

COVATIONBIO|PDO

susterra[®]



Better flow. Lower energy costs.

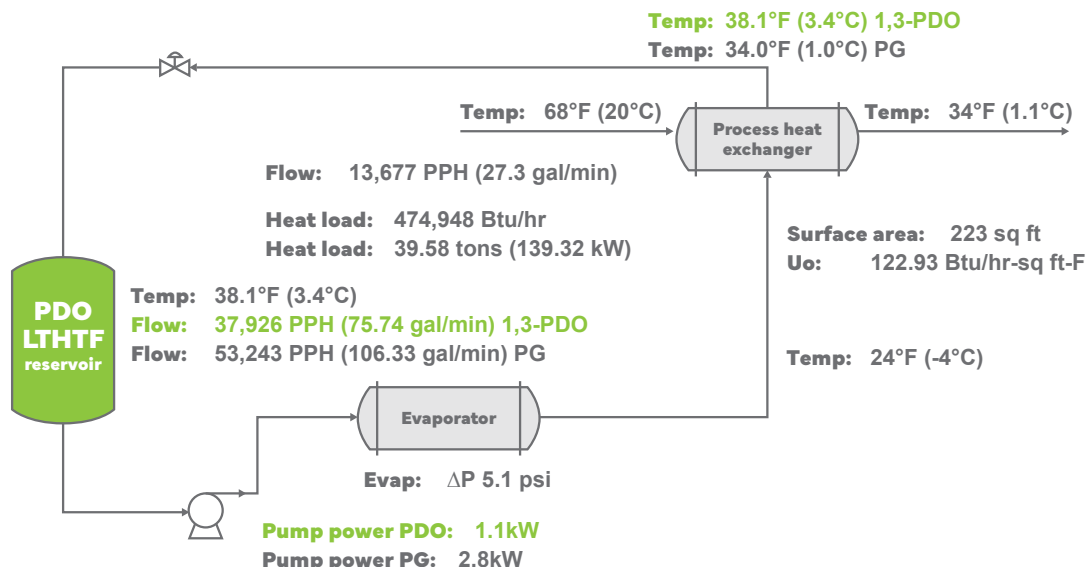
A sustainable heat transfer and cooling choice

Susterra[®] USP-FG propanediol (1,3-propanediol or PDO) is a 100% plant-based diol for heat transfer fluids. The performance advantages of Susterra[®] USP-FG propanediol help address a variety of **common processing challenges**, including:

- The temperature of a heat transfer system needs to be below 33°F considering the use of a glycol-water low-temperature heat transfer fluid (LTHTF)
- Local regulations or a specific application require the evaluation of glycol toxicity
- Properties such as density, viscosity, thermal conductivity or specific heat must be evaluated to determine optimal system efficiency
- Meeting the highest purity and safety standards for food and beverage applications
- Considering sustainability platforms and goals
- Susterra[®] USP-FG propanediol emits 42% less greenhouse gas (GHG) emissions (than petroleum-based propylene glycol)
- Responsibly and renewably farmed dent corn is used as feedstock to produce Susterra[®] USP-FG propanediol
- Creating higher-performing and sustainable options for low-temperature applications

Case study: Cooling system energy usage reduction using Susterra® USP-FG PDO (food grade version)

In this example, we modeled a 40,000-gallon fermenter's maturation cooling cycle from 68°F to 34°F.



*FG = Food grade, meets USP-FCC monograph specifications for 1,3-propanediol

Results of Susterra® USP-FG PDO vs. propylene glycol (PG) FG (food grade)

- **3.5%** power reduction adding Susterra® USP-FG propanediol and no other process alterations
- **20%** power reduction adding Susterra® USP-FG propanediol and adding a control valve to reduce system flow to match heat transfer capacity
- **61%** power reduction adding Susterra® USP-FG propanediol and replacing existing equipment with a smaller pump to handle lower viscosity material and reduce flow

Food Grade Fluid	Heat load (BTU/hr)	Process flow (gal/min)	LHTF flow (gal/min)	Fluid temp in/out (°F)	Process temp in/out (°F)	Plate exchanger area (ft ²)	Power reduction	Modification
PG	475,000	27.3	106.33	24/34	68/34	223	—	—
1,3-PDO	475,000	27.3	106.33	24/34	68/34	223	3.5%	Constant flow
1,3-PDO	475,000	27.3	75.74	24/38	68/34	223	20%	Control valve
1,3-PDO	475,000	27.3	75.74	24/38	68/34	223	61%	Smaller pump