

BioPro 380 Design  
“Designed With Safety In Mind!”

The BioPro 190 & BioPro 380 was designed around the reality that it must handle methanol, a flammable liquid.

Methanol's flash point is 52F and the lower flammability limit is about 6% in air. This calls for appropriate caution when handling. (Although, by comparison, other common fuels, such as gasoline, with a flash point of -40F and a lower flammability limit of only 1.7% in air are much more highly flammable.)

The selection of stainless steel, rather than a polymer, such as high density polyethylene, was made, in part due to the fact that flammable liquids would be contained in the unit. The stainless chassis has multiple grounds, and thus cannot build a static charge. Additionally, it is much more mechanically robust, and will resist puncture or softening at higher temperatures, which could result in a hazardous spill.

Great care is taken to prevent methanol from leaking inside the lid, where the electrical components are. All of the hoses are made of stainless steel to prevent any possible puncture or leakage. All ports from the lid into the machine tank are sealed. The pump heads which handle the methanol are a diaphragm style, there is no shaft seal to leak and allow fluid to get to the motor driving the pumps. The main mixing motor is a C-Face unit, with a shaft and propeller extending into the main tank. The face of this motor is sealed against the tank lid, and the motor itself is Explosion Proof (Class 1, Division 2).

All electrical devices are listed by UL or another NRTL. Relays coils are 'ice-cube' style, sealed in a plastic housing. At all times when the machine has power, the component housing is constantly purged by a 250 CFM rated exhaust fan. This ensures that in the event of a failure/leak of some kind, methanol vapors can never reach a flammable concentration.

Unlike other processors, which heat the reactants using high watt-density heaters immersed in the fluid, the BioPro 380 uses only low watt-density (5 watts/sq in) blanket heaters which are adhered externally to the underside of the tank and conduct through the tank wall, thus ensuring that a potentially dangerous temperature is never achieved in the machine.

The BioPro 380 was designed and built with safety as a priority, and is certainly the safest consumer-scale biodiesel processor on the market today.

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