

# ENGINEERING BULLETIN

Ref Document No.	EB13004	Issue No.	2
Subject	COALTRAM® Radiator Upgrade		
Release Date	16 <sup>th</sup> April 2015		

**Purpose** –Advise COALTRAM® owners of cooling system efficiency gains that can be gained through installing an upgraded radiator.

**Applicability** – In service COALTRAM® models – CT08 / CT10 / CT10LP

### Background

The PPK technical department is aware of overheating issues from the Coaltram DES when external surfaces of the radiator become dirty decreasing its cooling capacity. A redesigned radiator (5520009339) with greater cooling capacity has been available since April 2014. This bulletin gives some more information on the improvements made.

### Investigations/Findings

PPK has developed a new radiator design that will deliver increased heat dissipation to the DES whilst being easier to clean.

The improvements to the new radiator include:

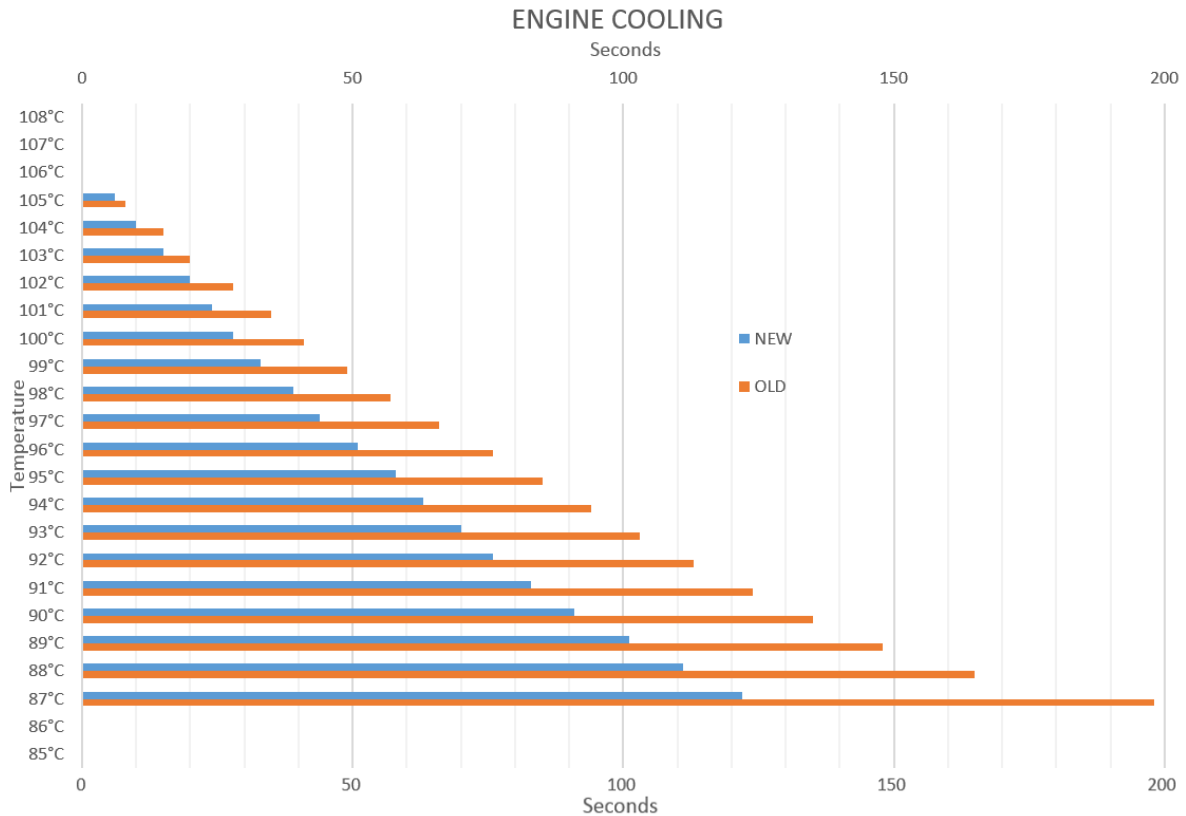
- Increased radiator heat rejection capability from 135kW to 168kW
- Multi-dimple, high efficiency copper brass core design for low fouling characteristic
- High frequency butt welded brass tube-to-header joints (ultra fused) on all cores. More durable than existing soldered joint construction
- Double hemmed fin edge for increased impact resistance
- Heavy duty side supports and additional cross bracing to control flexing of the radiator
- Bolt on header tank design to facilitate new core design providing additional strength
- Access hatches in radiator shroud to allow cleaning access to the engine side of the radiator

PPK has a supplementary approval MDR 088335 DES-1 for the use of this radiator on Coaltram produced under MDR 088335 DES. This radiator is now supplied as standard with all new built Coaltram post April 2014.

Testing has been completed at PPK to confirm the improvements which include increased heat rejection, lower engine surface temperatures and quicker recovery from elevated temperatures.

The comparison results from the recovery test can be seen below. The tests were completed in chassis with a clean radiator, all engine cowlings closed and guards fitted with an ambient temperature of approx. 20°C. By blocking the radiators the coolant temperature was raised

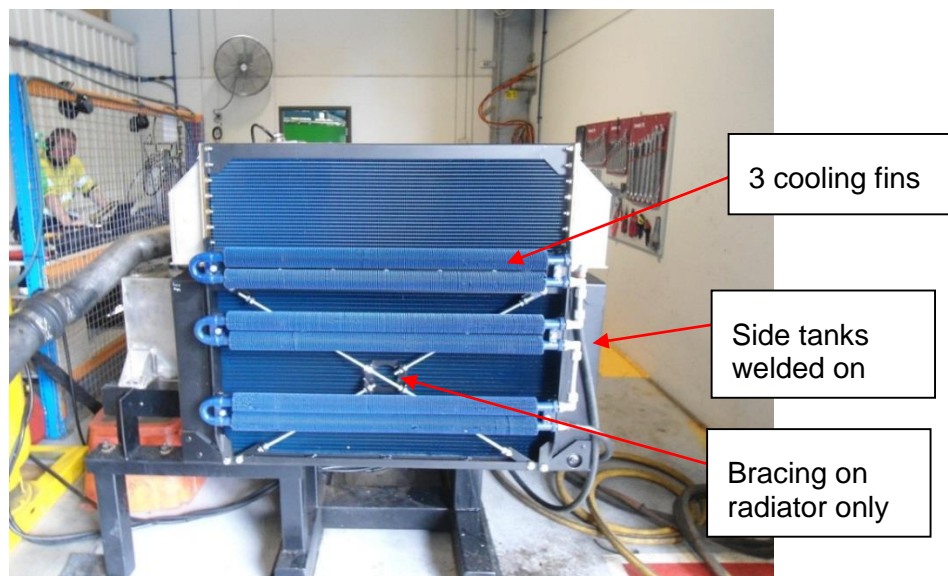
to 106°C at which point the radiator was unblocked and left at idle whilst the cooling results were recorded. The temperature vs time recordings were captured with Caterpillar Electronic Technician (CAT ET) and figures transferred to Microsoft Excel for graphing. The results show the new radiator returning the coolant temperature to 87°C in 122 seconds vs the old radiator 198 seconds.



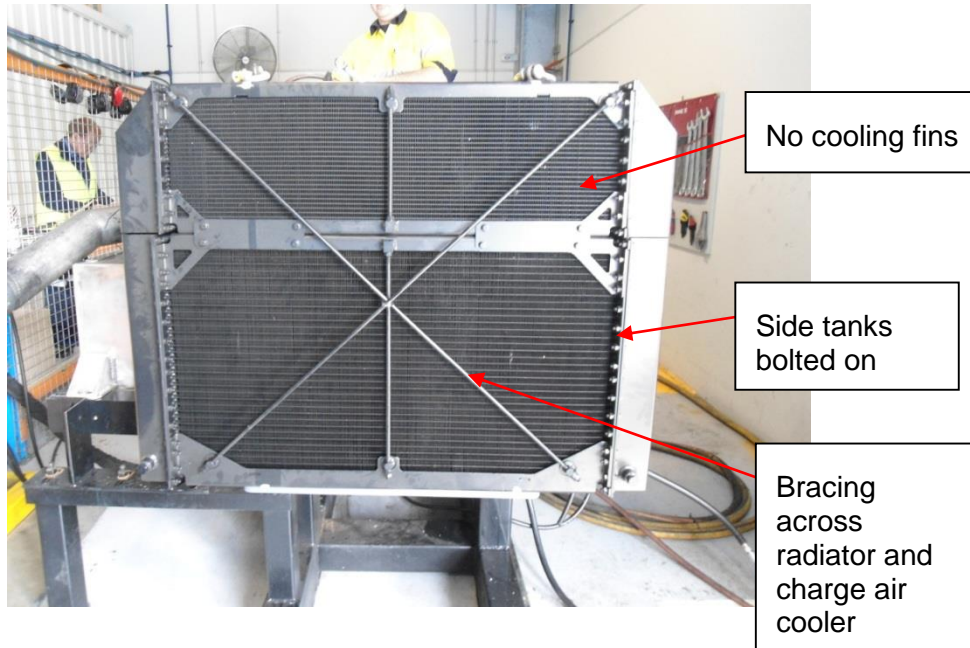
Note: MONEx engine management system will warn the operator when coolant temperature reaches 103°C, de-rate the engine at 106°C and shutdown the engine at 109°C.

To identify if a new radiator has been installed below are two pictures with what to look for.

Old Radiator (5520000394)



New Radiator (5520009339)



**Recommendations**

1. PPK recommend mine sites experiencing overheating issues retrofit the new radiator (5520009339) to increase cooling efficiency and allow for more effective cleaning of the radiator. In conjunction the engine covers will need to be modified to allow access to the hatches in the radiator cowl as per EB13003.
2. If the radiator is upgraded the new approval paper work and associated drawings are available from your PPK service centre.
3. Regular maintenance and cleaning regime must be maintained.
4. If overheating issues occur with new radiator PPK recommend the following:
  - Check water pump belt tension
  - Check coolant level in header tank
  - Clean radiator
5. New radiators are currently available.

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