

ITQ 093 / 09 - 10

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**Working Principle of coalescing filter**

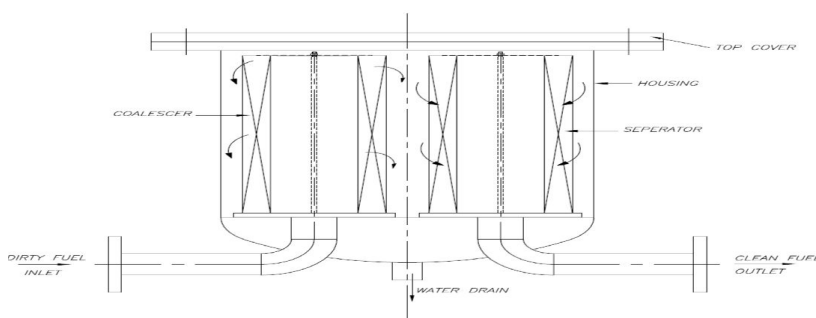
**Reference Drawings** 4 ITQ 3013 – Schematic sketch for coalescing filter.

**Working Principle :**

Fuel oil is drawn from the main storage tank and pumped into the filter housing. The hydrocarbon and water mixture enters the coalescing element and flows inside to outside. The filter element has multiple layers of filter media.

The first layer is a Pre-filter layer which retains major solid particles. The fuel oil mixed with water then passes through the coalescing filter media. This is where small droplets of dispersed phase liquid come together, or coalesce, as the mixture moves through the depth of specially formulated coalesce filter media. Both fuel oil and agglomerated water droplets come out of the coalescing filter. Finely dispersed water droplets were moving along with the stream in the beginning but now with agglomeration, water droplets sink to the bottom due to heavier weight.

Now the fuel oil passes through the separator filter. In separating water from fuel, water-free fuel and large water droplets flow toward the separator located adjacent to the coalescing filter. Flow is outside to inside. The separator medium is hydrophobic, which prevents water from entering the separator. Only water-free fuel flows through the separator. Water thus separated settles down at the bottom and is periodically drained by a timer based solenoid valve.



**SCHEMATIC SKETCH FOR COALESCING FILTER**

**SPECIFICATIONS:-**  
 FLUID HANDLED : DIESEL  
 CAPACITY : 3000 lph  
 OPERATING PRESSURE : 3 BAR (Max.)  
 OPERATING TEMPERATURE : 50°C (Max.)  
 VISCOSITY : 5 CST @ 40°C  
 MICRON RATING :5 Microns  
 MOISTURE CONTENT AT OUTLET : < 0.20 PPM

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Doc No	Rev	Issue	Rev	Drawn By	Rev
ITQ 093	01	30.07.09	01	4 ITQ 3013	0
Approved	30.07.09	30.07.09	30.07.09	4 ITQ 3013	0
SCHEMATIC SKETCH FOR COALESCING FILTER					

**Comparison Between Centrifuge and Coalescing Filter**

<b>Sl. No.</b>	<b>Centrifuge</b>	<b>Coalescing Filter</b>
1	Consumes more power per liter of fuel filtered	Power consumption is minimum. Less than Rs. 1 per 1000 Lts filtered.
2	Water content in the filtered oil will be not less than 1%	Water content in the filtered oil will be not more than 20 PPM.
3	Complex machine with many controls	Simple to operate and maintain.
4	Skilled labor required for maintenance	Semiskilled labor sufficient to maintain.
5	High speed moving components Many expensive spare parts	No moving parts. Only filter needs to be changed. Low cost spares.
6	Cost of filtration high.	Cost of filtration is very low and less than Rs. 10 per 1000 Lts.
7	Initial cost of investment very high with long delivery periods.	Initial cost of investment low and available at short
8	Removal of solids upto 10 Micron	Filtration upto 3 microns.





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**SALIENT FEATURES OF THE FILTRATION SKID**

**FOR DIESEL OIL**

- ✓ SIMPLE AND FAIL SAFE SYSTEM. MODULAR DESIGN. BUILT FROM HIGHLY RELIABLE COMPONENTS.
- ✓ NO MOVING PARTS. PRACTICALLY ZERO MAINTENANCE
- ✓ DESIGNED FOR CONTINUOUS OPERATION.
- ✓ MOISTURE CONTENT AT OUTLET : < 20 PPM.& MICRON RATING : 3 MICRONS
- ✓ LOW POWER CONSUMPTION. MOST ECONOMICAL IN ITS CLASS
- ✓ NOMINAL LIFE EXPECTANCY OF FILTER ELEMENTS - 6 MONTHS
- ✓ STURDY CONSTRUCTION FOR LONG LIFE.
- ✓ PROVEN FIELD RELIABILITY.
- ✓ IN USE IN INDIA AND ABROAD