

To whom it may concern

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Important information regarding sludge tanks for TeamTec Incinerators

Reference to: MEPC 40/21 Annex 8-10- A1.4:

"FUELWASTE SPECIFICATION FOR TYPE APPROVAL TEST (% BY WEIGHT)

Sludge oil consisting of: 75% sludge oil from heavy fuel oil, 5% waste lubricating oil and 20% emulsified water"

All TeamTec Incinerators that are able to burn sludge are equipped with either one or two waste oil sludge tanks. There are 3 different installation possibilities listed below, all keeping the sludge at a temperature of normally 80-95°C by active heating by means of steam, el or thermal oil. See also attached time schedule with visualization for the different sludge tank setups.

Single tank:

A single sludge tank for settling/service is commonly used where space and/or the quantity of sludge is limited. The tank is first used for settling, and then as sludge service tank for the incinerator. The settling of free water is then also limited to one cycle per burn, before draining water and mixing the sludge by means of the sludge circulation pump. Only thereafter can the sludge be transferred for incineration.

For daily incineration starting each morning, this will limit the settling time to overnight.

Dual Tanks:

A dual sludge tanks system consists of one settling tank and one service tank. This setup is more than doubling the settling time for separating water compared to a single tank setup, and will increase the amount of drained free water considerably. The advantage is less chance of high water content in the sludge going for incineration, which may reduce the amount of diesel used on the support burners drastically. If the water content is brought below 50%, sludge incineration can virtually go unsupported by the diesel burners.

Principle when burning daily: After 24 hours settling in the first tank, free water is drained off, and the sludge is transferred to the service tank for a new cycle of settling overnight, before new draining, mixing and incineration.

Twin tanks:

We have selected to use the terminology "twin tanks" to differ this from dual tanks when we have two identical tanks performing the same as single tanks, for the same incinerator. This also doubles settling time vs single tank setup.

The user switches between the two tanks after each burning cycle. Compared to a standard dual tank system, this system eliminates the sludge transfer time because you do not need to transfer the sludge between the two tanks. If the sludge is of reasonable quality (less than 50% water content), the switch can be done as soon as the mixing and heating of the second tank is completed, and incineration can continue.

The system is equipped with two 3-way valves to secure interlock function when choosing which sludge tank to incinerate. This minimizes crew involvement and reduces the risk of overfilling one of the sludge tanks. Transfer between the two tanks as with dual tanks is also possible.

General:

Mixing of the sludge tank content is very important in all the three installations because this ensures a stable and problem free combustion of the content. If the mixing is poor, and the content is not homogenous, small pockets of water may disturb the combustion process, and create flame failure alarm. This is not dangerous, but the operation of the incinerator will not be continuous. It may also increase wear on the refractory.

TeamTec recommends cylindrical waste oil sludge tanks built on our design. For tanks built by the yard, TeamTec have a strong recommendation for cylindrical tanks, based on experience. Rectangular tanks with high volume sludge circulation pumps circulating the sludge can be acceptable below 750 liters, but tanks above 750 liters must have secondary mixing in addition. The system design and function is specified in the TeamTec piping and instrument diagram. It is strongly recommended that TeamTec should approve the design in each case, and that suitable component packages are supplied by TeamTec. This is to ensure the quality of the equipment and to ensure a good system design.

Best regards
TeamTec AS


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Technical Manager

Sludge tank operation modes

	Day 1		Day 2				Day 3				Day 4				Daily sludge capacity	Typical settling time	Remarks
	evening	night	morning	day	evening	night	morning	day	evening	night	morning	day	evening	night			
Single service/settling tank	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	One full tank minus drained water	12 hours	
Dual sludge tank setup:																	
Dual tank A (service)	Filling by transfer from B	Heat/Settle	Drain/Mix	Burning mode	Filling from B	Heat/Settle	Drain/Mix	Burning mode	Filling from B	Heat/Settle	Drain/Mix	Burning mode	Filling from B	Heat/Settle	One full tank minus drained water	36 hours, but the settling starts from scratch on transfer.	
Dual tank B (Settling)	Filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Drain, and transfer to A, new filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Drain, and transfer to A, new filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Drain, and transfer to A, new filling from sludge holding tank	Heat/Settle			
Twin sludge tank setup (Normal sludge burning capacity):																	
Twin tank A	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	One full tank minus drained water	36 hours without interference	Compared to Dual tanks: Less complex for operator. Less attendance from operator.
Twin tank B	Filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle	Heat/Settle		36 hours without interference	
Twin sludge tank setup (Maximizing sludge burning capacity):																	
Twin tank A	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Two full tank minus drained water	12 hours	Only recommended if it is possible to get below 50% water content in the settling time available.
Twin tank B	Filling from sludge holding tank	Heat/Settle	Heat/Settle	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode	Filling from sludge holding tank	Heat/Settle	Drain/Mix	Burning mode		12 hours	