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	Project	TFX - Plant P&ID
	Drawn: MH	TFx (Centralized Vacuum)
	Date: 2019/09/06	
	Issue: 11	Proj No: 012-00-00 Sheet: 1 of 1 Rev: E

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Requirements per Machine

Flow Rate (Maximum)

- 16,500 liter/hr
- 30% formed solid contents
- Max Pulp Supply: 23 040 l/h
- @ 0.35% consistency

Power Supply (Installed Load)

- 480V @ 60Hz
- 300kW installed
- 400A installed
- 3 Phase, 3 wire, solidly grounded

Hot Water

- 45 degrees C
- 3000 l/h maximum
- 250 l/h steady state average

Compressed Air Supply

- 7 Bar dry compressed air
- 144m³/h (85 CFM) free air

Vacuum Supply

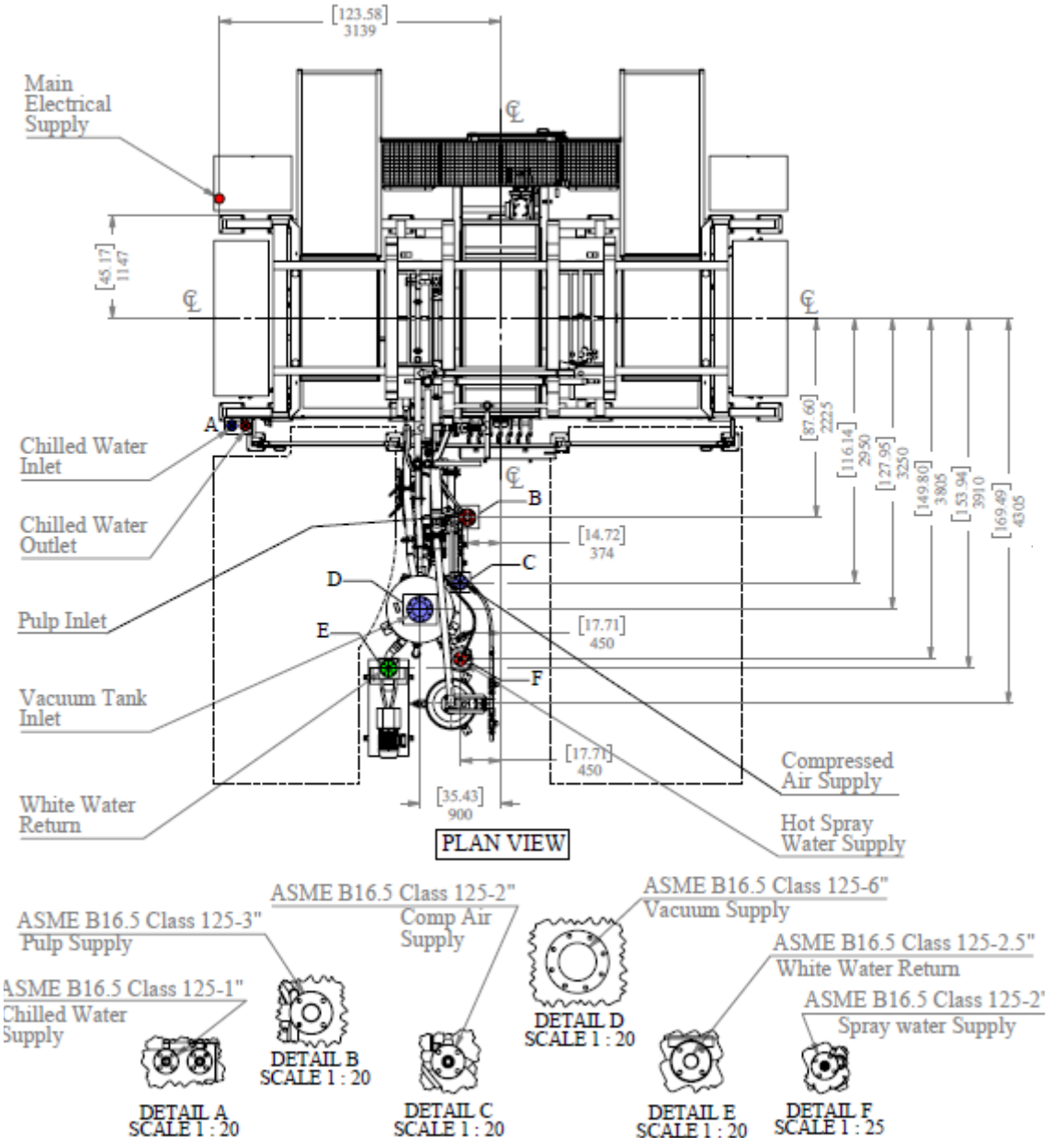
- Nominal vacuum level : -40 to -60kPa
- New pumps typically deliver: -60 to -80kPa
- Nominal vacuum flow: 1100acfm

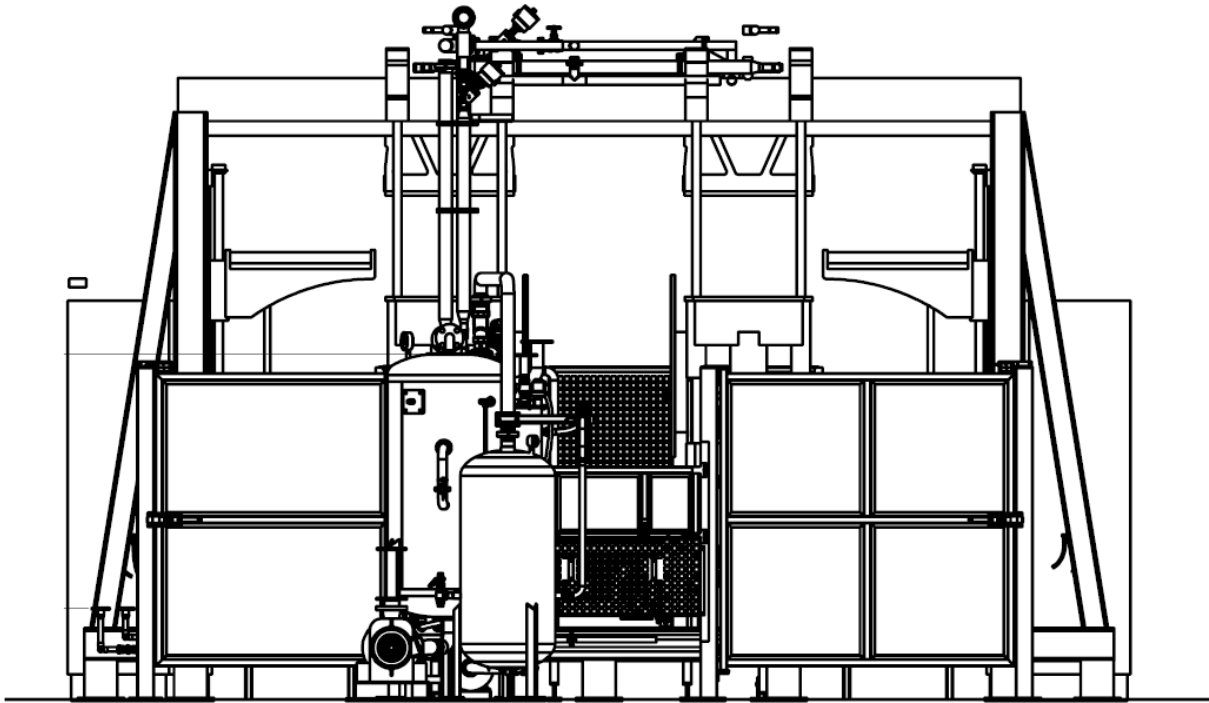
Cooling Water Supply

(Electrical Panel Coolers, Hydraulic Heat Exchangers)

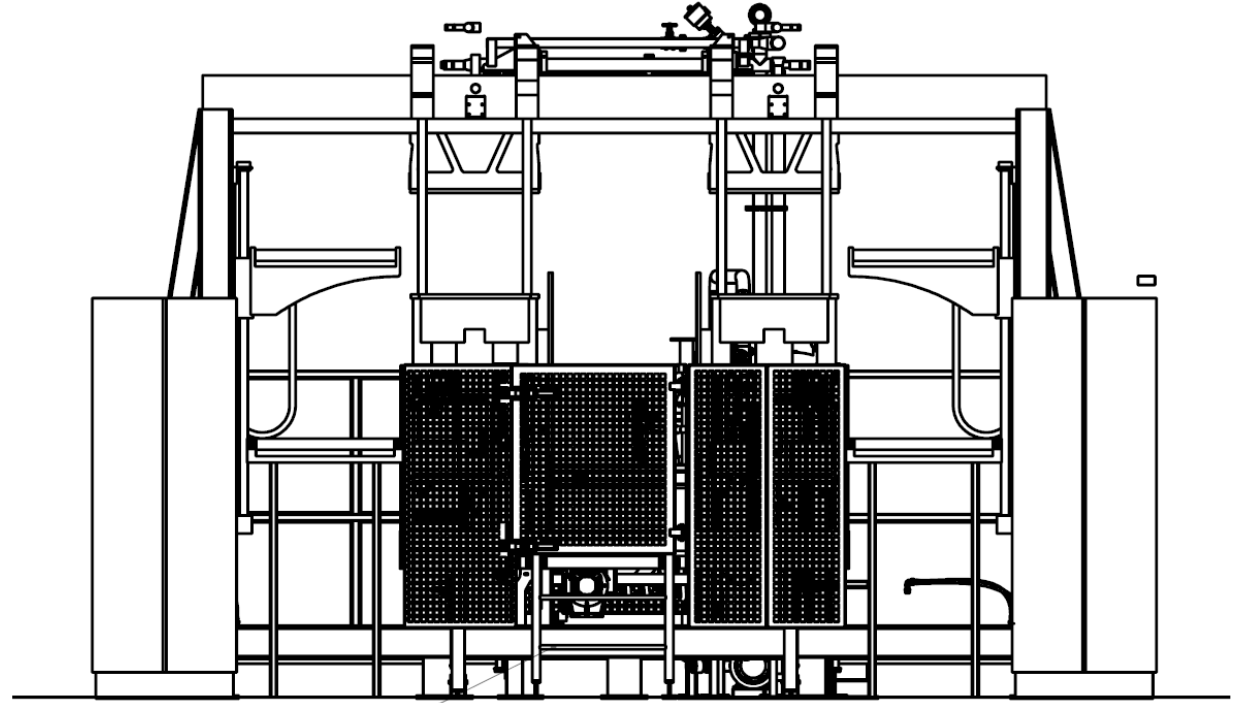
- Heat load 7.4kW
- Flow rate: TBD
- Inlet temp: 7 to 25 degrees C

NOTE: Connections to be flanged as per ASME B16.5 or NPT threaded as per ASME B1.20.1

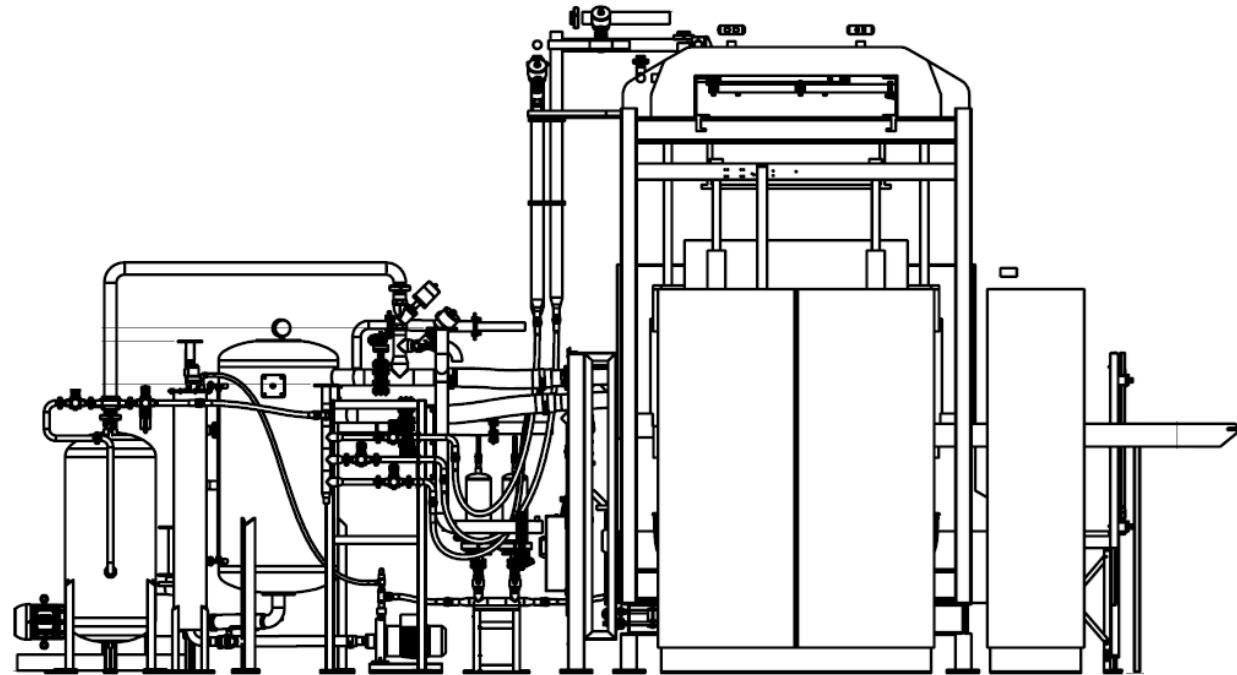
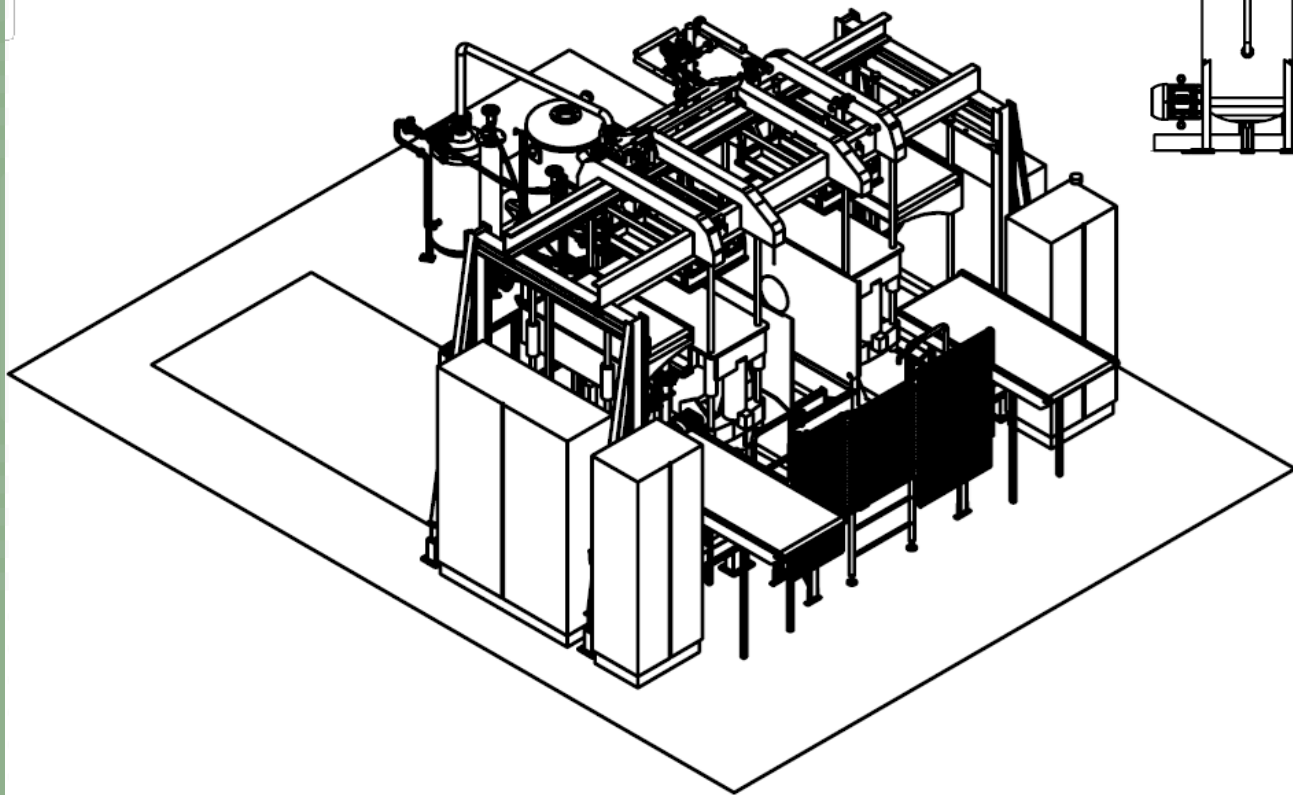




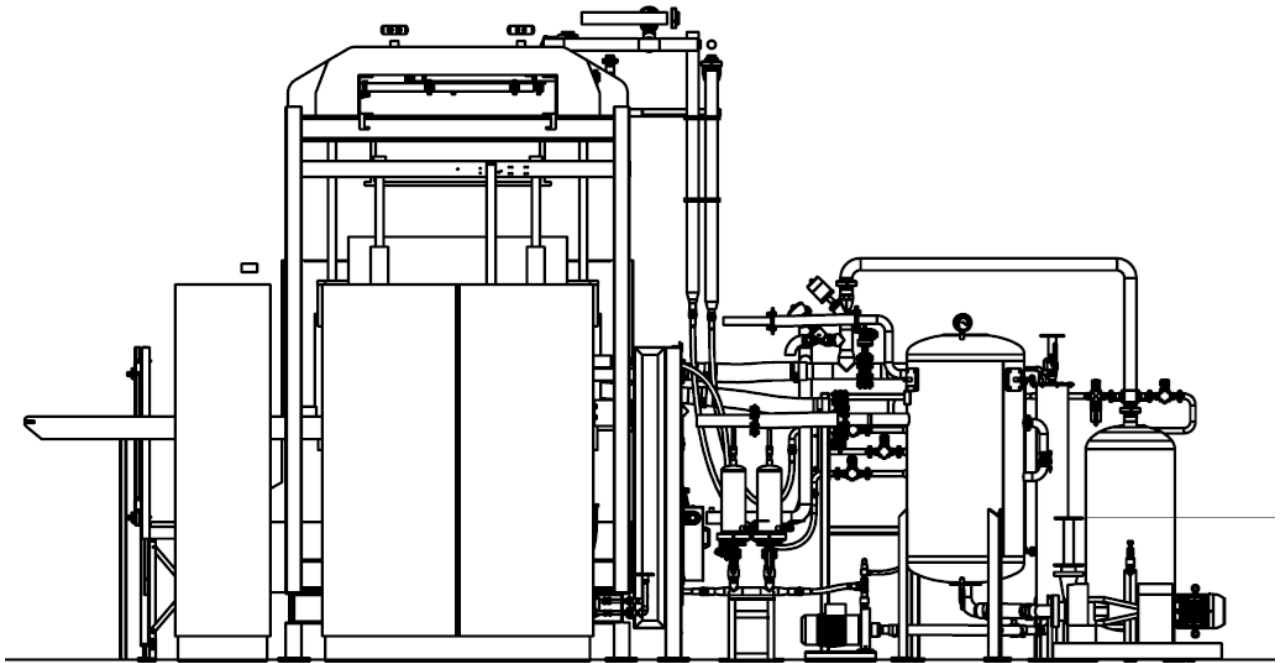
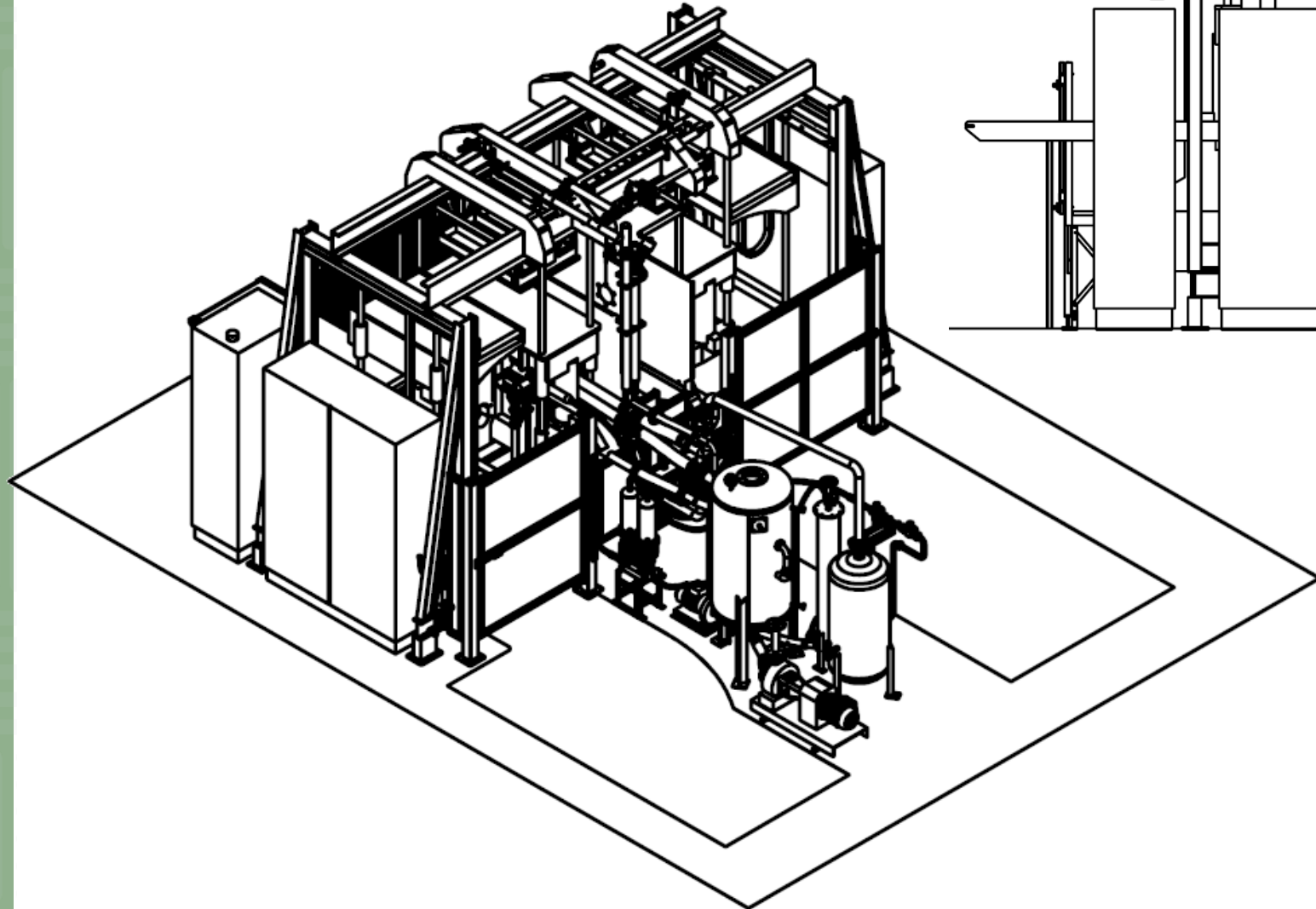
REAR ELEVATION



FRONT ELEVATION

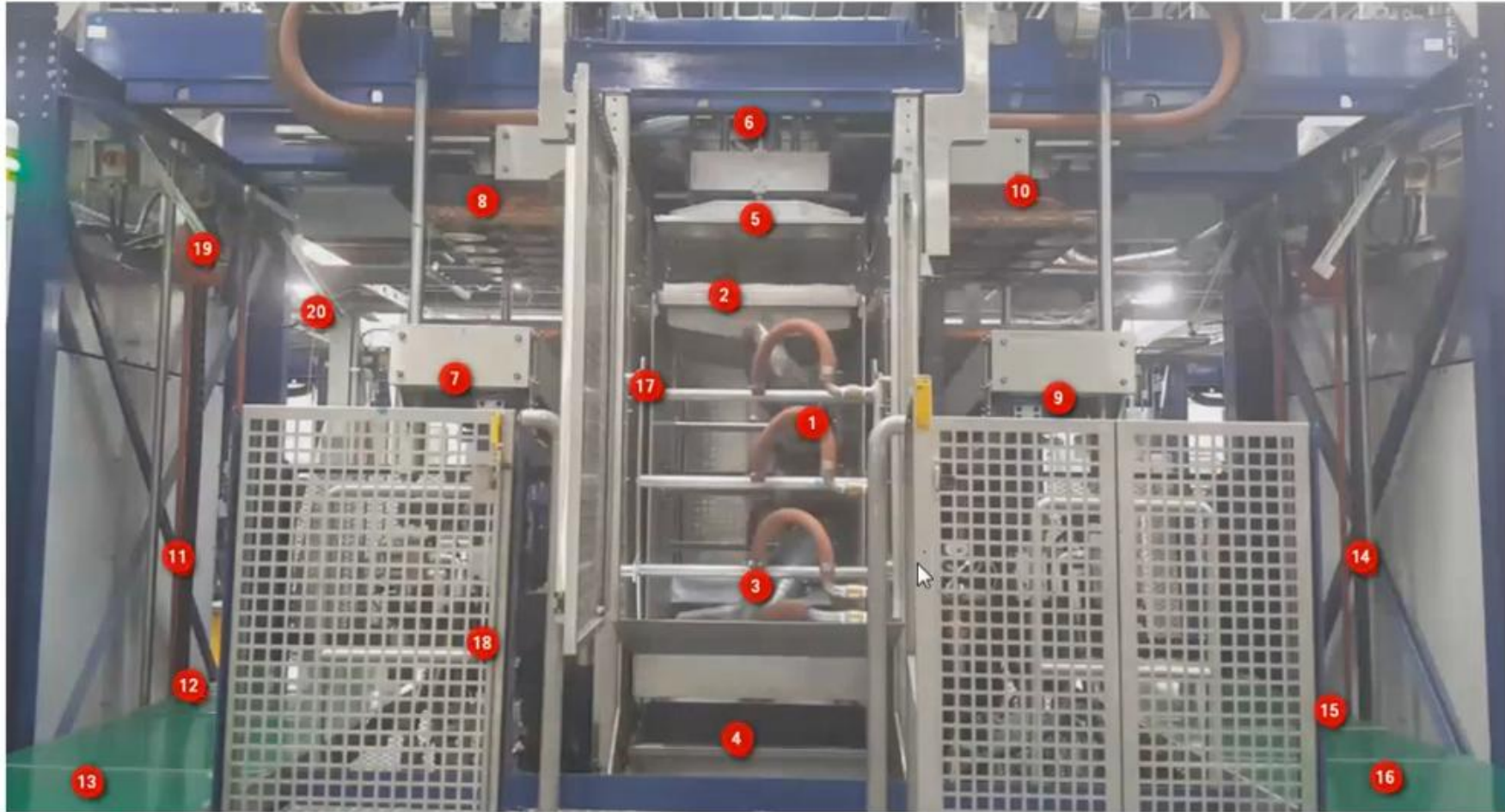


LEFT SIDE ELEVATION

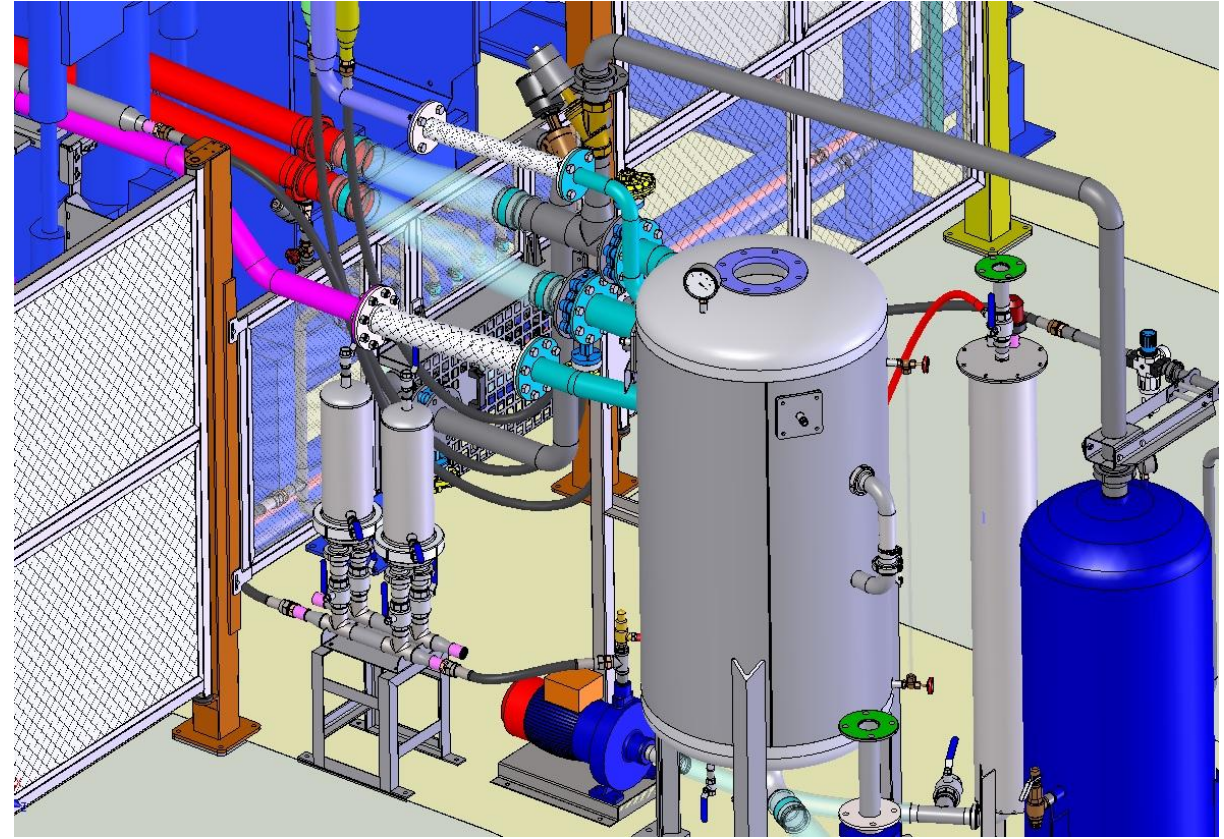
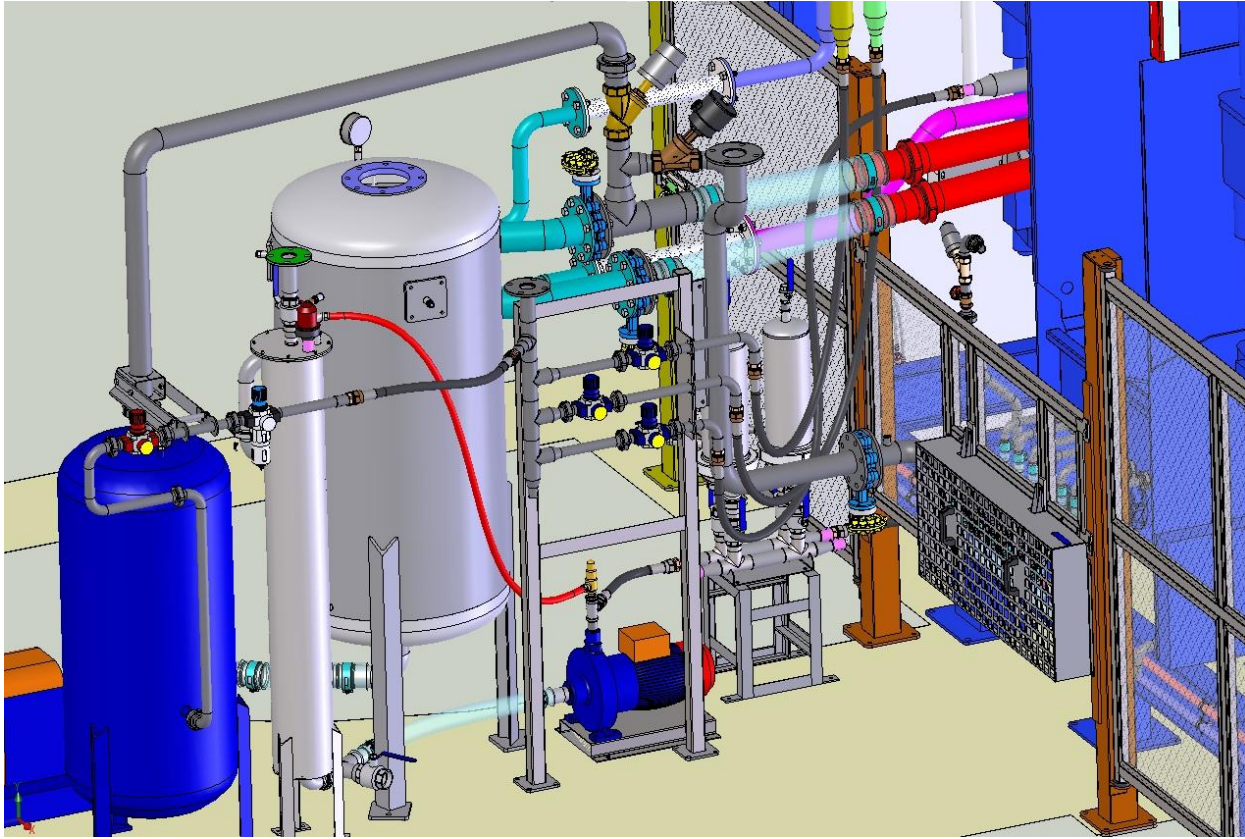


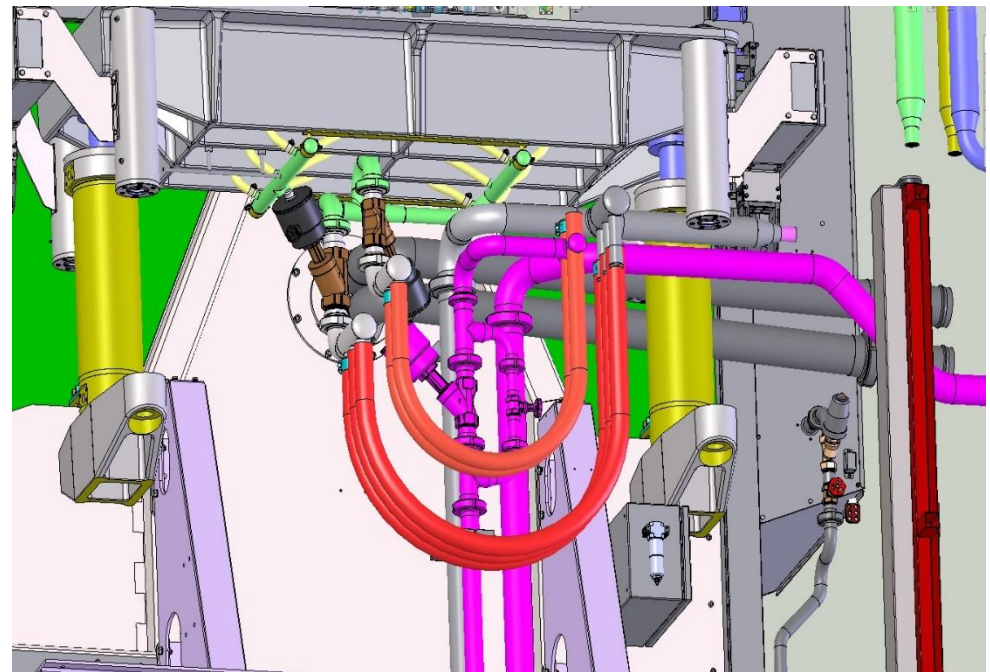
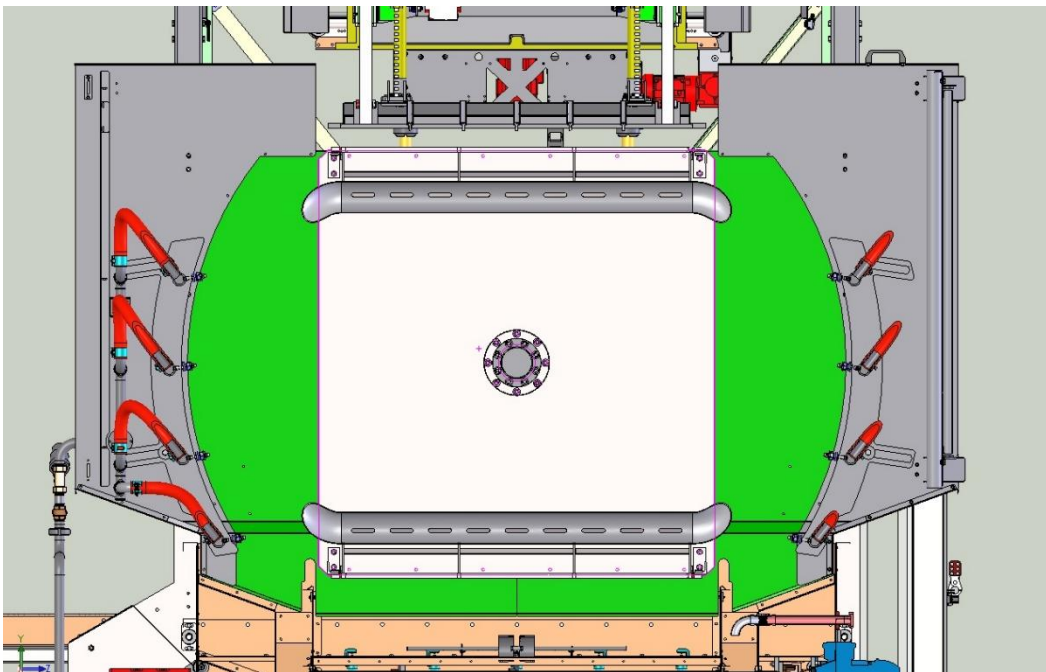
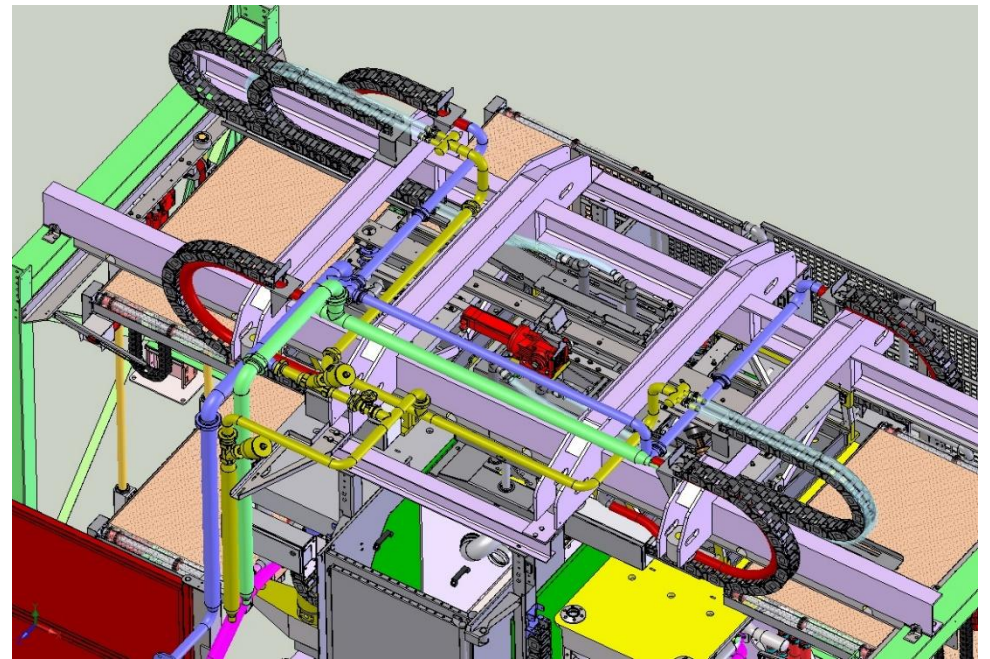
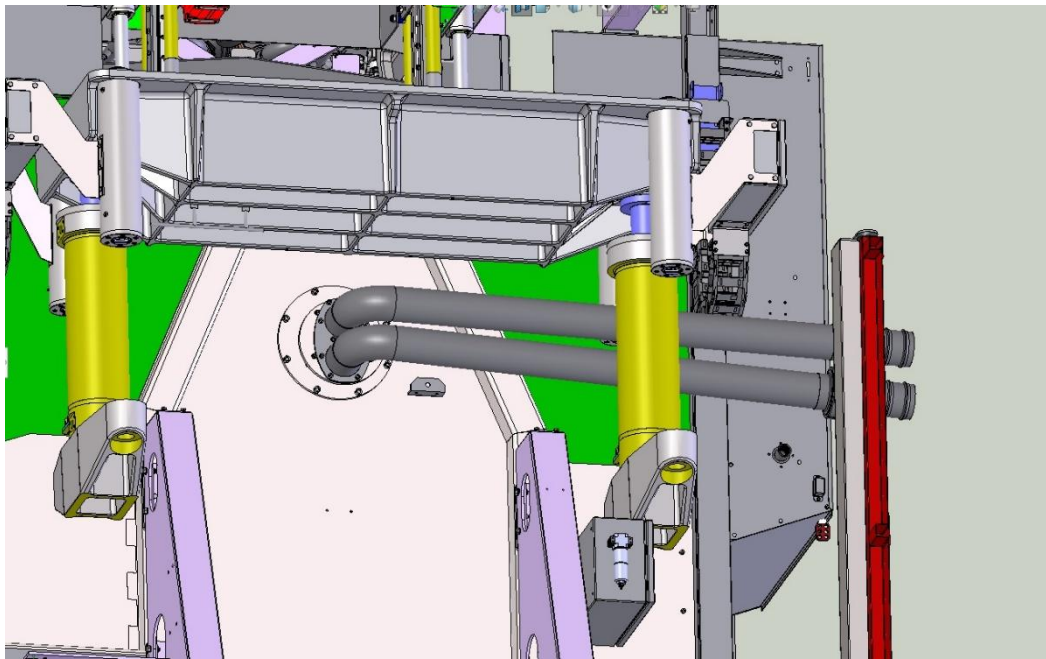
RIGHT SIDE ELEVATION

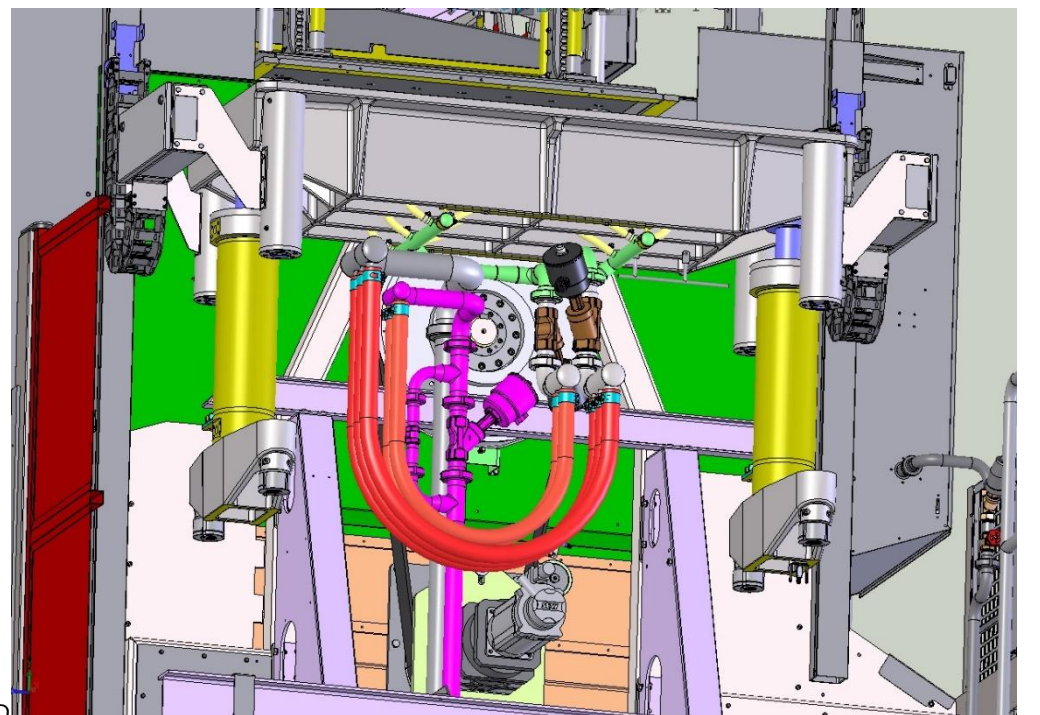
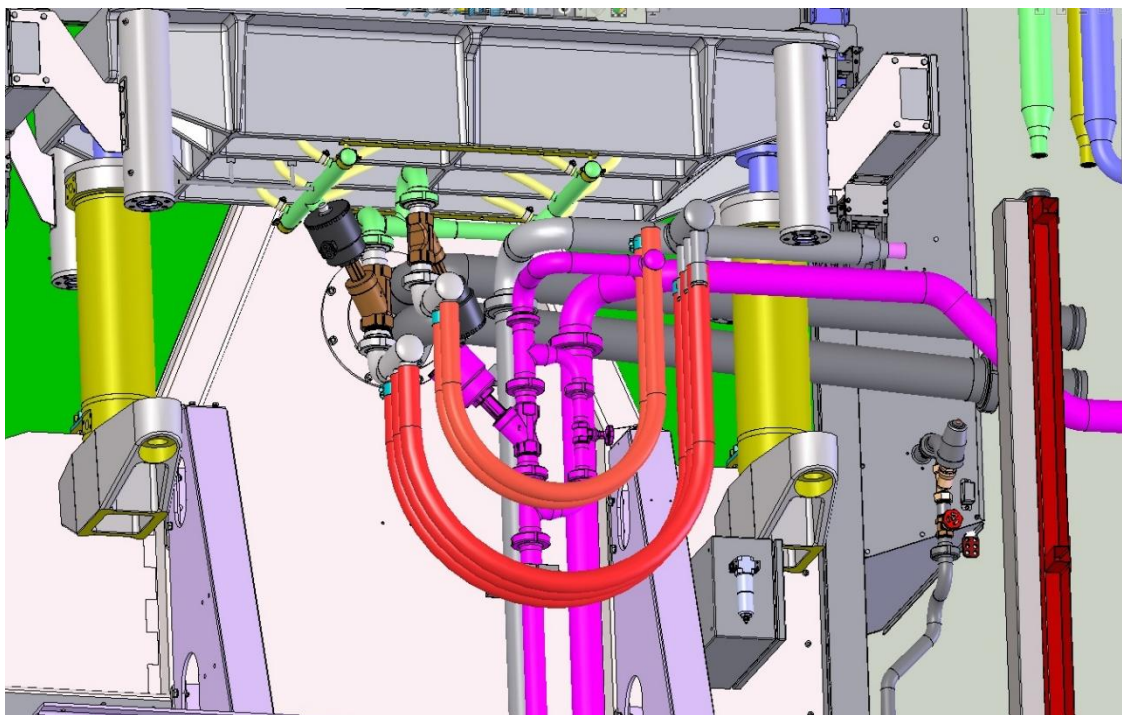
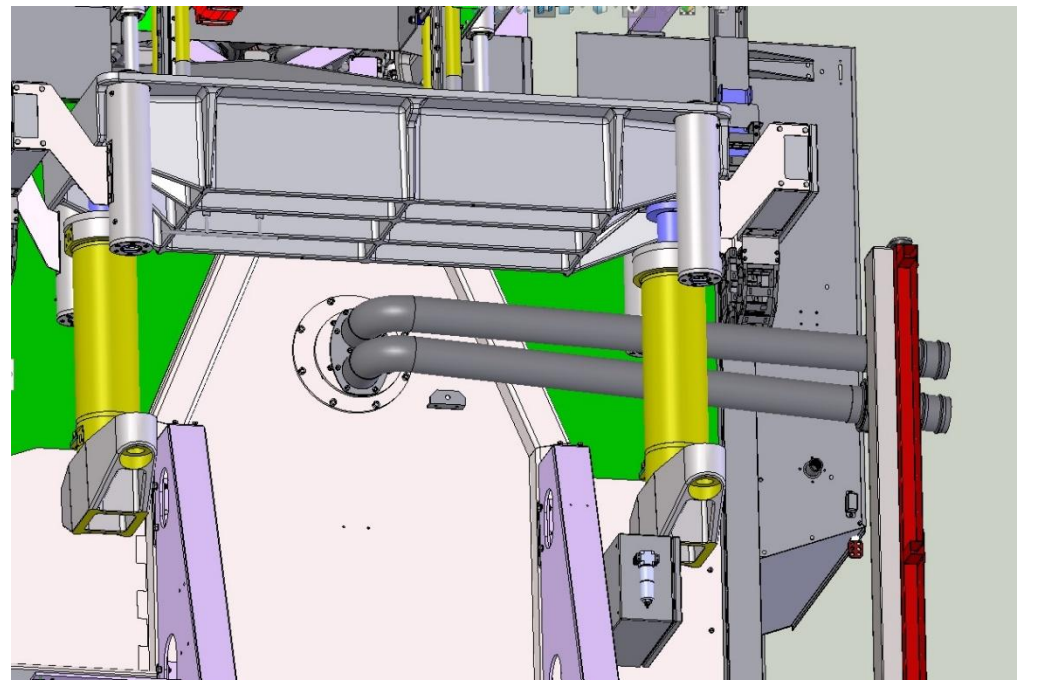
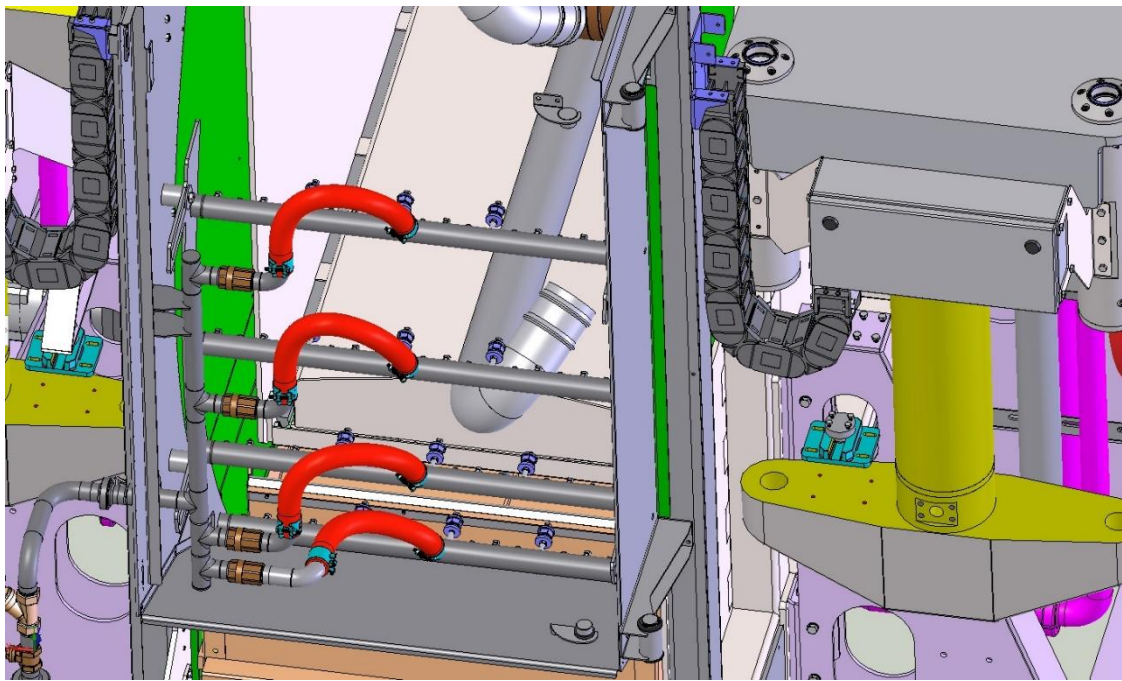
Components



- 1 Former
- 2 Former B
- 3 Former A
- 4 Tub or Vat
- 5 Transfer 1
- 6 Transfer Mech. 1
- 7 Bottom Press A
- 8 Top Press A
- 9 Bottom Press B
- 10 Top Press B
- 11 Stacker Lift A
- 12 Lift A Conveyor
- 13 Static Conveyor A
- 14 Stackrr Lift B
- 15 Lift Conveyor B
- 16 Static Conveyor B
- 17 Product Spray Bar
- 18 Walkway
- 19 Product Sensor Reflector
- 20 Product Present Sensor



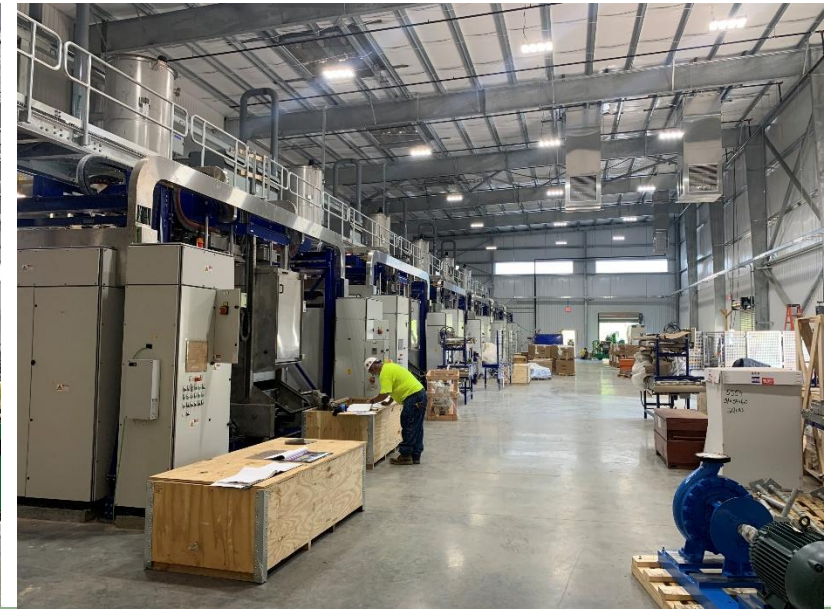




Construction & Equipment Staging (2020-Q2)





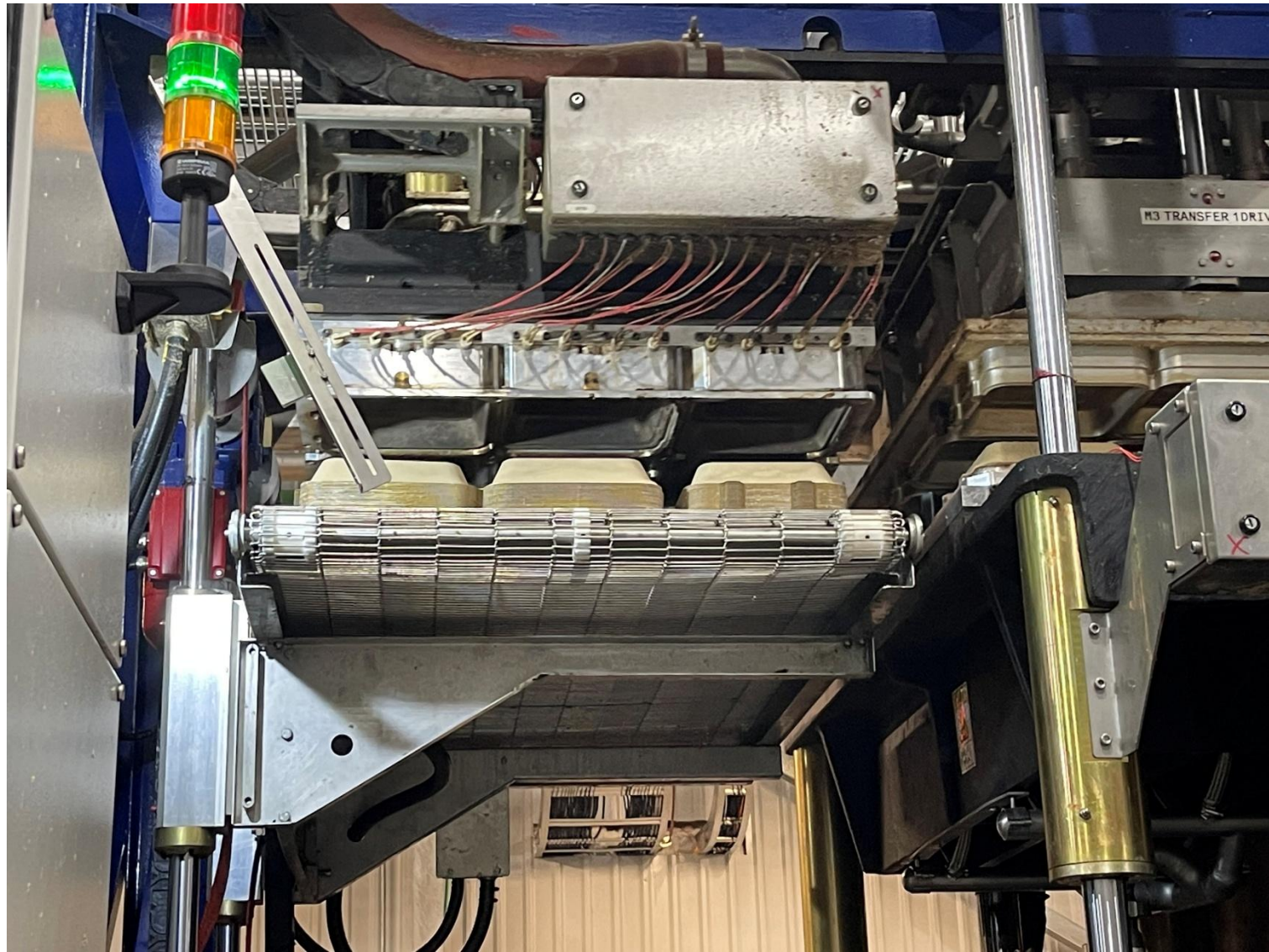


TFX-1 First Dry Run.MOV
9/22/2020









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Tooling

Tool	Cavities/ Platen	Pieces/ Machine	g/piece (@design)	# of Tool Sets
9" Round Plate	15	30	14	3
9"x9" Clamshell	7	14	44	1.5
9"x6" Clamshell	10	20	32	1
12 oz Round Bowl	28	56	9	1

- 4 different tools. All are complete sets except the 9"x9" clamshells (one partial set missing formers).
- All tools are aluminum.
- Tooling is for "generic" foodservice products; SPM designed the tooling; no distinguishing markings.
- Original 6 tools were received and installed between September 2020 and July 2021; initial quality issues with several tooling sets, multiple rounds of rework
- Purchased 1 additional tool in 2024: 9" plate
- Ran tooling 2021-Q1 through 2023-Q3



- The SPM machines are in a separate enclosed room, about 6,000 sq. ft., highlighted yellow here.
- This room can be segregated from the rest of thermoforming, allowing uninstalation and removal without interrupting operations.
- There's a high bay door at the North end of the SPM room with a concrete pad poured to the door. Should allow easy removal and loading.
- As seen in the DropBox photos, stacking tables at the front of the machines have been removed to make space for QA Hold product. Stacking tables are all lined up at the North end of TFX #6.



Bay Door for Equipment Removal

SPM TFX#: 654321

Photos from the Mezzanine above the 6 TFX machines



Partially Disassembled Machine #6, Missing Components







