



ANIMAL WASTE RENDERING PLANT

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### MEET SENSITAR---FROM WASTE TO VALUE

Sensitar has been helping the world turn organic waste into valuable proteins and other products we all depend on. It is simple - Instead of simply throwing out leftovers from meat, poultry and fish production, break this waste down into its constituent parts – including proteins, minerals, ingredients and fuels we can use.

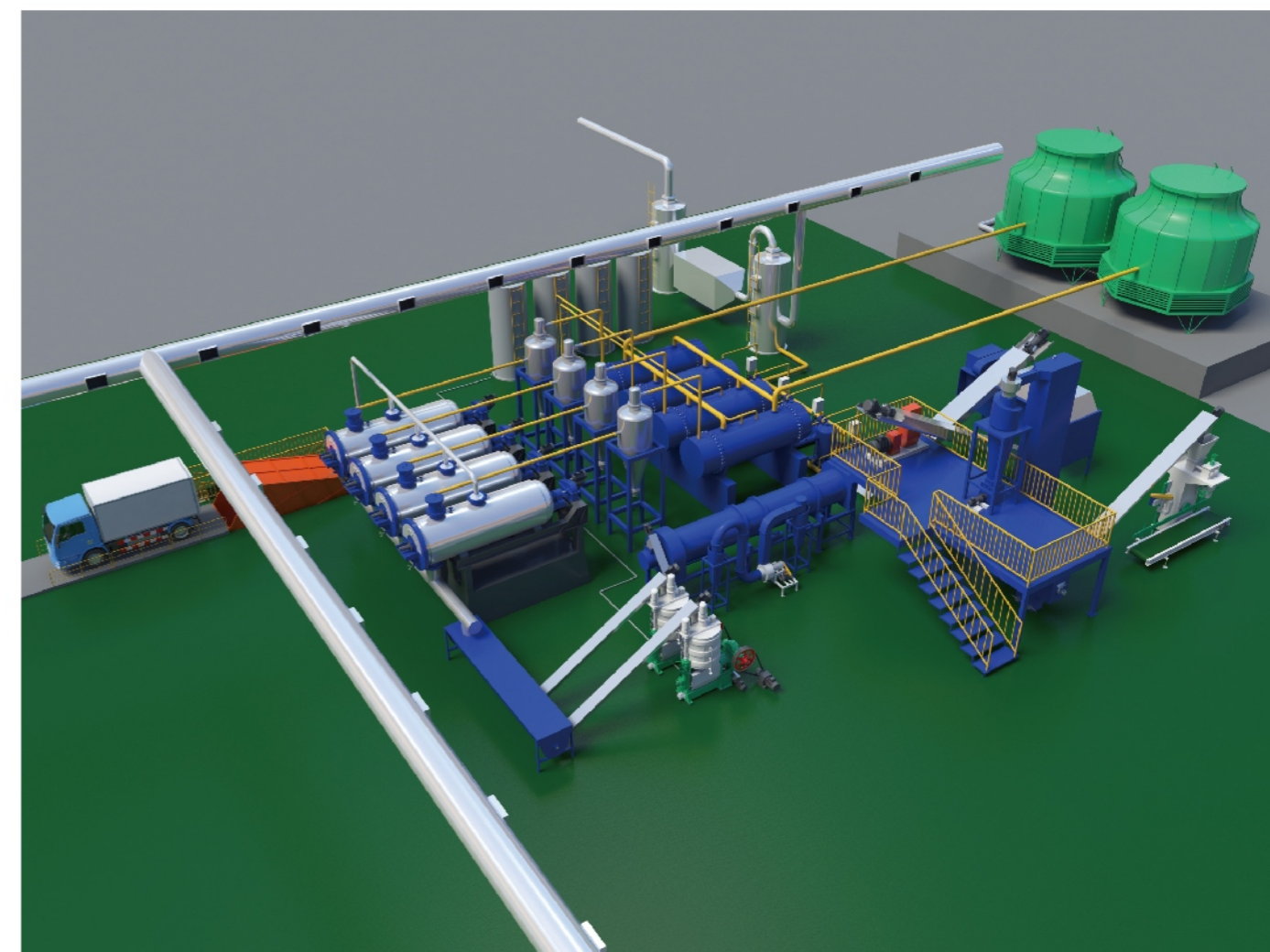
### INDUSTRIES SERVE

Sensitar provides solution design, equipment manufacturing and service process systems for many of today's important recycling and renewable energy industries, including:

- 1. Animal Waste Rendering
- 2. Meat & Bone Meal processing
- 3. Oil & Grease Processing
- 4. Fish Protein Meal Processing
- 5. Poultry Feather Meal Processing
- 6. Food Waste Processing

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(All the waste from slaughter, including blood, guts and feathers, can be converted into proteins, minerals, raw materials and fuel)



### To Replace The Traditional Treatment By Resources Utilization

#### Material processing flow:

Crushing - cooking and drying - oil degreasing - bone meal cooling - fine crushing - automatic packaging

#### Waste gas rocessing flow:

Exhaust gas condensation - spray washing - high efficiency filtration - high energy photon catalytic oxidation - standard emission

## Batch Cooker



Sensitar Batch cooker is a product that sterilizes, hydrolyzes and dries for a variety of animal and poultry as well as fish by-products. The Batch cooker is one of the most important components of a dry rendering plant and is available in 5 standard sizes to suit a variety of factory capabilities.

### Application:

1. Mixed meat offal and bones
2. Raw blood
3. Wet feathers
4. Mixed poultry offal
5. Dead pigs, cattle, sheep, etc

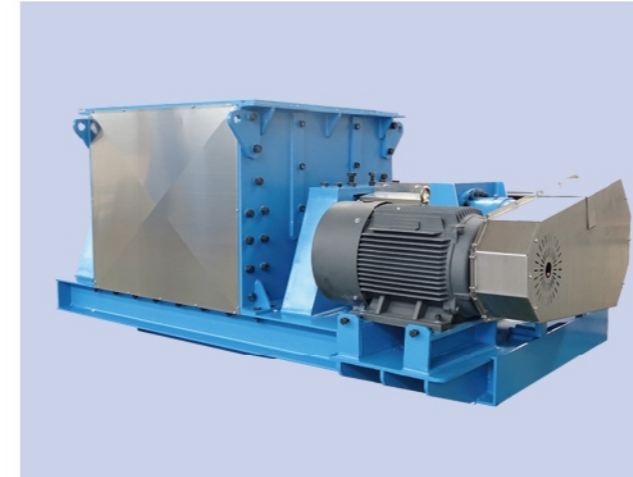


Type	Capacity(kg/batch)			
	Mixed meat offal, bone	Raw blood	Wet feathers	Mixed poultry offal
XBC5000	3000	2000	2700	3000
XBC6500	4000	2500	3500	4000
XBC8500	5000	3400	4600	5000
XBC10000	6000	4000	5400	6000
XBC16000	10000	7000	9000	10000



Technical specifications	Unite	Type				
		BC5000	BC6500	BC8500	BC10000	BC16000
Dimension A	mm	5450	7100	7425	8400	9000
B	mm	2070	2070	2305	2035	2500
C	mm	1600	1600	1775	1775	2100
Design pressure jacket and rotor	Bar	10	10	10	10	10
Design pressure cooker	Bar	5	5	5	5	5
Heating surface	m <sup>2</sup>	27	35	41	49	63
Power	kw	37	45	55	75	110
Shipping weight	kg	12000	13500	19000	22000	36000

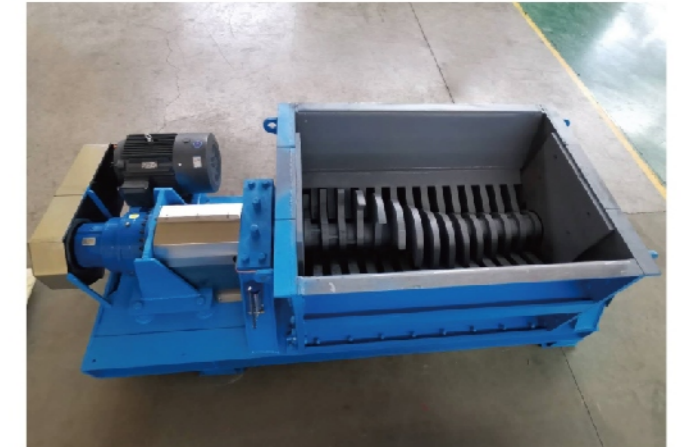
## Crusher



Sensitar Crusher is particularly rugged and hardwearing, designed for breaking down all types of offal and bones from meat and poultry slaughterhouses, so they can be used more effectively in rendering processes.

Crushers are used for the breaking down of input material into particles of less than 30 mm in size. They enable you to align overall efficiency requirements for your process, based on particle size.

The low-speed breaker shaft makes sure the unit can deal with any foreign objects in the input material. Single-shaft and twin-shaft configurations are available. You can select motor size and breaker shaft speed based on the amount of material you need to break down, and the output capacity you require. This helps keep operating costs down.



Type	Capacity(t/h)	Anvil Gap(mm)	Power/motor, up to(kw)	Weight(kg)
PB10/PBH10	15	30	22	3200
PBG15	25	40	45/22	4500
PB15	35	48	55	7300

## Pre-heater



Sensitar Pre-heater is ideal for rendering and fishmeal processing, with inputs of varying quality and composition, requiring minimal pre-cooking preparation. Customers can freely choose the type of equipment in the production range of 2-50t/h, and the steam supply regulator can easily handle even small volumes of steam when needed.

Type	Capacity(t/h)	Dimensions(mm)			Weight (metric ton)
		Length	Height	Width	
FC0605	2.6-3.5	3350	1050	1200	4
FC0806	6.4-8.0	8250	1850	1850	12
FC0808	8.8-11.0	10200	1850	1850	14
FC1108	12.8-16.0	10900	2350	2200	20
FC1110	16.0-20.0	12800	2350	2200	23
FC1112	20.0-25.0	14850	2350	2200	27
FC1310	20.0-25.0	13050	2450	2200	32
FC1312	24.0-30.0	15050	2450	2200	36
FC1314	28.0-35.0	17050	2450	2200	40
FC1612	30.4-38.0	15150	3450	2400	40
FC1614	35.2-44.0	17150	3450	2400	47
FC1616	40.0-50.0	19150	3450	2400	55

## Bin



No matter what kinds of meat, poultry or fish by-products you process, you will always need simple, rugged bins for moving, parking and storing everything from raw material and other inputs to your finished output.

Sensitar product programme for rendering comprises various types of bins. The size and design of the bins will depend on the amount of material, on the process in the subsequent plant, and on the kind of material to be handled. We supply all kinds of bins, from small charging/dosing bins(2-5m<sup>3</sup>) to large storage bins of approximately 150-200m<sup>3</sup>.



## Screw Conveyor



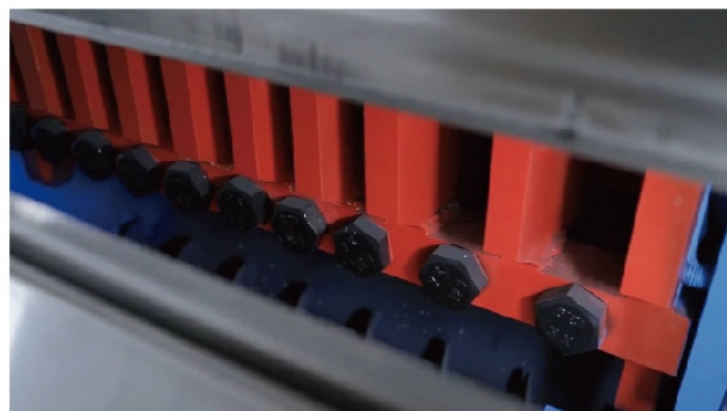
Screw conveyor adopts a multi-purpose, reliable and hygienic way to transfer materials from one process to the next.

## Oil Press



Sensitar Oil Press provides highly effective mechanical extraction of the fat content from cooked and dried animal and poultry by-products, in a continuous flow. This enables you to achieve a hard cake with a low fat content.

As the greaves pass along the single conical screw, the fat is pressed out into the surrounding enclosure, and the greaves are discharged as press cake. The fat runs into a collector trough, where a screw moves it to the outlet.



### BENEFITS

- High compression rate ensures efficient continuous fat extraction
- Rugged and reliable equipment, with a long service life
- Low maintenance costs

Type	Inlet Capacity	Capacity	Residual fat in cake	Power	Weight	Dimensions (mm)		
	kg/h	T/24h	%	kw	kg	A	B	C
ST1000	600-1200	50	9-14	45	4000	3170	1720	1600
ST1750	1200-2000	100	9-14	75-90	6400	3340	2100	2160
ST2500	1800-2800	150	9-14	75-90	6900	3990	2210	1800
ST4500	2400-5000	200	9-14	90-110-132	10500	4270	2620	1960

## Disc Dryer



Sensitar Disc Dryer is the ideal solution for removing as much water as possible, as gently as possible, from coarser fish, animal or poultry by-products with a low fat content.

### Application:

Sensitar disc dryers are ideal for drying products that include:

1. Defatted animal by-products such as meat and bone
2. Defatted fish by-products
3. Hydrolyzed feathers
4. Mechanically dewatered blood



Type	Heating surface(m <sup>2</sup> )	Power(kw)	Shipping data (mm)			
			Length	Width	Hight	Weight
1228	60	30	7750	2050	2600	22
1242	90	45	9700	2050	2600	26
1537	110	45	9050	2200	3200	30
1542	130	45	9750	2200	3200	31
1551	150	55	11100	2200	3200	37
1850	215	75	11100	2560	3500	52
2050	260	75	11300	2800	3650	59
2064	320	90	13250	2800	3650	68
2264	375	110	14000	3000	3850	79
2550	400	110	12200	3300	4150	84
2564	515	132	14150	3300	4150	99
2578	595	160	16150	3300	4150	120
2864	650	160	14150	3600	4500	116
2878	730	200	16150	3600	4500	135

## Cooler



Sensitar Cooler adopts rapid flow type to cool powder and small granular materials. While cooling the material, it can screen different particles according to different requirements.



### Working Principle

Cooler is a continuously working machine with a cooling principle based on the counter flow of cooling air and hot product. The hot dried product is continuously fed into the cooler through the inlet chute at the driving end of the machine.

The rotor, rotating between 17 and 28 rpm, is equipped with agitating arms and paddles lifting the product up into the stator drum where it is cooled by the contact with the air stream that is drawn through the stator by the centrifugal fan.

Type	Dimensions (D*L in m)	Nominal Capacity (kg/h)	Stator Volume (m <sup>3</sup> )	Motor Drive/Fan (kw)	RPM
AC-1207	1.2x7.0	1700	8	11.0/5.5	28
AC-1606	1.6x6.5	2600	12	15.0/5/5	25
AC-1609	1.6x9.5	3350	17	18.5/11.0	25
AC-2009	2.0x9.0	5250	24	30.0/15.0	21
AC-2012	2.0x12.0	7000	32	37.0/18.5	21
AC-2909	2.9x9.0	10500	49	45.0/37.0	19
AC-2912	2.9x12.0	14500	66	55.0/37.0	19

## Air Condenser



Sensitar Air Condenser uses a flow of air to condense vapors from cooking or drying fish or meat by-products to help ensure effective odor reduction.

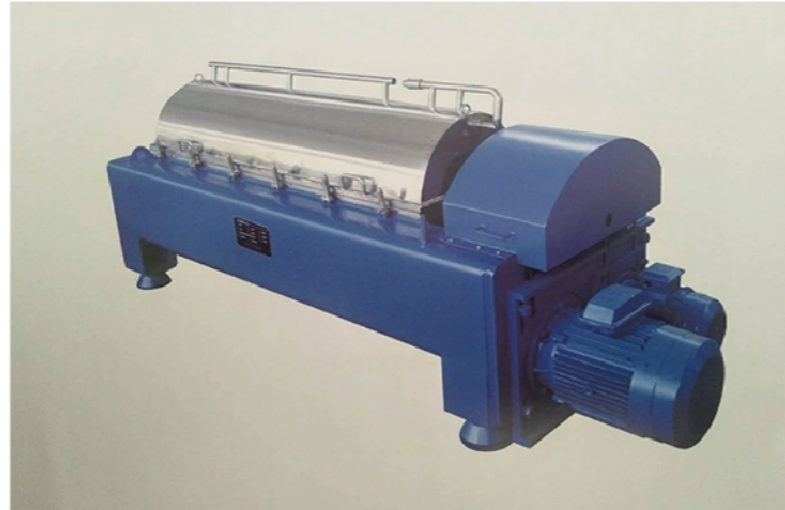
Air condensers are also available in twin-pass configurations in which vapors condense in one direction, and then perform cooling duties while returning in the other direction. This provides maximum thermal efficiency.



Type	Condensing capacity	Dimension(mm)			Power/motor(kW)	Weight(kg)
		Length (L)	Width (W)	Height (H)		
ACV015	900	50	1800	3950	1x7.5	2200
ACV021	1300	3900	1805	4050	2x5.5	2750
ACV030	1800	4450	2300	4150	2x7.5	3350
ACV034	2000	4450	2300	4150	2x7.5	3400
ACV042	2500	6400	2300	4050	3x5.5	4600
ACV055	3300	6400	2300	4050	3x11	4800
ACV072	4300	8350	2300	4150	4x11	5700
ACV090	5400	10300	2300	4200	5x11	7000
ACV160	9600	10300	5250	5300	2x30	17000
HM3000	3000	5110	3000	4045	2x11	5700
HM5000	5000	9120	3000	4045	3x11	8500
HM7000	7000	10580	3000	4145	4x11	11300

## Decanter

Decanter is three-phase separation, can achieve a good solid-liquid separation effect.



## Tube Condenser

Tube Condenser is designed for condensing the processing vapours emitted from cooking or drying of meat or fish by products. The condensed water can be recycled to other machine. Its heat transfer area range of 30-200 m<sup>2</sup>.



## Milling Plant



Milling Plant effectively reduces the size of particles in the not-yet-finished meal after fat extraction, helping you meet customer specifications about particle size.

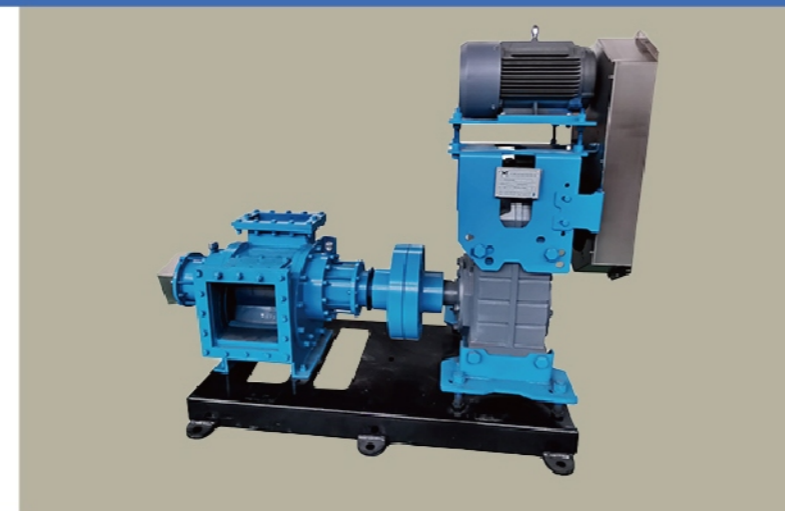
## Scrubber



Using the high pressure spray equipment, atomized liquid, full contact with the smelly gas, thus realized the purification, deodorization, cooling effect.

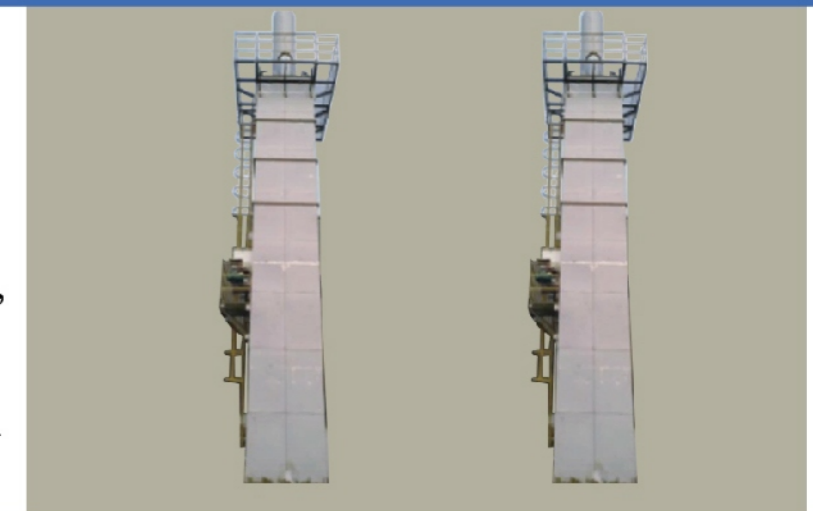
## Lamella Pump

This type of positive-displacement sliding vane pump is specifically designed to transfer flows that contain large particles, such as pre-broken animal by-products, pet food or fish, with as little as 20% liquid in the flow.



## Ionization Tower

Ionization tower uses high voltage electrode to produce high voltage electric field, bombards with high voltage electric energy odor, organic material molecular chain, changes the material structure, damage odor, organic molecular structure, organic compounds into small molecules, neutrons, atoms, the use of ozone produced for oxidation, deodorization and purification purposes.

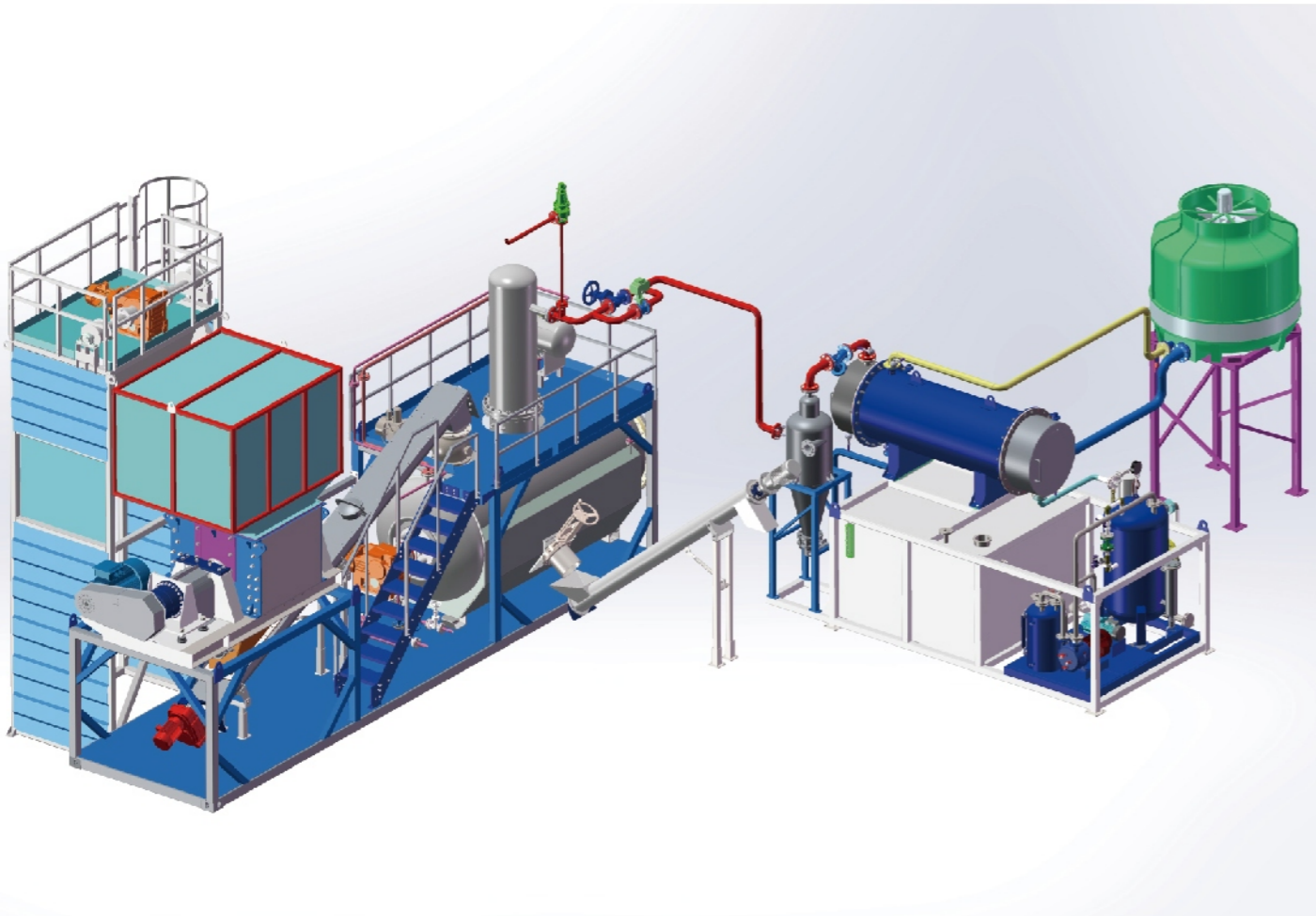


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# COMPACT RENDERING PLANT

1t/ batch and 2T / batch are designed and developed for farms and slaughterhouses. The heating mode is divided into electric heating, high temperature and high pressure (140 C,0.35Mpa) drying treatment. The whole set of equipment includes: feeding system,pre crusher, high temperature and high pressure drying machine, exhaust gas condenser, cold water tower and other systems. The unit has the advantages of full-automatic control, simple operation,no need to add auxiliary materials in the processing process, green environmentalprotection, etc.



# RENDERING PROJECT INSTANCE

