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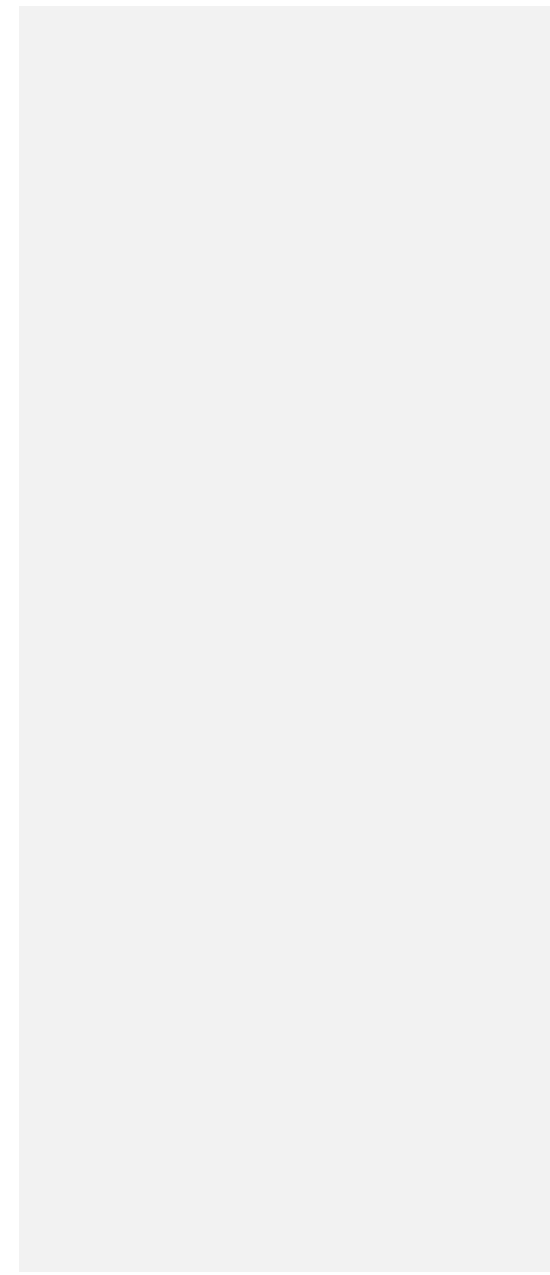
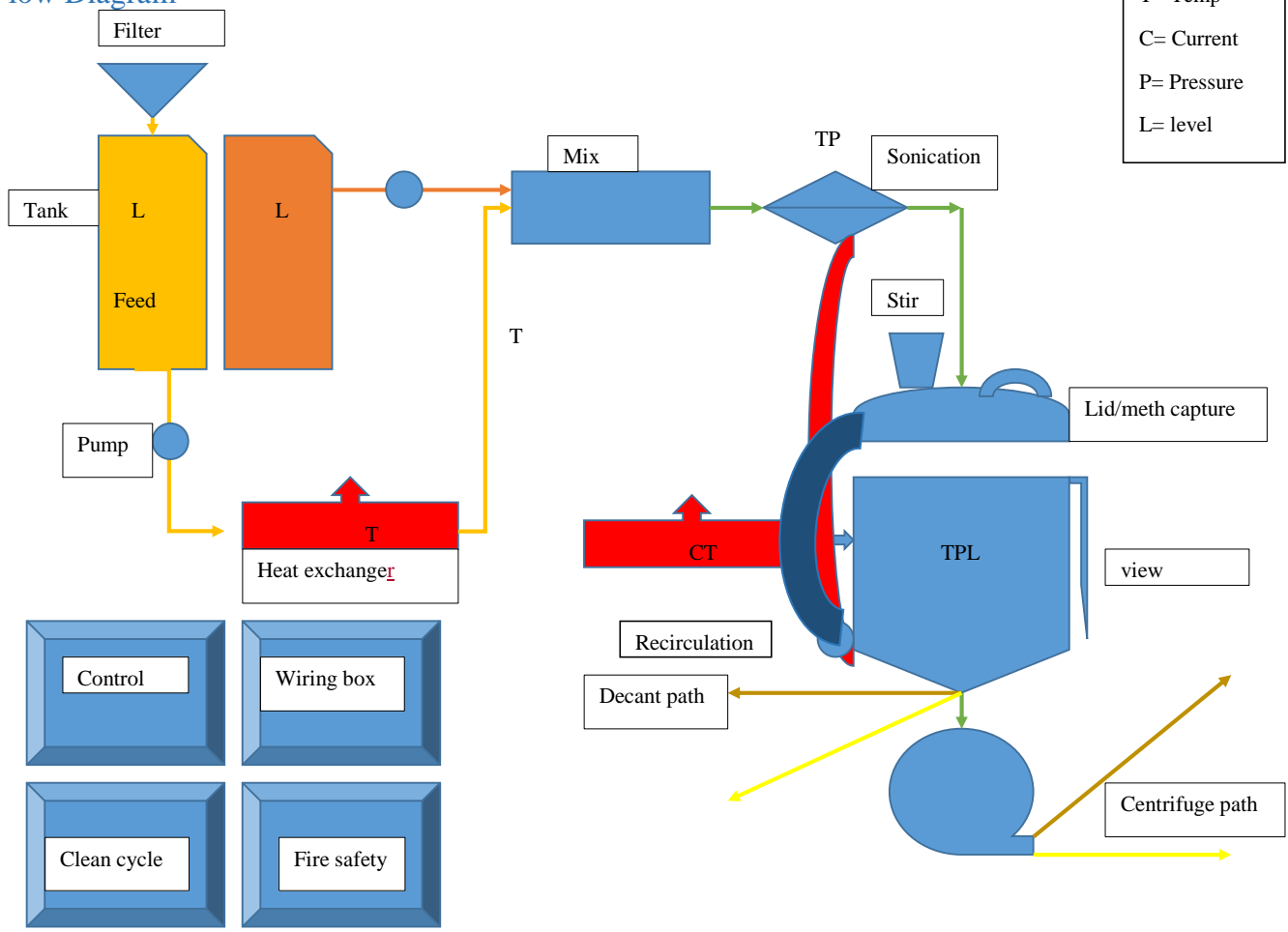
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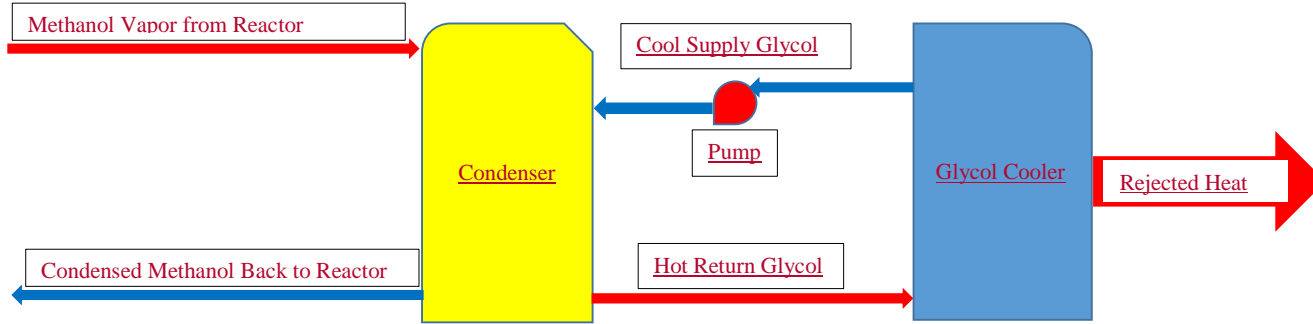


# Flow Diagram





## Condenser System Flow Diagram



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Table 2: Mixing Ratios

Oils and fats	Total molecular weight	Density	Density @ 50°C	Volume oil (ml)	Volume methanol (ml)	Stoich. ratio methanol : oil %
Tallow	858.54	0.895	0.88	981.18	121.52	12.4
Lard	863.73	0.92*	0.9*	959.7*	121.52	12.7
Butter	797.64	0.91	0.89	896.73	121.52	13.6
Coconut	674.51	0.926	0.91	744.57	121.52	16.3
Palm kernel	704	0.912	0.89	789.33	121.52	15.4
Palm	847.28	0.923	0.9	938.29	121.52	13
Safflower	879.1	0.927	0.91	966.44	121.52	12.6
Peanut	885.02	0.919	0.9	984.45	121.52	12.3
Cottonseed	867.38	0.918	0.9	963.76	121.52	12.6
Maize	872.81	0.923	0.9	966.57	121.52	12.6
Olive	870.65	0.923	0.9	964.17	121.52	12.6
Sunflower	877.22	0.925	0.91	969.3	121.52	12.5
Soy	882.82	0.925	0.91	975.5	121.52	12.5
Rapeseed/Canola	959.04	0.914	0.89	1072.75	121.52	11.3
Mustard	925.43	0.916	0.9	1032.85	121.52	11.8
Cod liver oil	908.81	0.929	0.91	1000.34	121.52	12.1
Linseed	872.4	0.934	0.91	954.48	121.52	12.7
Tung	873.68	0.944	0.92	945.54	121.52	12.9

Table 3: ASTM D 6751 standards

<u>Test</u>	<u>Limit</u>
Flash Point	130 Degrees C Min
Water and Sediment	.050% volume Max
Kinematic Viscosity	1.9-6.0 mm <sup>2</sup> /s
Sulfated Ash	.020% mass Max
Sulfur	.050% mass Max
Corrosivity	No. 3 Max
Cloud Point	No Limit
Carbon Residue	.050% mass Max
Acid Number	.8 mg KOH/g Max
Phosphorus	.0001% mass Max
Distillation	360 degrees C Max when 90% recovered
Free and total Glycerin	.020% mass Free Glycerin and .240% Total Glycerin
Cetane Number	47 Min

Table 4: Industry standards

<b>Category</b>	<b>Standard 1</b>	<b>Standard 2</b>	<b>Standard 3</b>	<b>Standard 4</b>
Piping	300 series austenitic stainless steel	Certified Welding	No threads	
Methanol Storage	Inert gas padding	300 series austenitic stainless steel	20% of tank working volume for liquid expansion	
Fire Suppression	AR-AFFF/CO2	IR Imaging	Vapor Detection Sensor	
Wiring	Certified wiring			



Table 5: Current reuse inventory

<b>Item</b>	<b>Description</b>	<b>Quantity</b>
Cooling system	Ethanol recirculation machine	1
Centrifuge	Hawker 230V 1hp 3 phase centrifuge separator	1
Vessel-primary	300 gallon stainless non-insulated	1
Vessel-primary	500 gallon stainless insulated	1
Container	80 gallon plastic	1
Container	70 gallon plastic	2
Container	187 gallon plastic	1
Container	100 gallon plastic	1
Platform	8x6 feet	1
Water Heater	47 gallon 240V 2x4500watt	1
Water Heater	6 gallon 120V	1
Water Heater	63 gallon 240V 2000watt	1
Stainless pipe	Unknown length	1
Pump	1hp 115/230V	1
Pump	½ hp 115V	1
Pump	¼ hp 115V	1
Pump	1/8 hp 115V	1
Pump	Needs motor	1
Agitator	3hp electric with shafts	1