

Every cleaning and sanitation must be highly reliable and totally repeatable.

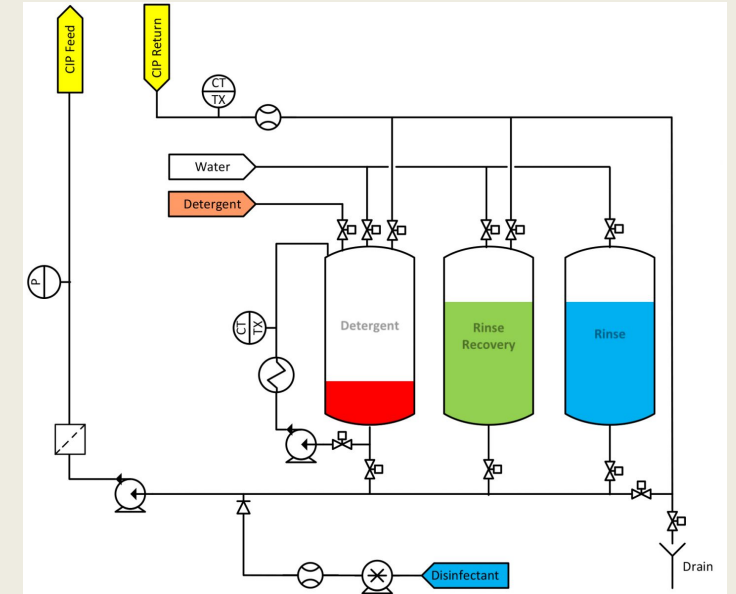
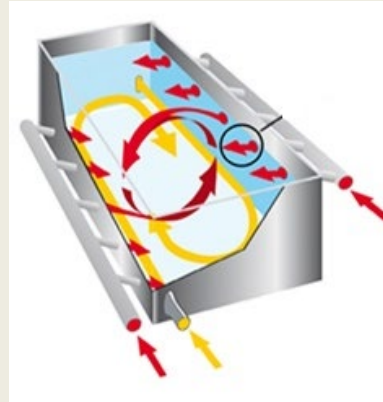


Did I sanitize correctly?

Did I sanitize efficiently?

There are four main cleaning processes used in food and beverage .
These include:

- Cleaning-in Place (CIP)
- Cleaning-out-of-place (COP)
- Manual Cleaning
- Immersion Cleaning



COP is used when there are components that CIP can't handle.

COP and manual cleaning of process equipment can be costly and time consuming

The longer the detergent contact period, the higher the cleaning efficiency

- TIME

Turbulent flow is required to provide maximum cleaning effect

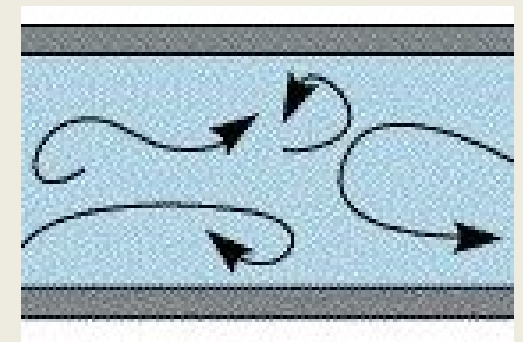
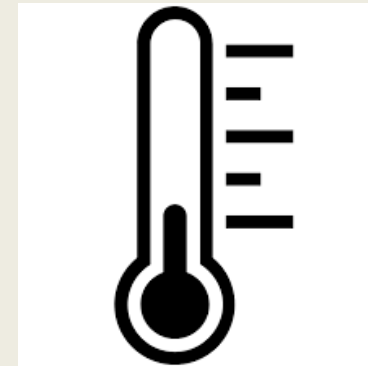
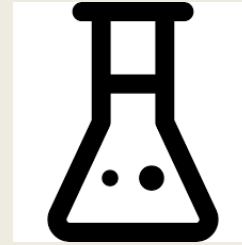
- FLOW

The right chemical cleaning agents in the right concentrations

- CHEMICAL

Increasing the temperature, increases dirt removal efficiency

- TEMPERATURE



Verification/Validation

Verification proves that the CIP system operated as intended and all target set points were met during the circuit operation: time, temperature, chemical concentration, and flow (mechanical action).

“you can't manage what you can't **measure.”**

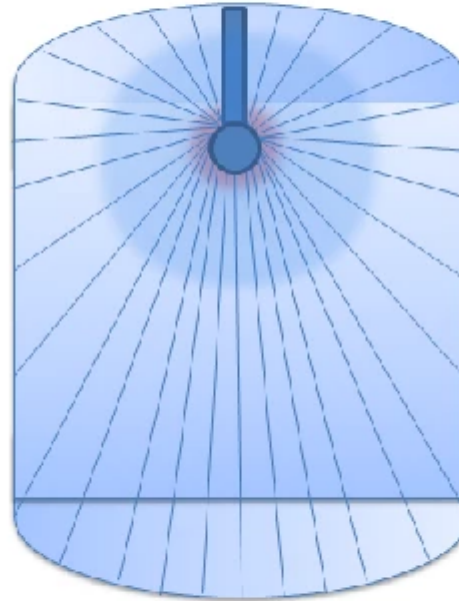
Opportunities for improvement

- ✓ CIP pumps flow unbalance
- ✓ There was not enough flow in the spray ball
- ✓ Flow restriction in the suction hose
- ✓ There was no concentration measurement
- ✓ Temperature controller out of operation
- ✓ Too much work for one person

**“Anything that can go wrong will go wrong”
-Murphy’s Law**



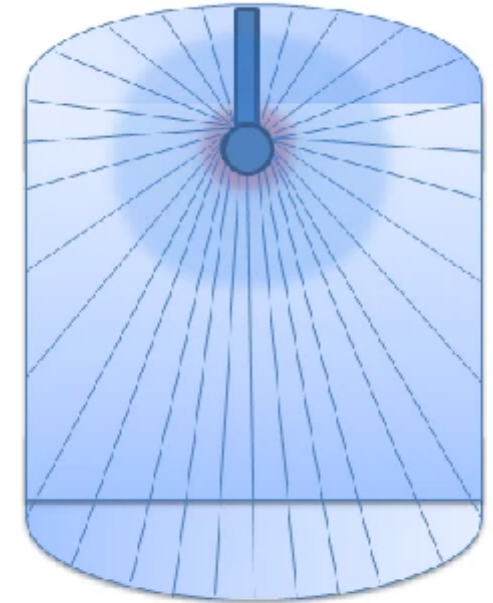
TEXAS PROCESS TECHNOLOGIES FIXED SPRAY BALL		
SIZE	FLOW RATE @	
	30 PSI	40 PSI
1 1/2"	38 GPM	42 GPM



360° SPRAY COVERGE

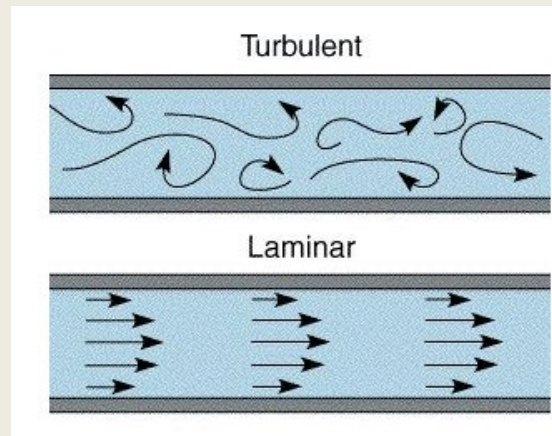
RECOMMENDED FOR TANK DIAMETER UP TO 6 FEET

TEXAS PROCESS TECHNOLOGIES ROTARY SPRAY BALL (SLOTTED)				
SIZE	D	A	FLOW RATE @	
			30 PSI	40 PSI
1 1/2"	2"	5.62"	65 GPM	75 GPM



360° SPRAY COVERGE

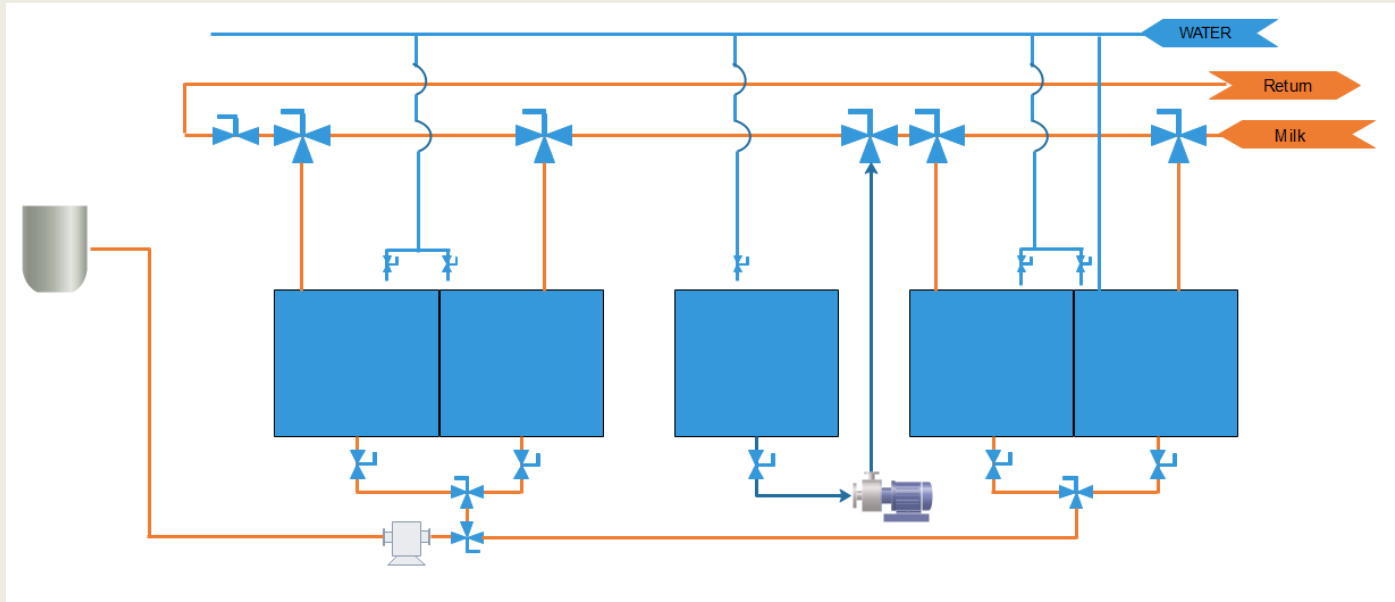
Tank cleaning flow rate: 0.2-0.3 GPM / Square feet
 Three gallons per minute (GPM) per foot of circumference



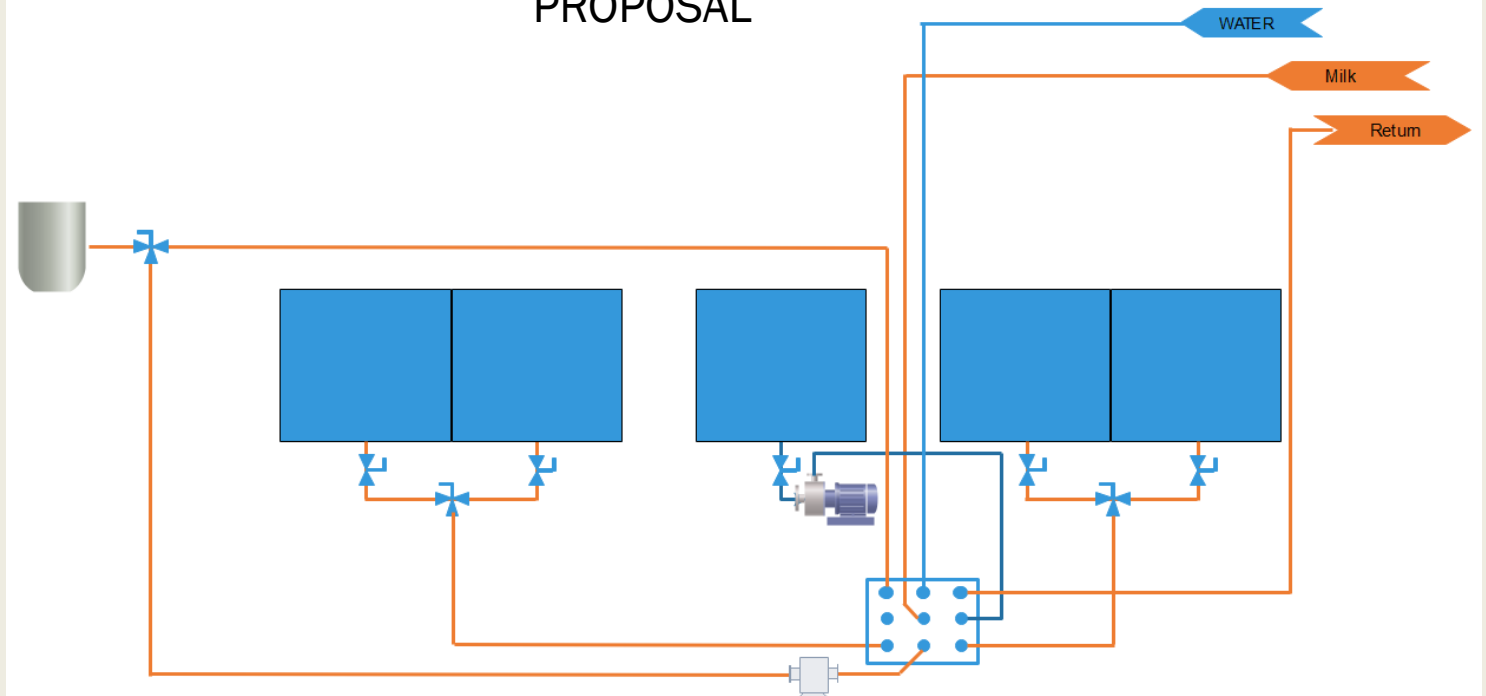
$$Q = A \times V$$

Tube OD	Tube ID	Gallons Per Minute (gpm) for 5 Feet/Second
0.5"	0.37"	2 gpm
0.75"	0.62"	5
1.0"	0.87"	10
1.5"	1.37"	23
2.0"	1.87"	43
2.5"	2.37"	69
3.0"	2.87"	101
4.0"	3.834"	180
6.0"	5.834"	417

CURRENT SITUATION

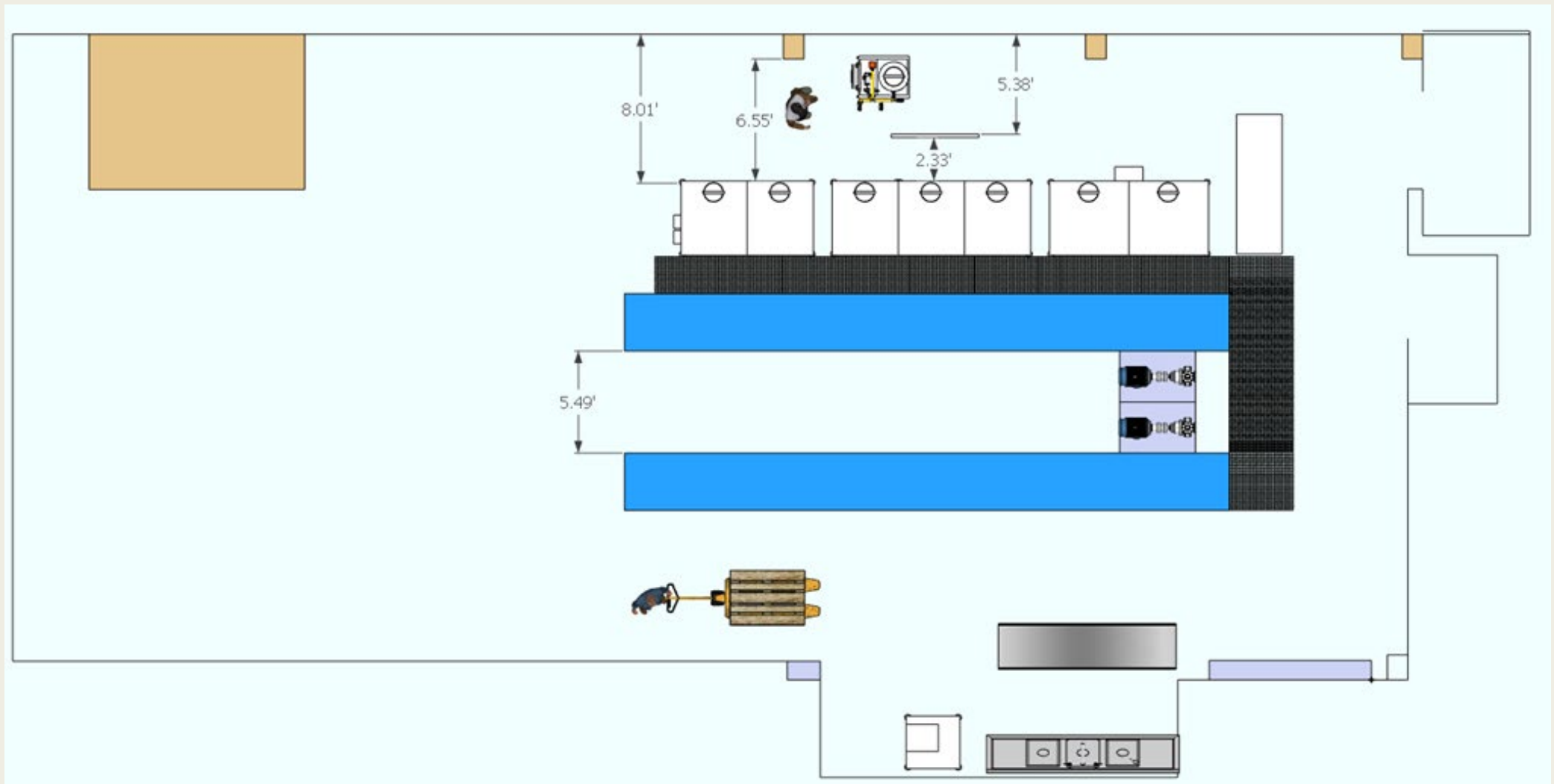


PROPOSAL

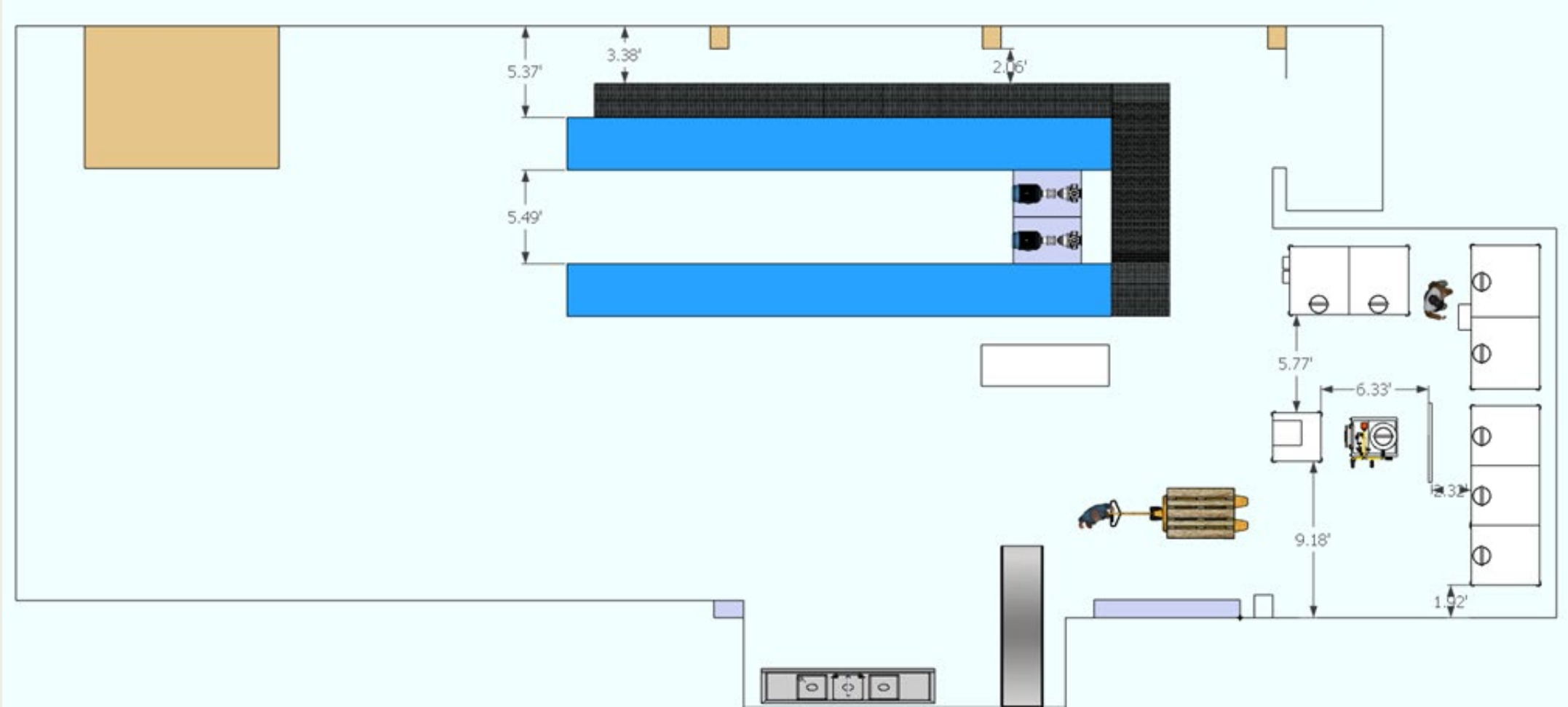


CLEANING OPERATION	EQUIPMENT	DETERGENT FLUID OUNCES	SANITIZING FLUID OUNCES	COST \$	MAN-HOUR
CIP	T1	7.5 (\$ 1.02)	2.75 (\$ 1.1)	(\$ 2.12)	1
CIP	T2	7.5 (\$ 1.02)	2.75 (\$ 1.1)	(\$ 2.12)	1
CIP	T3	7.5 (\$ 1.02)	2.75 (\$ 1.1)	(\$ 2.12)	1
CIP	T4	7.5 (\$ 1.02)	2.75 (\$ 1.1)	(\$ 2.12)	1
CIP	BLENDER	7.5 (\$ 1.02)	2.75 (\$ 1.1)	(\$ 2.12)	1
CIP	MILK CIRCUIT	23.5 (\$ 3.19)	8.6 (\$ 3.44)	(\$ 2.12)	1.5
COP	PIPE/FITTINGS	37.5(\$ 5.1)	13.7 (\$ 5.48)	(\$ 2.12)	2.5
				\$ 28.00	9 HR.

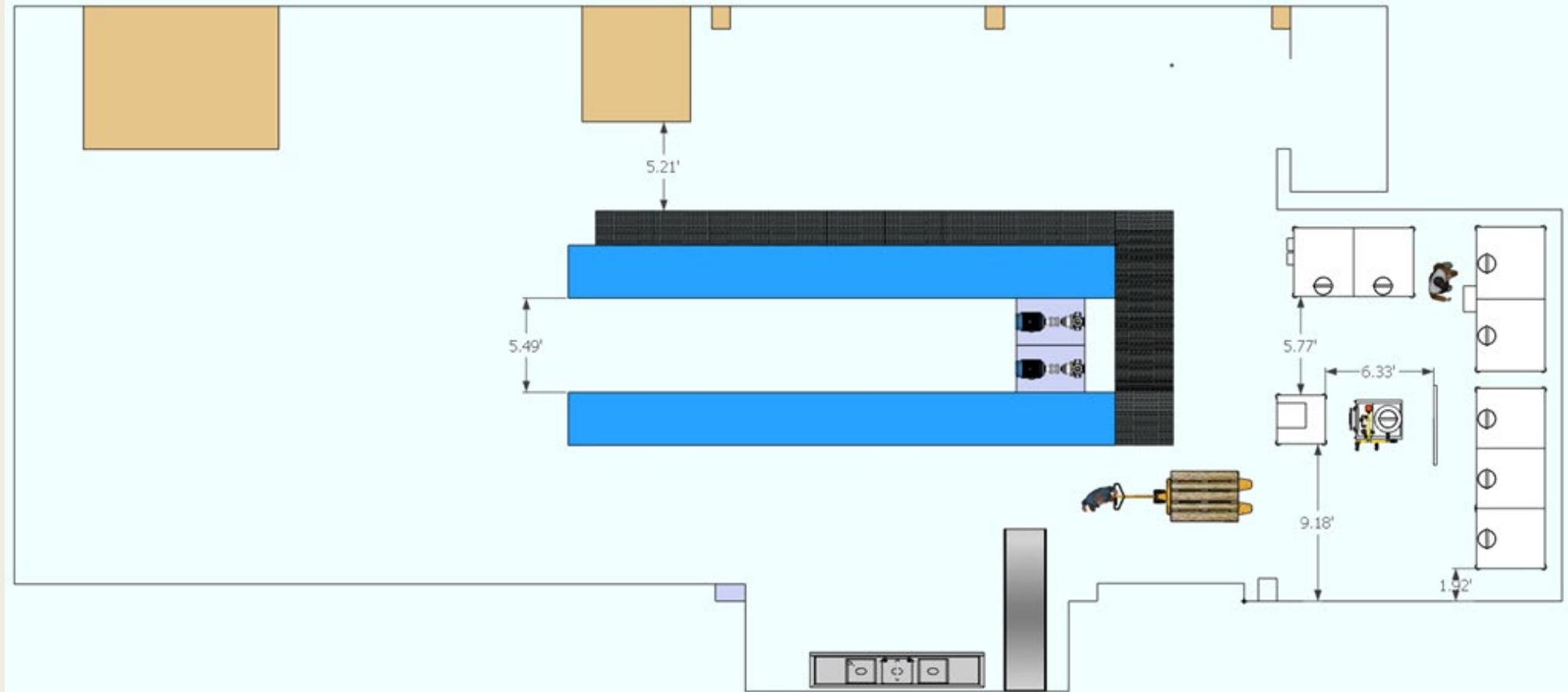
Option 1

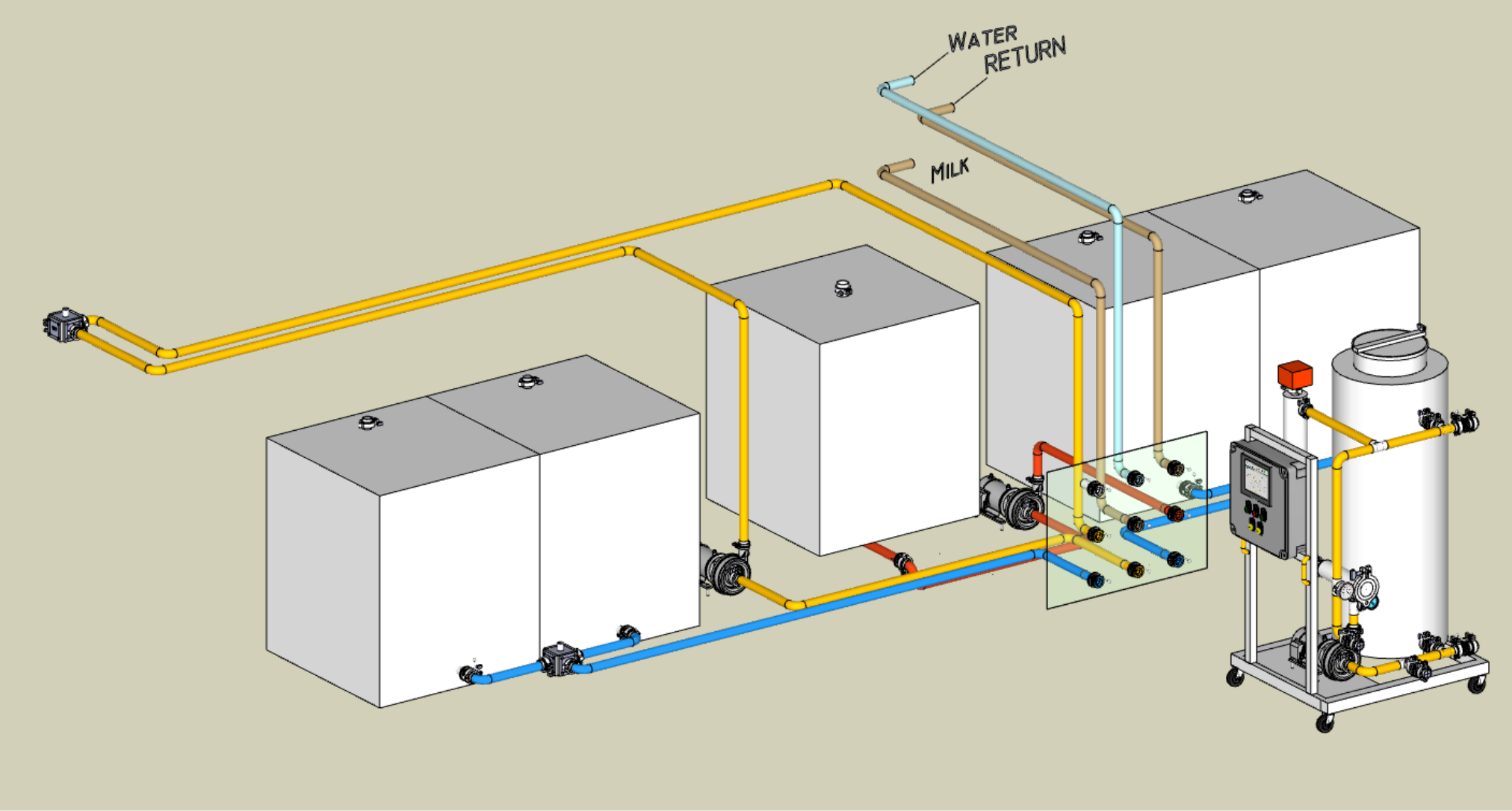


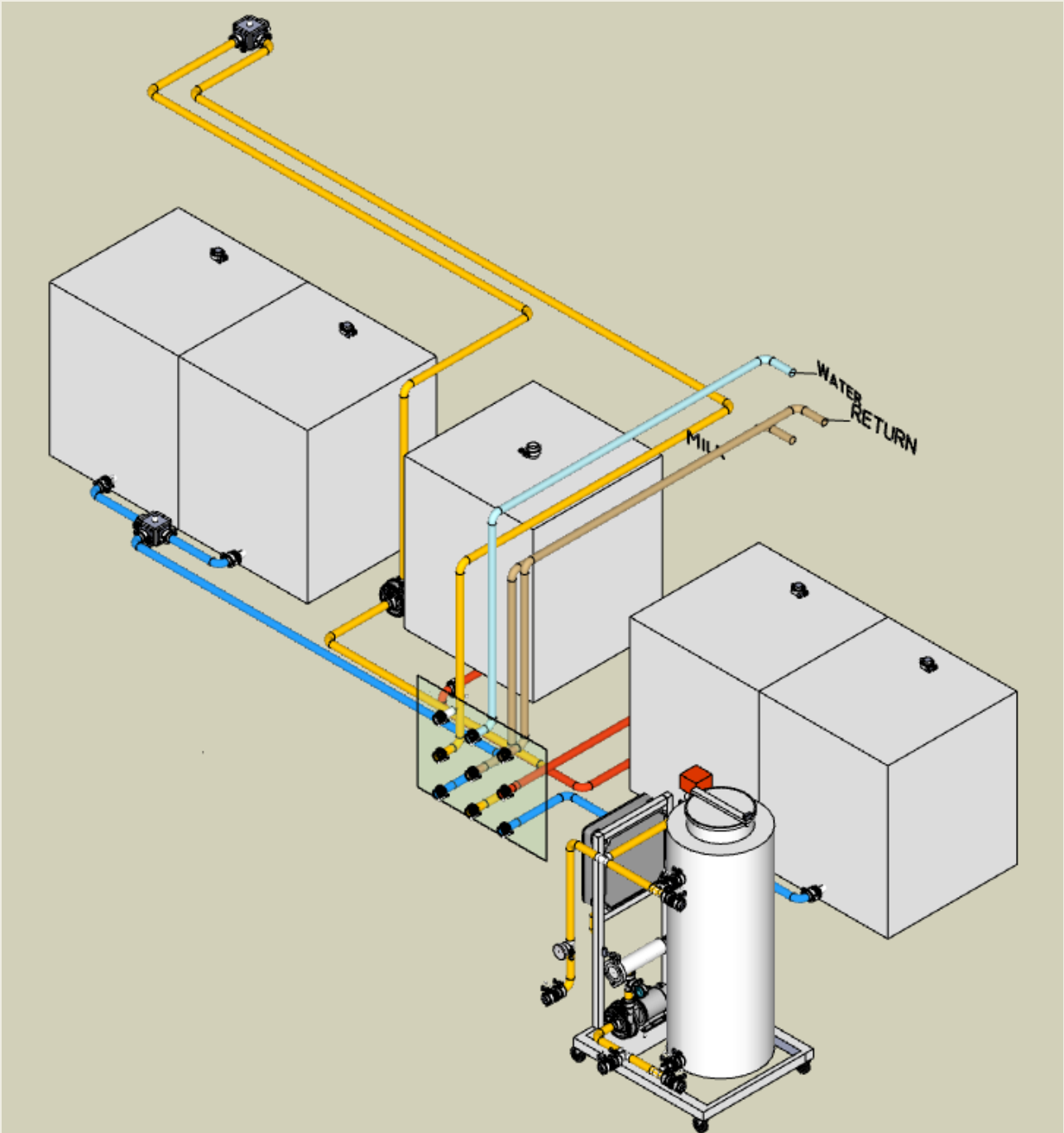
Option 2

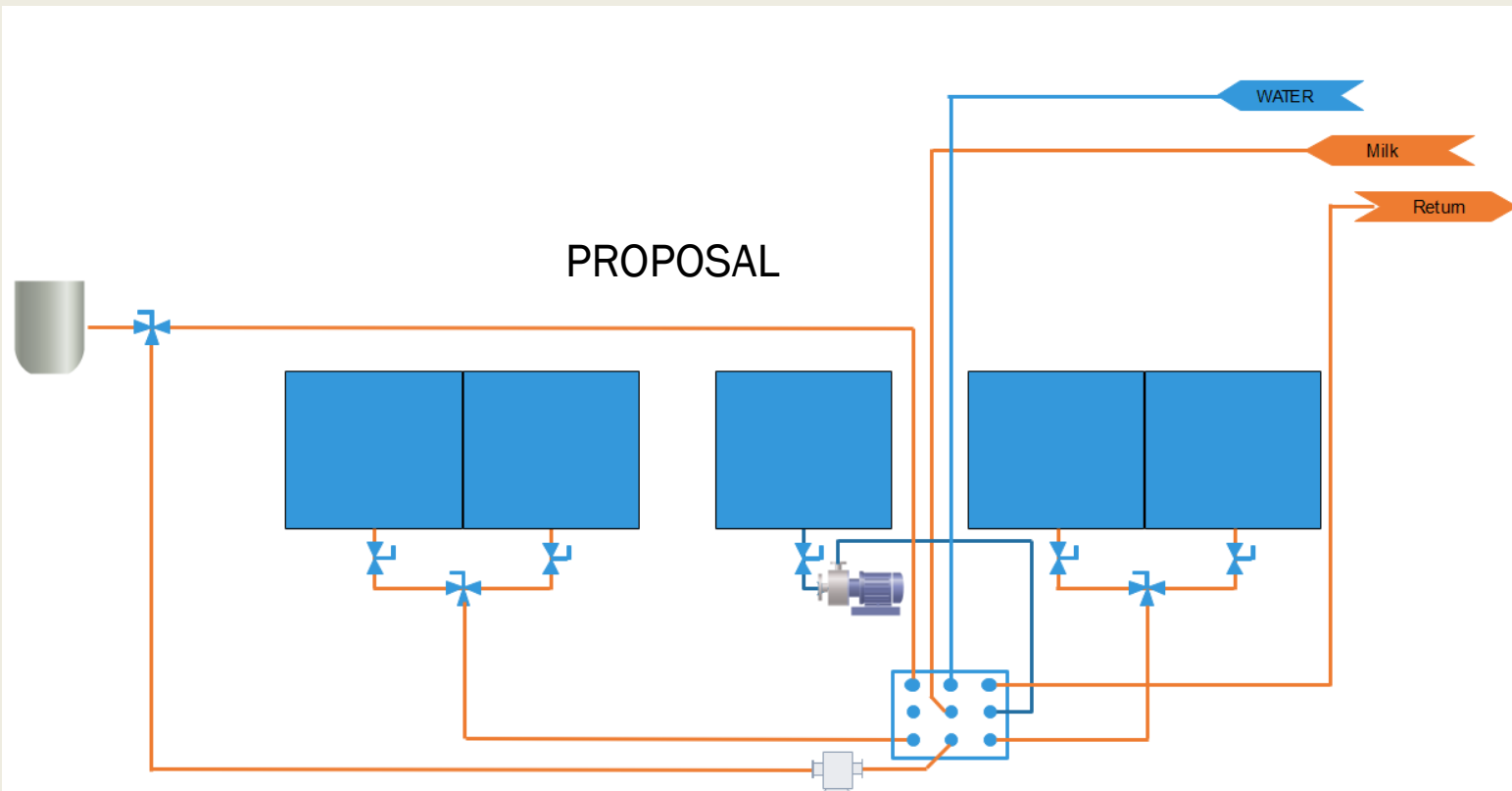


Option 3





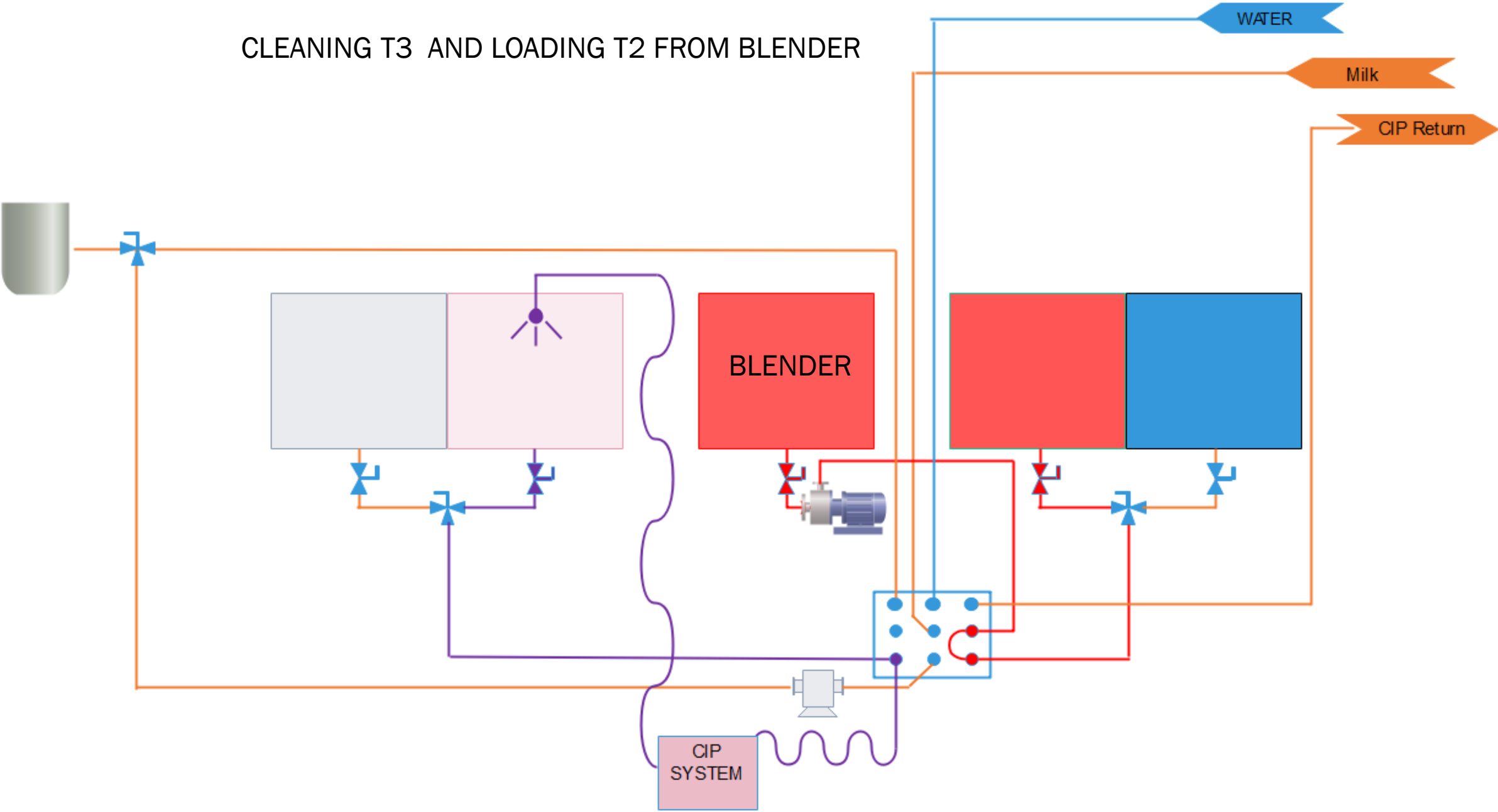




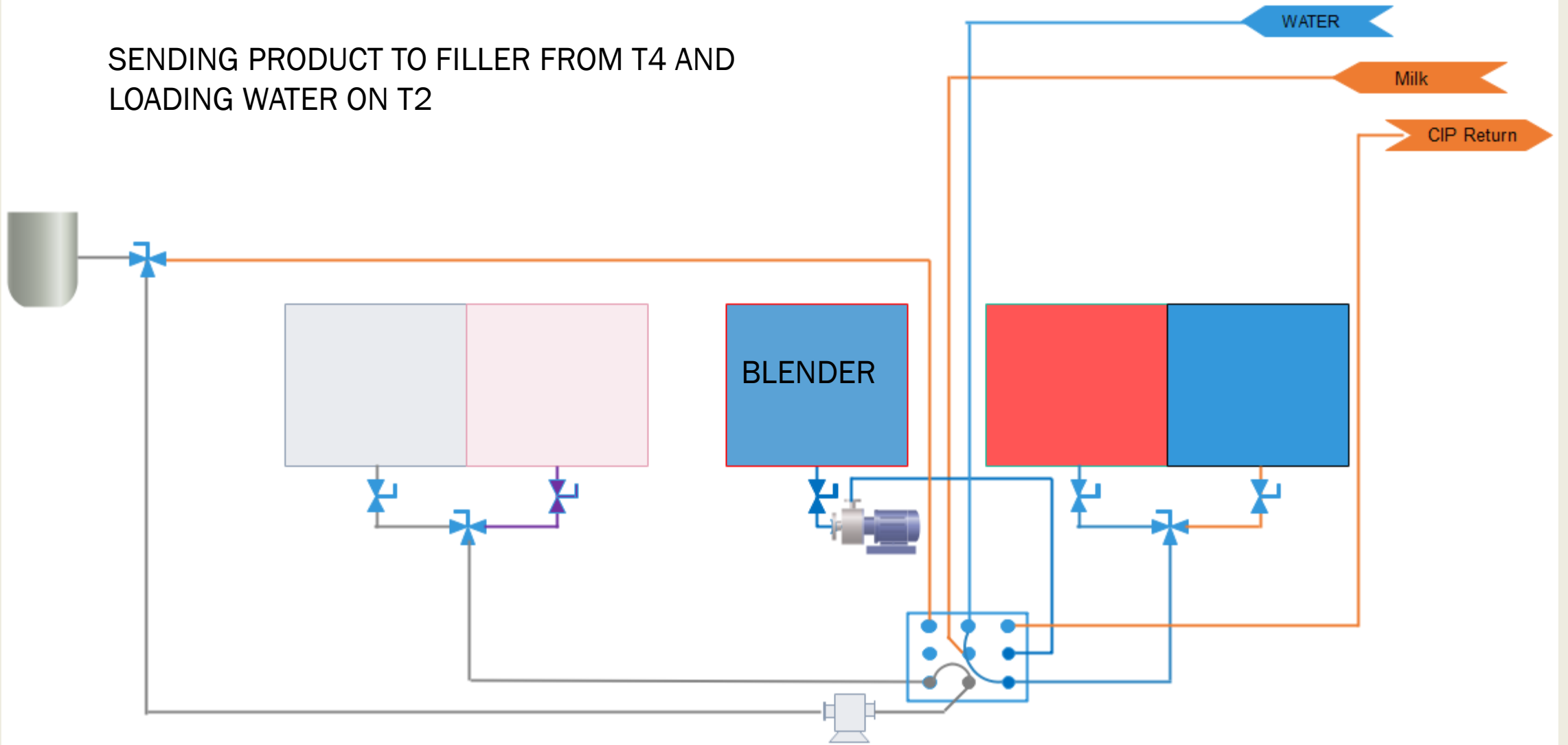
ADVANTAGE

- INCREASE FLEXIBILITY
- INCREASE EFFECTIVENESS IN CLEANING AND SANITATION.
- ELIMINATION OF THE COP PROCESS
- LABOR REDUCTION
- CHEMICAL COSTS REDUCTION
- SIMPLIFIED PROCESS AND CLEANING CIRCUITS
- WASTEWATER REDUCTION

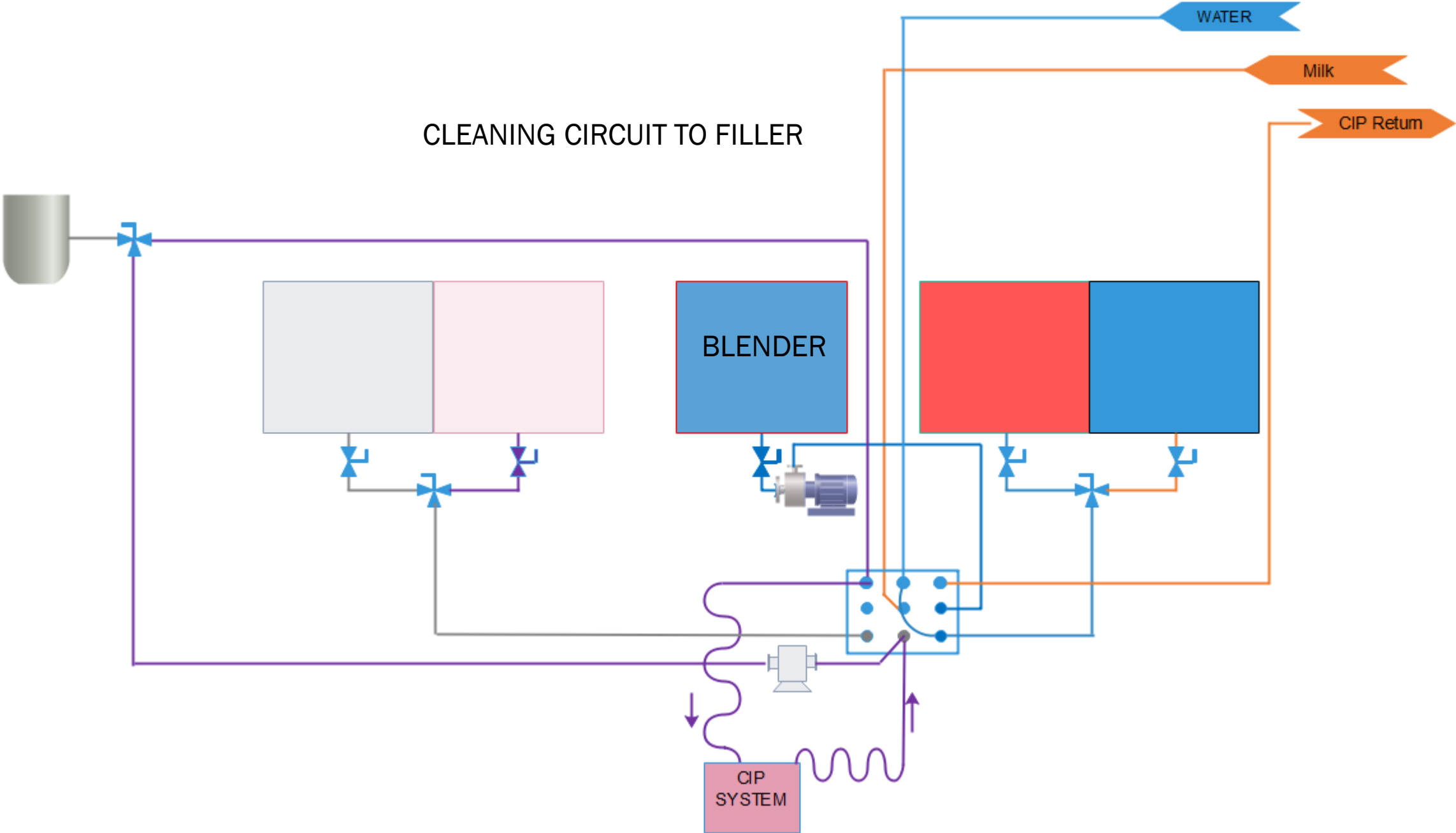
CLEANING T3 AND LOADING T2 FROM BLENDER



SENDING PRODUCT TO FILLER FROM T4 AND
LOADING WATER ON T2



CLEANING CIRCUIT TO FILLER



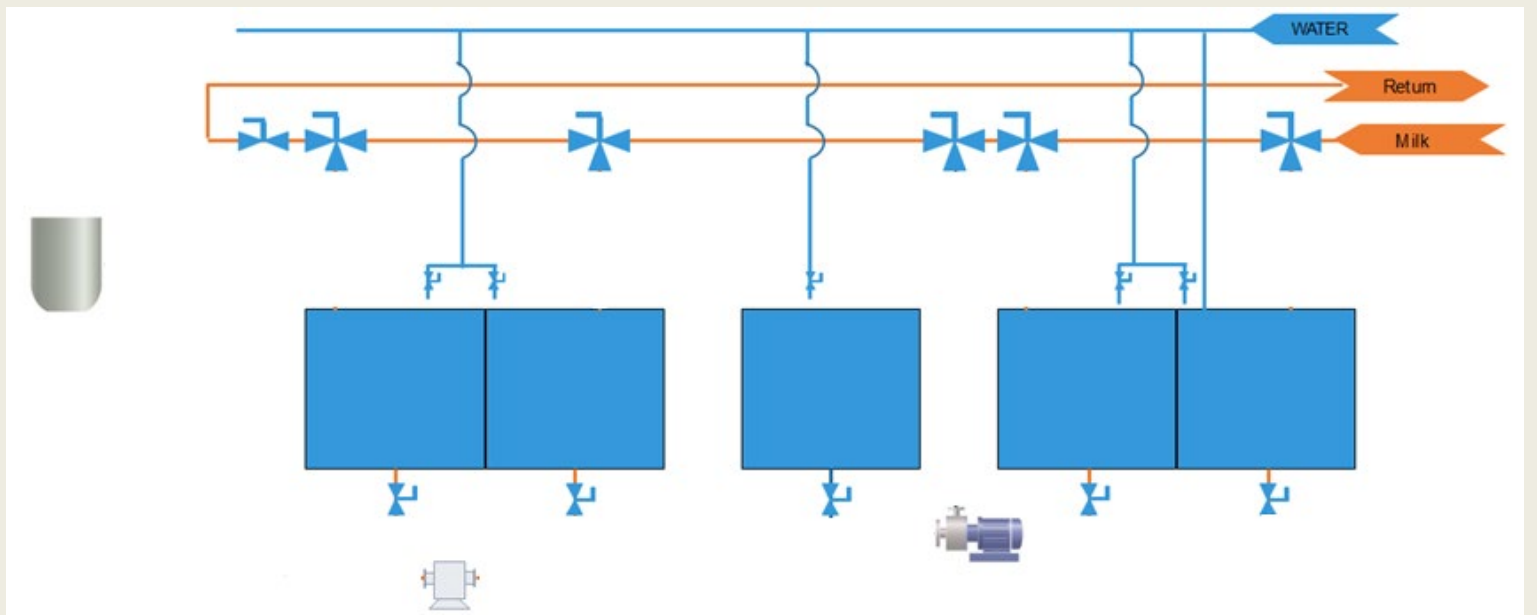
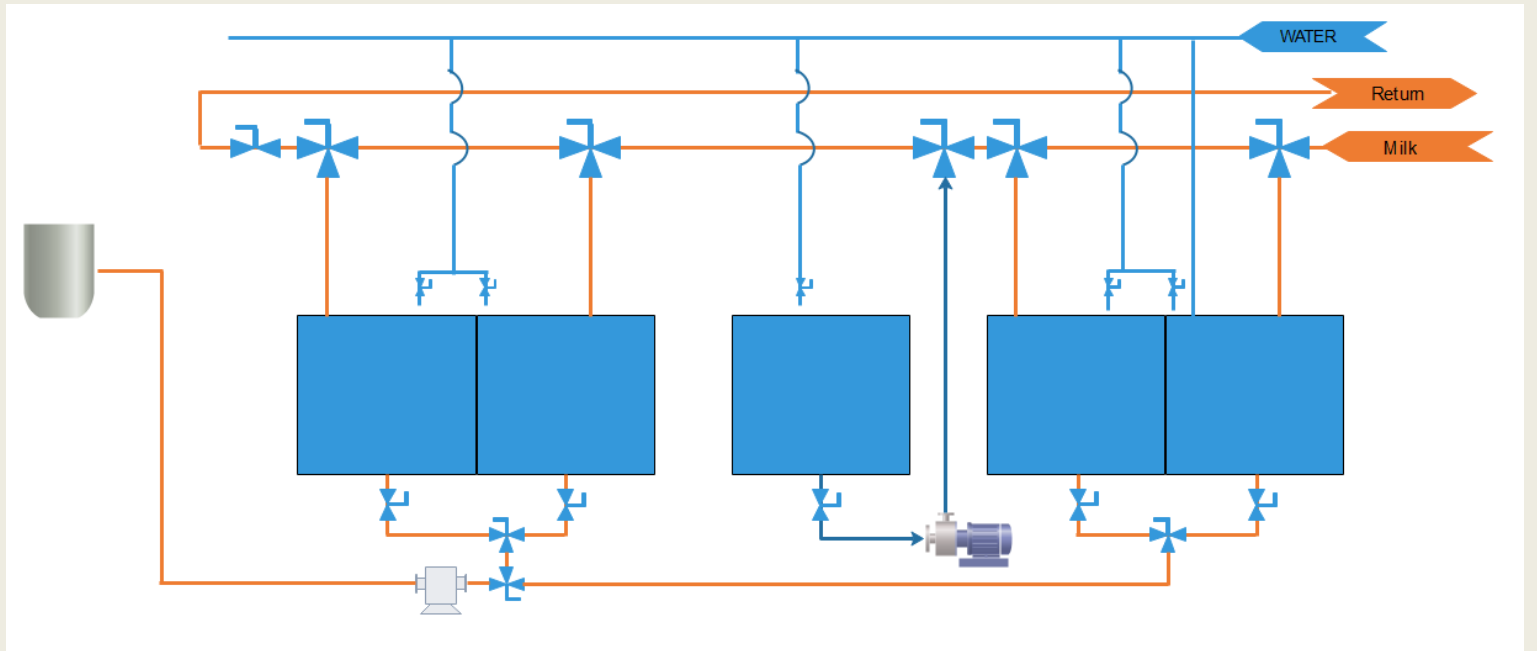
DISASSEMBLED AND ASSEMBLED
MAN-HOURS = 2 HR.

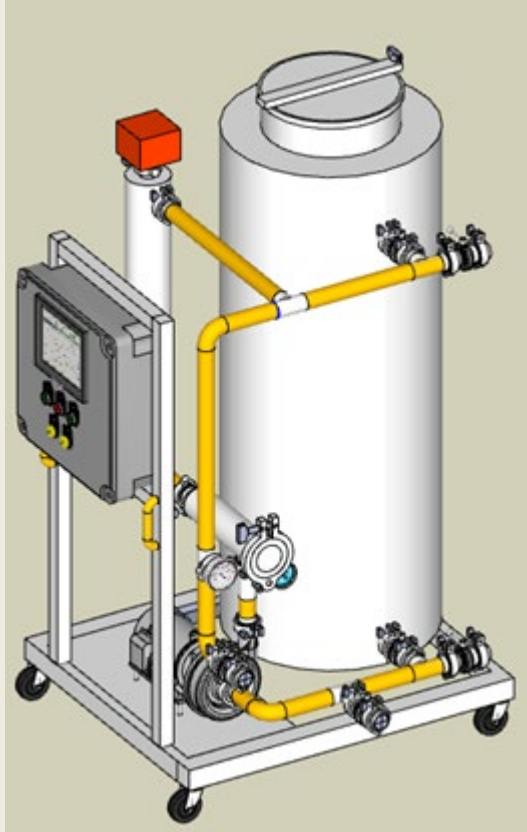
CIP :

- T1 - T4 4 CIRCUITS
- BLENDER
- MILK CIRCUIT

COP :

- PIPE
- FITTINGS
- VALVES





Basic with tank

- 50 Gal stainless steel 304 Tank
- Sanitary centrifugal pump self priming 3 HP
- Sanitary pressure gauge
- Sanitary tri-clamp thermometer bimetallic
- Sanitary four position valves
- Side entry sanitary strainer
- Stainless steel 304 frame and piping
- Stainless steel caster
- 24x24x8 Fiberglass Electric Enclosure

- Optional heater
- Electric heater 12,000 wats
- Steam injection inline heater
- Prices:

Basic + electric heater	\$14,200.00
Basic + steam heater	\$12,200.00

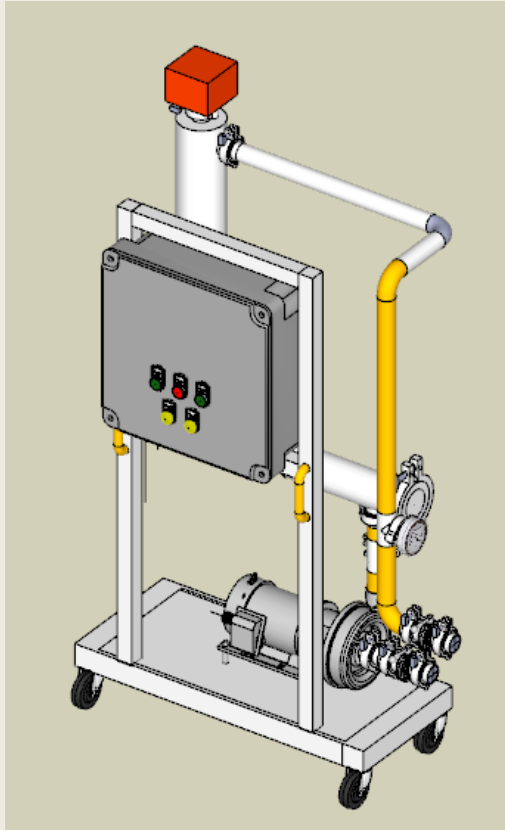
Monitoring and data recorder

Temperature monitoring	\$500.00
Chemical concentration monitoring	\$3,300.00
Flow monitoring	\$2,250.00
Data recording	\$4,000.00

Automatic control PLC/HMI

- PLC Allen Bradley 1100
- 7,5" color HMI
- Pneumatic actuators single acting for butterfly valves
- Norgren Pneumatics electro-vales
- Tank control and level monitoring
- Automated chemical addition
- PLC/HMI program

\$12,000.00



Basic without tank

- Sanitary centrifugal pump self priming 3 HP
- Sanitary pressure gauge
- Sanitary tri-clamp thermometer bimetallic
- Sanitary four position valves
- Side entry sanitary strainer
- Stainless steel 304 frame and piping
- Stainless steel caster
- 24x24x8 Fiberglass Electric Enclosure

- Optional heater
- Electric heater 12,000 wats
- Steam injection inline heater
- Prices:

Basic + electric heater	\$12,200.00
Basic + steam heater	\$10,200.00

Monitoring and data recorder

Temperature monitoring	\$500.00
Chemical concentration monitoring	\$3,300.00
Flow monitoring	\$2,250.00
Data recording	\$4,000.00

Automatic control PLC/HMI

NA



DATA LOGGER



conductivity meter