



Phoenix Equipment Corporation

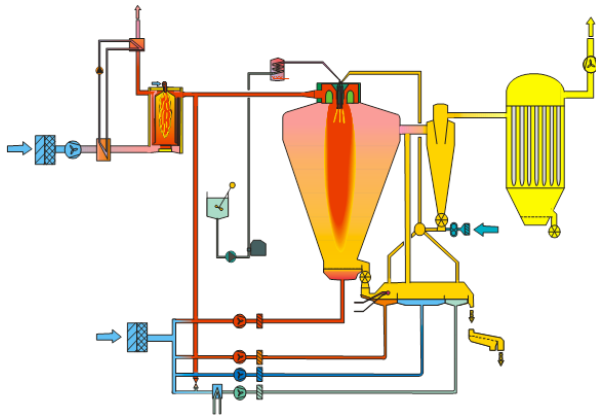
Dairy Dryer

Pre-built Triple-A 140 Dryer, for Infant Formula and Whole Milk powders for sale.

Anhydro Triple-A Dryer, Ready for Installation

Background:

- ❑ Anhydro Triple-A Dryer available for installation.
- ❑ As new - has never been installed.
- ❑ Designed for dairy applications, Whole and Skim milk as well as infant formula products. The Dryer can be used for other protein applications.
- ❑ Benefits: Low price, high quality powder, fast delivery.



Dryer Capacities

Feeds:		Whole Milk	Inf. Formula	Inf. formula***
Feed rate:	kg/h	15,474*	10,636	12,000
Total solids in feed	%	49	55	58
Feed temperature	°C	75**	60**	75**
Fat in solids	%	26-28	26	26
Total water evaporation	kg/h	7,673	4,599	4,861
Powder production	kg/h	7,800	6,037	7,138
Powder temp. from EFB	°C	30	25	25
Moisture in Powder	%	2.8	3.1	2.5

*Homogenizer nominal design 10,000 l/h (Dryer capable of up to 20 hours with feed system modifications).

**Feed Preheater is not in scope.

*** With Installation of a dehumidifier for constant air humidity of 2 g/kg air.

The Dryer can be reconfigured to produce up to 10 ton /hr of Milk Powder, engineering details are available on request.

Example of Dryer Capacities

Inlet air temperatures		Whole Milk	Inf.Formula	Inf. Formula
Drying Chamber	°C	195	175	190
Integrated Fluid Bed	°C	80	60	70
Fluid Bed Dryer, sec.1	°C	87	26	26
Fluid Bed Cooler, sec.2	°C	28	21	25
Fluid Bed Cooler, sec.3	°C	19	19	20
Fluid Bed Cooler, sec.4	°C	17	16	20

Basis for Calculation

Basis for calculation:

- Ambient Air Temperature °C 20
- Ambient Moisture g/kg 12
- Ambient Humidity % 80
- Altitude m 50
- Steam Pressure at Air Heater bar (g) 17

Dryer Equipment

1.1	Feed and Atomizer System
1.1.1	2 Feed Tanks
1.1.2	1 Balance Tank
1.1.3	1 CIP Return Pump
1.1.4	1 Supply Pump
1.1.5	1 Duplex Filter
1.1.6	1 Keofitt Sample Valve
1.1.7	1 Homogenizer/High-Pressure Feed Pump (Rannie)
1.1.8	1 High-Pressure Feed Line
1.1.9	1 Nozzle Atomizer (9 nozzles+ 9 spare)
1.1.10	1 Atomizer Stand
1.1.11	1 Tank with CIP Stand
1.1.12	1 Atomizer Hoist
1.2	Main Air System
1.2.1	1 Air Intake Filter
1.2.2	1 Fine Air Filter
1.2.3	1 Delivery Fan
1.2.5	1 Fine Air Filter (HEPA Filter)
1.2.6	1 Air Duct
1.2.7	1 Steam Air Heater, designed for temperatures up to 195° C
1.2.8	1 Spare Heater Section
1.2.9	Hot Air Duct
1.3	Drying Chamber System including Integrated Fluid Bed
1.3.1	1 Air Distributor
1.3.2	1 Drying Chamber, 15 m diameter
1.3.3	Pneumatic Hammers, 21 pcs.
1.3.4	1 Integrated Fluid Bed Dryer
1.3.5	Powder Duct
1.3.6	1 Powder Valve , Ø300 mm
1.3.7	2 Air Outlet Ducts
1.4	Cyclone System
1.4.1	Cyclones- 4 pcs Ø3162 mm
1.4.2	4 Blow Through Rotary Valves, Coperion Ø300 mm

1.4.3
1.5
1.5.1
1.5.2
1.5.3
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1.5.4.1
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1.5.6

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1.8.4

2 Air Ducts
Bag Filter System
2 Bag Filters (each after 2 cyclones), Simatek filters
1 Accessories for CIP-Type Filters
1 Separated Filter Powder Transport
1 High Pressure Blower Assembly
1 Absolute Air Filter
2 Blow Through Rotary Valves, Ø300 mm Coperion
Filter Powder Conveying Line

Secondary Air Supply System
Air System for Integrated Fluid Bed
1 Air Duct
1 Delivery Fan
1 Air Conditioning Unit (Ice water)
1 Absolute Air Filter
1 Air Duct
Air System for External Fluid Bed
1 Air Conditioning Unit, Common for the 4 Sections (ice water)
Air Ducts
Hot Air Manifold with Dampers
4 Delivery Fans
4 Absolute Air Filters
4 Air Ducts

Fluid Bed System
1 Fluid Bed (To be supplied not included.) *See notes
1 Air Outlet Duct
Cyclone, / 1 pc-Ø2500 mm
1 Powder Valve Ø300 mm
Lecithination System

Powder Treatment System
1 Vibrating Powder Sifter, Scanvibro
Magnetic Collector
Butterfly Valve
Powder Sampler

Dryer Equipment (cont.)

1.9

- 1.9.1
- 1.9.1.1
- 1.9.2
- 1.9.3
- 1.9.4

2 Fines Return Systems

- 2 High Pressure Blower Assemblies, make Busch
- 2 Absolute Air Filters, One for Each Line
- Fines Conveying Lines
- 2 Line Diverters
- 1 Fines Distributor

1.10

- 1.10.1
- 1.10.2
- 1.10.3
- 1.10.5

Exhaust Air System

- 2 Air Ducts
- 2 Exhaust Fans
- 2 Air Silencers on the Outlet Air
- 2 Caps for Outlet Air Ducts

1.11

- 1.11.1
- 1.11.2
- 1.11.3

Heat Recovery System

- 2 Heat Exchangers, make Brunner
- 1 Heat Exchanger, make Brunner
- 1 Liquid Circulation System

1.12

- 1.12.1
- 1.12.2
- 1.12.3
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- 1.12.5
- 1.12.6
- 1.12.7
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- 1.12.10
- 1.12.11
- 1.12.13
- 1.12.14
- 1.12.15
- 1.12.16
- 1.12.17

Cleaning in Place (CIP) System

- 1 Tank for Water (5m3)
- 1 Tank for Collected Water (15 m3)
- 1 Tank for Caustic Solution (15 m3)
- 1 Tank for Acid Solution (15 m3)
- 1 Dosing System
- 2 Centrifugal Pumps
- 2 Tubular Heat Exchangers
- Piping System
- 1 Rotating Tank Cleaner
- Spray Balls
- Air Supply System
- Piping System
- 1 Liquid Return Tank
- 1 Centrifugal Pump
- 2 CIP Exhaust Fans
- 2 CIP Exhaust Air Ducts

1.12.18

1.12.19

1.13

- 1.13.1
- 1.13.2
- 1.13.3

4 CIP Shut-Offs

2 Caps for Outlet Air Ducts

Security System

- Pressure Rupture Discs (DustEx)
- Fire Fighting System
- CO Detection System (Hobré Instruments)

Parts needed to complete the Dryer

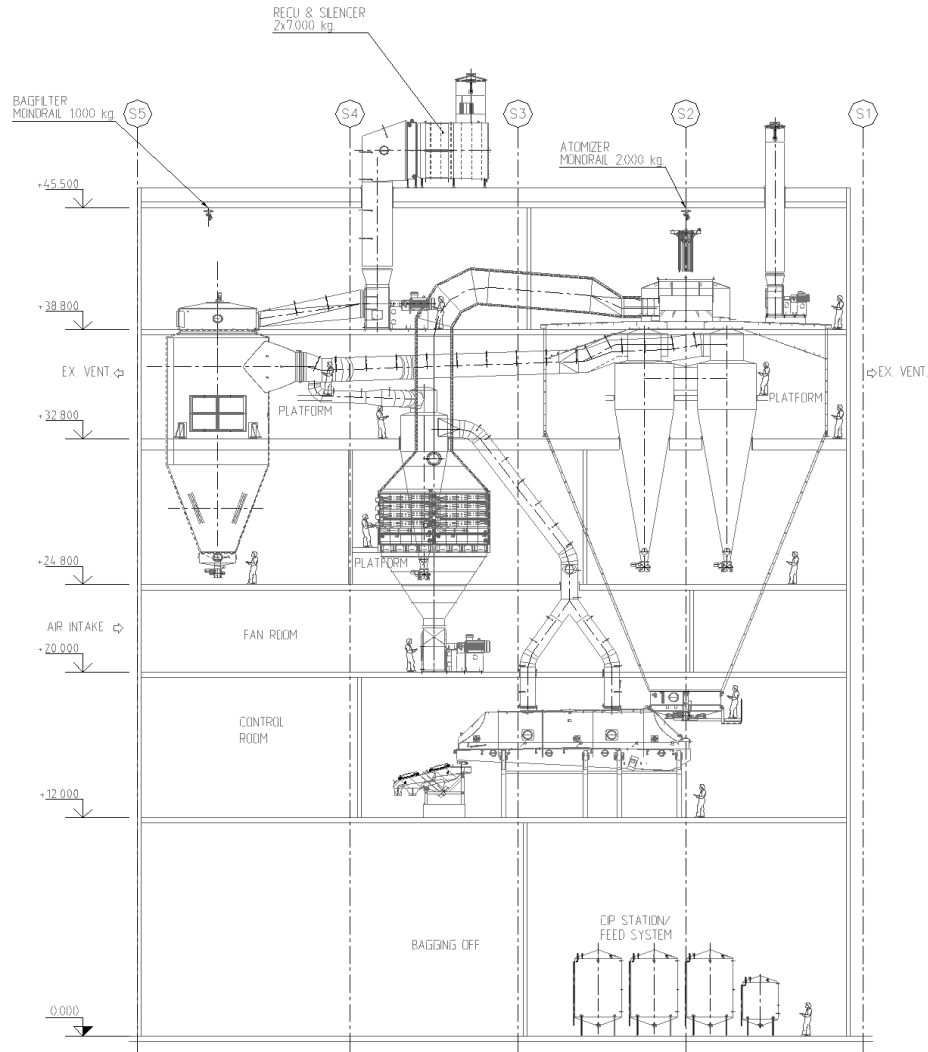
Number	Content	Brand
64	Attenuator elements 1500x1500x300	Trox
2	CIP tubular heat e)(changers 100+130 m3/h, delta T=40 oC	Alflow
2	Fines return blower	Busch
67	HEPA filters H13 - Sofilair HT120oC (61xl module + 6x½ module)	Camfill
2	CIP pumps W+II0/130, 45 kW, ISO SMS, im pellar 250/265	APV
1	CIP turbine Tof tejorg TZ79 4xI0, 2"BSP, 20 m hose	Alfa laval
11	Diff . Pressure gauge Magnehelic 2000 -100, range 0-100 mmWG	Dwyer
3	CIP liquid filters, 2xDN125+1xDN50, 1 mm	AH
		Gmbh
1	Bag filter steam air heater, 5.000 kg/h, 3 to 80 oC	Brunner
1	IFB 03750, AISI304	Anhydro
1	EFB no.5 4, 4 equal sections	Anhydro
8	Rotary valves, magnetic SS, 5 x BTV 11)300, 1 x RV 0250	Coperion
1	Co detection, Nicosys 4000, 2 probes, permapure dryer	Hobre

Equipment in Storage

The majority of the Equipment is in Sea Worthy packaging ready for shipment to Final Destination.

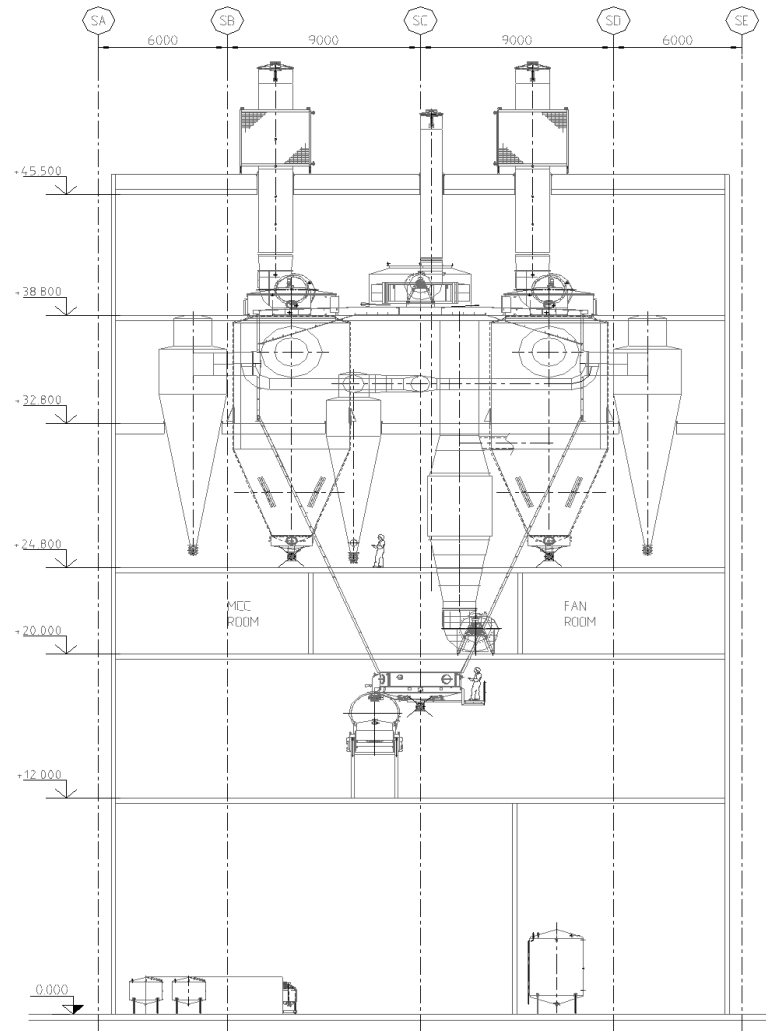


Originally Planned Layout



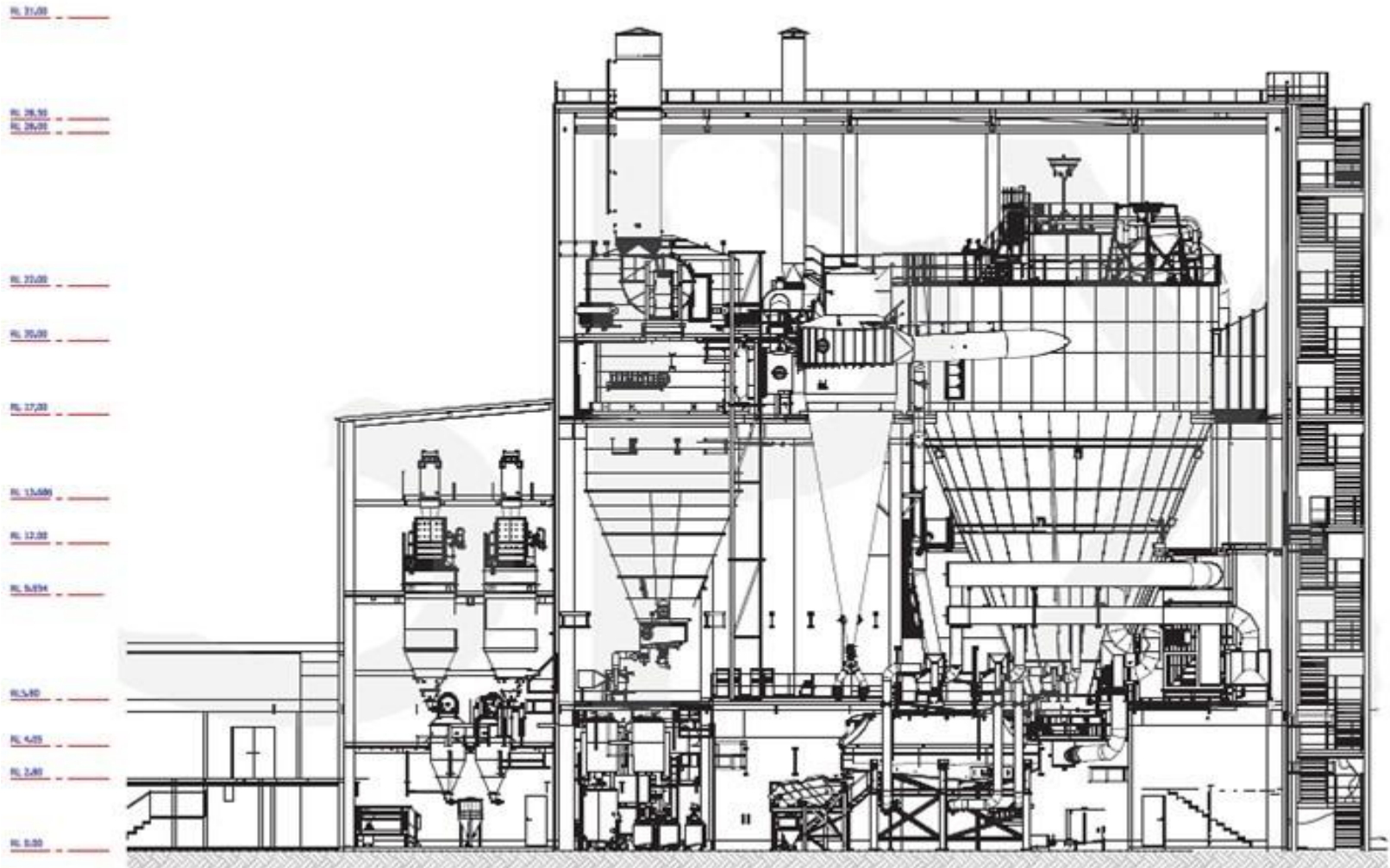
SECTION A-A

Originally Planned Layout



SECTION B-B

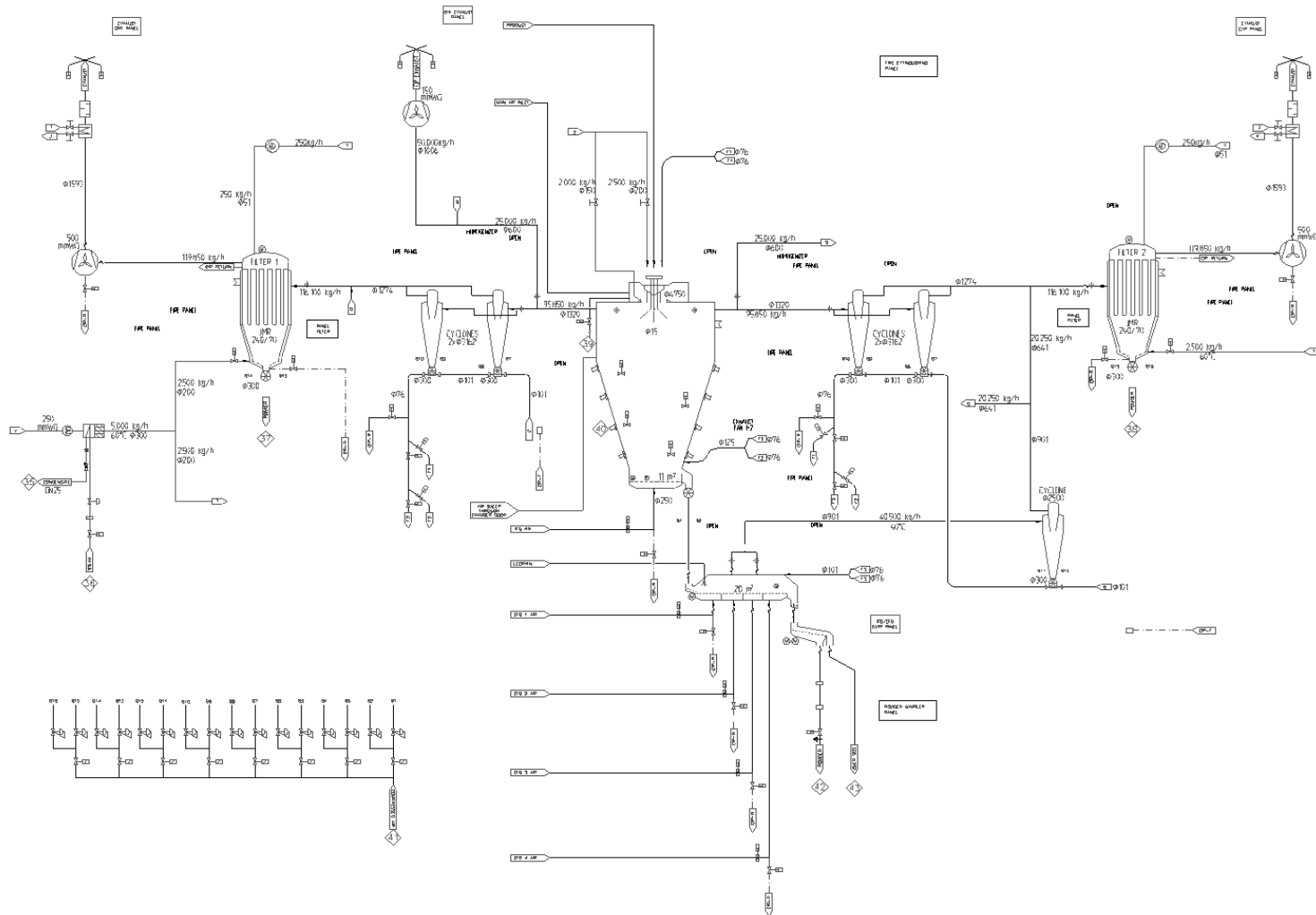
Alternative Layout Indicative Only



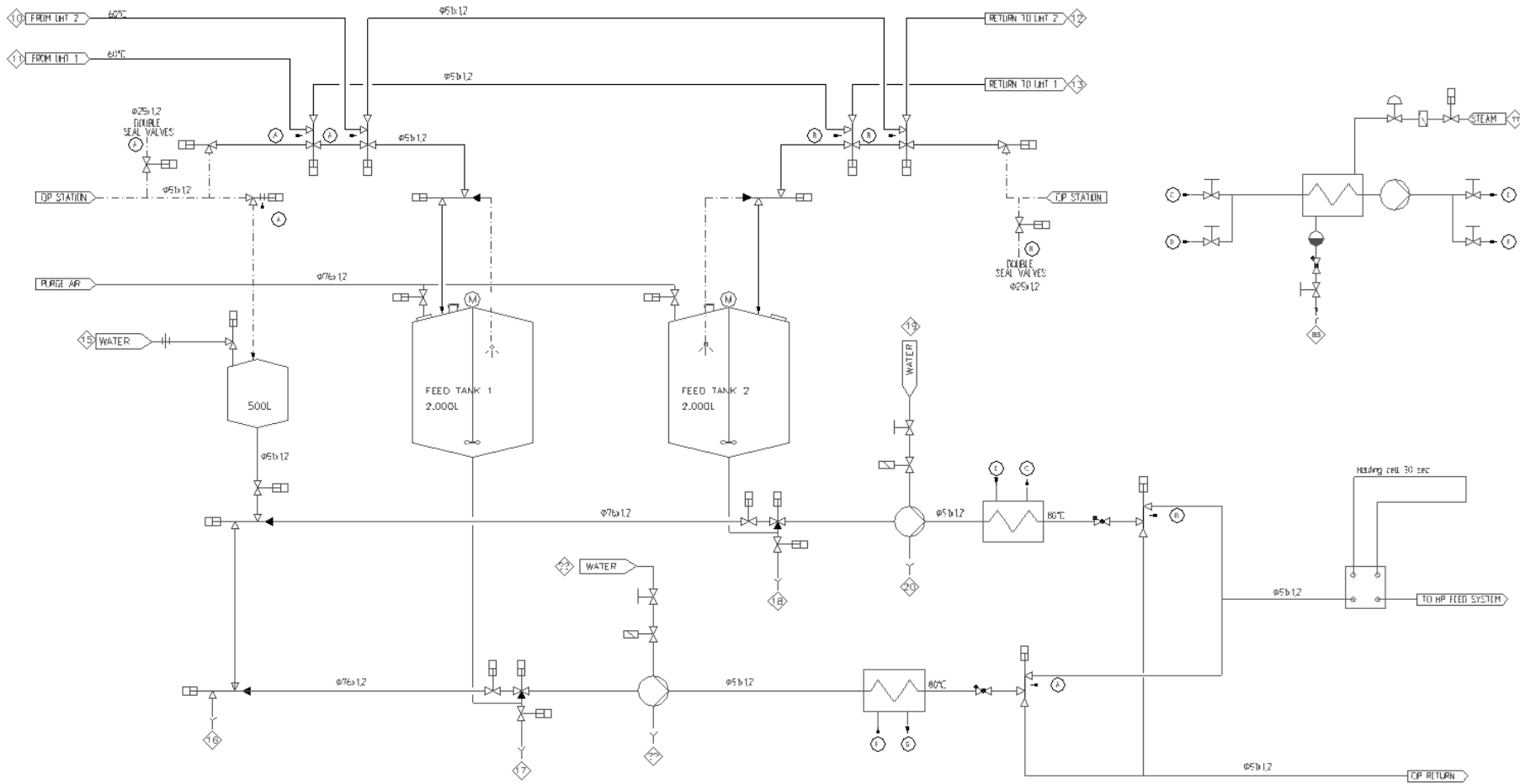
Similar SPX 3 A Dryer Installed



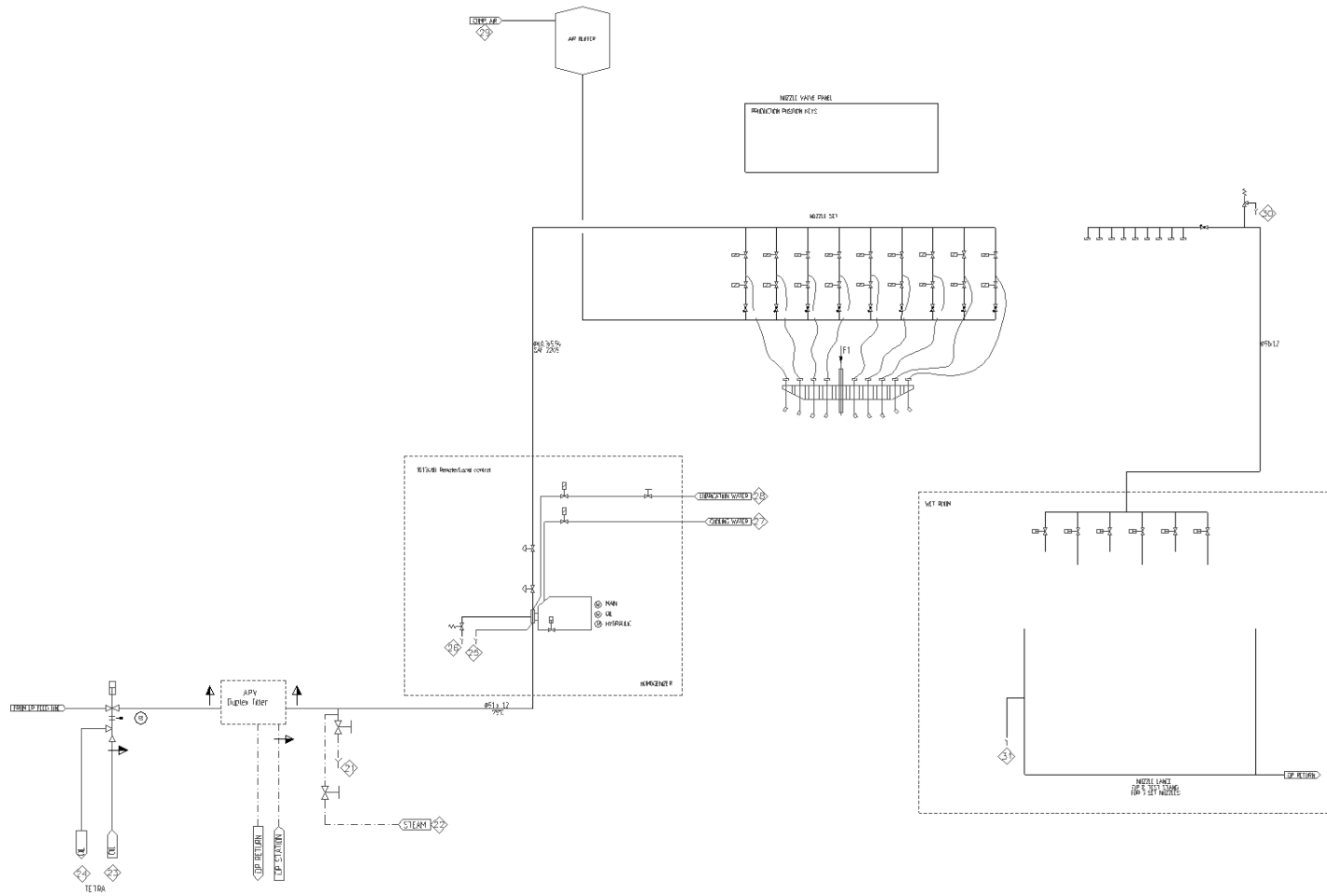
Flow Diagram



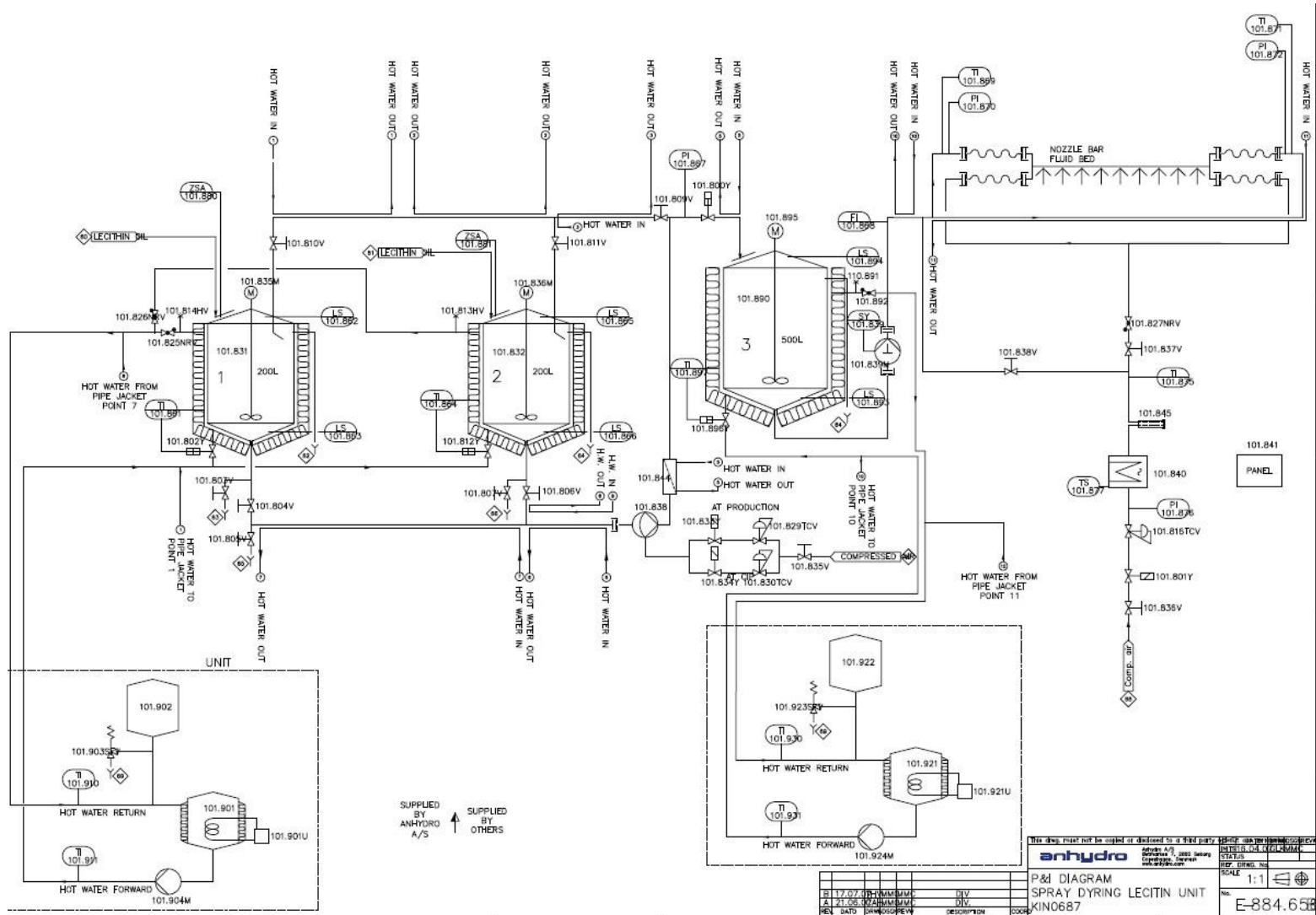
Feed System



Feed System



Lecithination unit



Appendix 1

We can recommend a global engineering company prepared to undertake the erection and commissioning of this Dryer and supply additional equipment as required.

Layout drawings and hole and load plan are available on request.

Contact us for further details.