optional damage resistant steel fins

Heat removal up to 70k-80k BTU/HR (20-23 KW) @ 100°F (56°C) ETD with oil flows to 110-165 GPM (416-625 LPM)



Stainless Steel, PHE-Plate Heat Exchangers

BP & PF Series



BP – Stacked plate with copper braze or nickel option

PF – Plate & frame (removable plates)

Oil to water applications

High performance compact design

Corrosion resistant Type 316 stainless steel plates are standard

ENGINE COOLING

Diesel, Gas, Alternative Fuels & E-Fan Integration



Aluminum has up to 25% higher heat transfer capacity in comparison to a traditional copper/brass cooling package

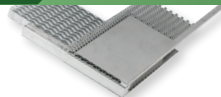
Rugged structure

Zinc coated for salt spray & salt air resistance

Handles high viscosity fluids

No tooling requirements

Seam/leak free



Aluminum has up to 30% higher heat transfer capacity in comparison to traditional copper/brass cooling package

Air-side fin design minimizes fouling and static pressure ensuring long-term, reliable performance

Welded aluminum fittings/ports and manifolds ensure structural integrity

High performing turbulator

No tooling charges required

Great dollar value per BTU



S-BAR high flow tubes offer higher heat transfer capacity in comparison to traditional radiator cooling package designs

Resistant to salt spray and salt air

Compact & light weight

Lower HP application

Fabricated or stamped aluminum tanks

Plastic tank molding options



APPLICATIONS

Feed Dispenser

Application: Truck Mounted Feed Spreader

Heat Exchanger Models: MA and MF Series

Details: As herd sizes have grown, efficiencies have been gained through automating the feed process. Farmers are now able to feed a large amount of cattle in a very short time. During operation, the hydraulic motors driving the augers and conveyors generate significant heat. Integration of a hydraulic oil cooler is the simplest way to address the problem.



Tree Crop Harvesting

Application: Nut Shaker

Heat Exchanger Models: M and DH Series

Details: Due to the short harvest season, farmers have been forced to mechanize the process. Modern equipment is capable of shaking 6 to 8 trees a minute. Due to the high speed actuation required, a great deal of heat is generated and requirement for an oil cooler is an absolute must.



Crop Treatment

Application: Self Propelled Chemical Sprayer

Heat Exchanger Models: MA Series with protective coating

Details: Crops require pesticides/fertilizers throughout the growing cycle. Chemical solution pumps are driven via hydraulic motors. Due to the high speed actuation, the system generates heat requiring a hydraulic oil cooler. Protective coating is required due to the corrosive nature of the solution being applied to the crops.



Row Crop Harvesting

Application: Self-propelled Leaf Harvester

Heat Exchanger Models: P-Bar Series Custom Diesel Engine Cooling Package

Details: The use of automated harvesting equipment is designed to reduce the cost of harvesting, reduce the amount of waste, and increase the yield of crop taken from the field.



Row Crop Planting

Application: Potato Planter

Heat Exchanger Models: MA, DH, and MF Series

Details: Through the use of modern planting equipment a grower is able to significantly reduce the amount of time it takes to get the crops planted. In addition, the grower is able to reduce the waste and down time associated with manual planting. Hydraulic powered planters can perform at a consistently high level when oil cooling is optimized.



Biofuels

Application: Water exchange circuit, Waste heat recovery

Heat Exchanger Models: BP and PF Series

Details: Biomass (from vegetation or waste) is converted to run biofuel engines that generate power to provide electricity with zero emissions. Heat exchangers are critical in the heat recovery process as biofuels are created through biomass conversion.





TTP Thermal Transfer 
Products

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We **COOL** what you **POWER**