ASTW

High Quality Rendering Plants

meat and bone meal

A & S Thai Works Co., Ltd.

Designer and manufacturer of
highest quality fishmeal and rendering plants

www.fishmealmachine.com
www.renderingmachine.com


A&K METAL WORKS CO., LTD.

ASTW – A & S Thai Works presentation

Supplier of complete rendering plants and equipment Twenty plants supplied to Australia and New Zealand since year 2000. Supplier of fish rendering plants in Asia. More than 200 complete plants supplied since year 1986.

- Refurbishment of old plants: We measure your existing plant and make layout drawings on site, "as is" and "as can be".
- Complete plants, manufacture and installation included in the delivery.
- Renewal of meal handling systems – while the plant is operating.
- ASTW seeks to make the best design and quality without compromises.

We deliver:

- The strongest and most efficient disc driers and Cookers.
- The strongest and most modern design twin screw presses.
- The most efficient preheaters with steam jackets.
- Heavy duty stainless screw conveyors for rendering applications with hardened steel wear plates over the whole length.
- Efficient and durable vertical screw conveyors.
- Blood drying plants, atmospheric and vacuum.
- Blood filter – automatic and self-cleaning.
- Container and bulk loader – semi automatic, height fully adjustable.
- Air cooled and shell and tube condensers.
- Tallow tanks.

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Rendering Plants

Highest Quality Rendering Machines

Installation

Installation included

- All plants are installed and commissioned by trained and skilled technicians and welders which solves a major problem for the customer.
- Plants come complete with all the nuts and bolts.
- ASTW try to avoid hidden costs for the customer.
- About forty ASTW technicians are trained to do installation, service and repair. They work in production in the workshops when not abroad.
- Spare parts and technicians are available on shortest notice from our factory located just 20 minutes from Bangkok international airport, and 1.5 hours from Laem Chabang, Thailand largest sea port.
- Tallow tanks.

ASTW installation team working at SCONE NSW AUSTRALIA 2011.

Standard Solution Technical Specification

Low Temperature Rendering plants – LTR

Plant name	Capacity tons input/hr
LTR 5	4 -6
LTR 7	6-8
LTR 10	9-11
LTR 15	14-16

Process: disc pre-heater, twin screw press, disc drier, meal handling

High Temperature Rendering plants – HTR

Plants name	Capacity tons input/hr
HTR 5	4-5
HTR 8	7-9
HTR 11	10-12
HTR 15	14-16

Process: disc cooker, high pressure press, meal handling

MINI High Temperature Rendering plants/Combined poultry plants – HTR – mini

Plant name	Capacity tons input/hr
HTR 1.5	
Waste, offal only	1.5
Feathers only	1.0

Process: Disc type batch or continuous cooker, high pressure press, meal handling

Blood Drying Plants – BDP

Plant name	Capacity tons input raw blood per hr
BDP 1.5	1.5
BDP 3	3
BDP 5	5
BDP 8	8

Process: Coagulator, decanter, normal drying or vacuum drying in disc drier, meal handling

Specifications may change

Wodonga Project

Wodonga, another challenge completed

Early 2015, ASWT has completed the installation of a new rendering plant at Wodonga Rendering, probably one of the most difficult installation jobs ever done in Australian rendering industry. Thirteen technicians have spent a total of months, working 7 days per week to install the 22 tons/hr state of the art high temp plant, and the customer did not lose a single day of production. Also, there was no need to send material away during the installation process.

The new machinery was installed in the same building as where the old plant was operating 6 days per week. The installation was scheduled to take 4 months while stopping operation Saturdays and Sundays, but due to a good year for meats, production continued on Saturdays as well, extending the time needed for installation to 6 months. Space was limited and the existing building should ideally have been double the size for such a large plant, but our installation team found workarounds for that too.

The installation was planned in steps, and up to 6 screw conveyor were made, modified and repositioned 5 time to bypass running machinery. Every Sunday, there was a 14 hour rush to finish vital changes in time for the plant to start up Monday morning. Old machinery was gradually removed as new equipment was being installed.

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Wodonga, another challenge completed

The job included delivery of electric control cabinet with PLC and Scada. During the whole period we had our own draftsman, electrician and programmers on site, while coordination with local installation crews and suppliers was done on a daily basis. Electric installations were also critically difficult as cable trays and cables had to be installed overhead under hot and steamy conditions while the old plant was running every workday.

The plant consists of two units ASTW 240 sqm stainless disc cookers and two units Harburg high pressure presses, meal cooler, large Bliss mill with cooling and large Rotex shaker screen. Alfa Laval decanter and all screw conveyors and vertical screw conveyors made from stainless steel with hardened steel wear plates were also installed. After a 2-3 weeks run-in period and familiarisation, all components work satisfactory and the meal has a consistent fat content of 8-9%.

This is not the first time A & S Thai Works have performed an installation with the old plant running at full production, and with the experience we have gained from this and other installations, this has become our niche. Each day a rendering plant has to be stopped during installation and upgrades means a loss of income for the operation and added logistic challenges. At ASTW, we know how to avoid those stops.

Wodonga, another challenge completed

Constrained space was a challengea

The ASTW installation team unloading electrical cabinets in the evening

Screw conveyors

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The Primo Scone Project

Primo, Scone 12 t/hr Low Temperature Rendering Plant

In 2011, A & S Thai Works supplied a complete 12 t/hr low temp rendering plant to Primo in Scone NSW. The plant was installed, commissioned and in fulltime production within 90 days. The plant is now operating at up to 15 t/hr input capacity.

The ASTW supply included:

- Metal detection with automated reject mechanism
- Fine crusher
- Pre-heater type RPH 30+8
- Twin-screw press type AST/BS-49
- Relocation and utilization of existing decanters and separators
- ASTW disc drier type TST 100 with 400 sqm heating surface
- Bliss hammer mill type ER 4424
- Complete meal handling and load out system
- Transfer screw conveyors, tanks, pumps, stainless steel process and ducting lines
- All electric control panels with Allen Bradley PLC and Scada control
- Waste heat evaporator with 2 shell and tube condensers

WHE Waste Heat Evaporator with 3 x 10 cum. tanks installed in SCONE NSW AUSTRALIA 2011

The Primo Scone Project

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Rendering plants from ASTW

The Taranaki Project

Description: Renew old meal handling system to handle 180 tons meal per hour, output from 3 units ASTW disc driers = total 1075 sqm heating surface.

- ASTW drafts men measured up and made layouts at site within 5 days.
- Installed a temporary line to handle the meal – no plant stoppage.
- Removed the old meal line, new concrete floor was poured.
- Installed the first section and commissioned.
- Installed the second section, using the components from the temporary line.

Components:

- 76 – stainless trough screw conveyors with hardened steel wear bars.
- 12 – stainless vertical screw conveyors up to 30 kw.
- 2 units Bliss mills ER 4430 – each 6 tons/hr with cooling systems.
- 2 units shaker screens.
- 2 units meal bins, each with capacity 200 cum with recirculation.
- Out–feed and loading system to container and bulk – 40 tons/hr

ASTW also overhauled the 3 disc driers while on site and installed a new steam piping system.

ASTW Meal handling system installed at Taranaki by-products in New Zealand 2013.

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Disc Driers and Cookers

Disc Type Driers for low temp plants and Cookers for high temp plants.

- ASTW understands the function of the disc machines.
- Most disc driers and cookers run at 70% capacity due to old style design.
- ASTW has spent over 10 years R&D to improve the disc driers and cookers and has installed more than 15 pilot machines in Asia, Australia and New Zealand,trying new designs and gaining experience.

New generation – some of the specs:

- More pitch = distance between the discs – optimized.
- Better material flow, less wear and better process control.
- Better internal steam and condensate flow for higher capacity.
- No more stay bolts and no more stay bolt leaks – use of (gusset) stay bars.
- Always bulb type steam jacket – superior and cheap heating surface.
- 12mm mild steel discs with U-caps or 10-12mm stainless steel discs.
- Heavy duty stainless steel cladding.
- Complete with insulation, galvanized walkway and stairway, temperature control, steam system and heavy duty SEW drive.
- All spare parts in stock.

Cooker with steam jacket

Rotor for cooker

TST /AST-D/C Driers/cooers with steam jackets	Heating Surface m^2	Disks	Material	kW	Symbol explanation
TST/AST – D/C	44	tba	CS/SS	18.5	D = Drier C = Cooker tba = Number of discs to be announced CS = Carbon Steel discs SS = Stainless Steel discs Stators and steam jackets are always stainless steel
TST/AST – D/C	80	tba	CS/SS	30	
TST/AST – D/C	100	tba	CS/SS	37	
TST/AST – D/C	160	tba	CS/SS	55	
TST/AST – D/C	200	tba	CS/SS	75	
TST/AST – D/C	240	tba	CS/SS	75	
TST/AST – D/C	300	tba	CS/SS	90	
TST/AST – D/C	350	tba	CS/SS	110	
TST/AST – D/C	400	tba	CS/SS	165	
TST/AST – D/C	450	tba	CS/SS	185	
TST/AST – D/C	500	tba	CS/SS	210	

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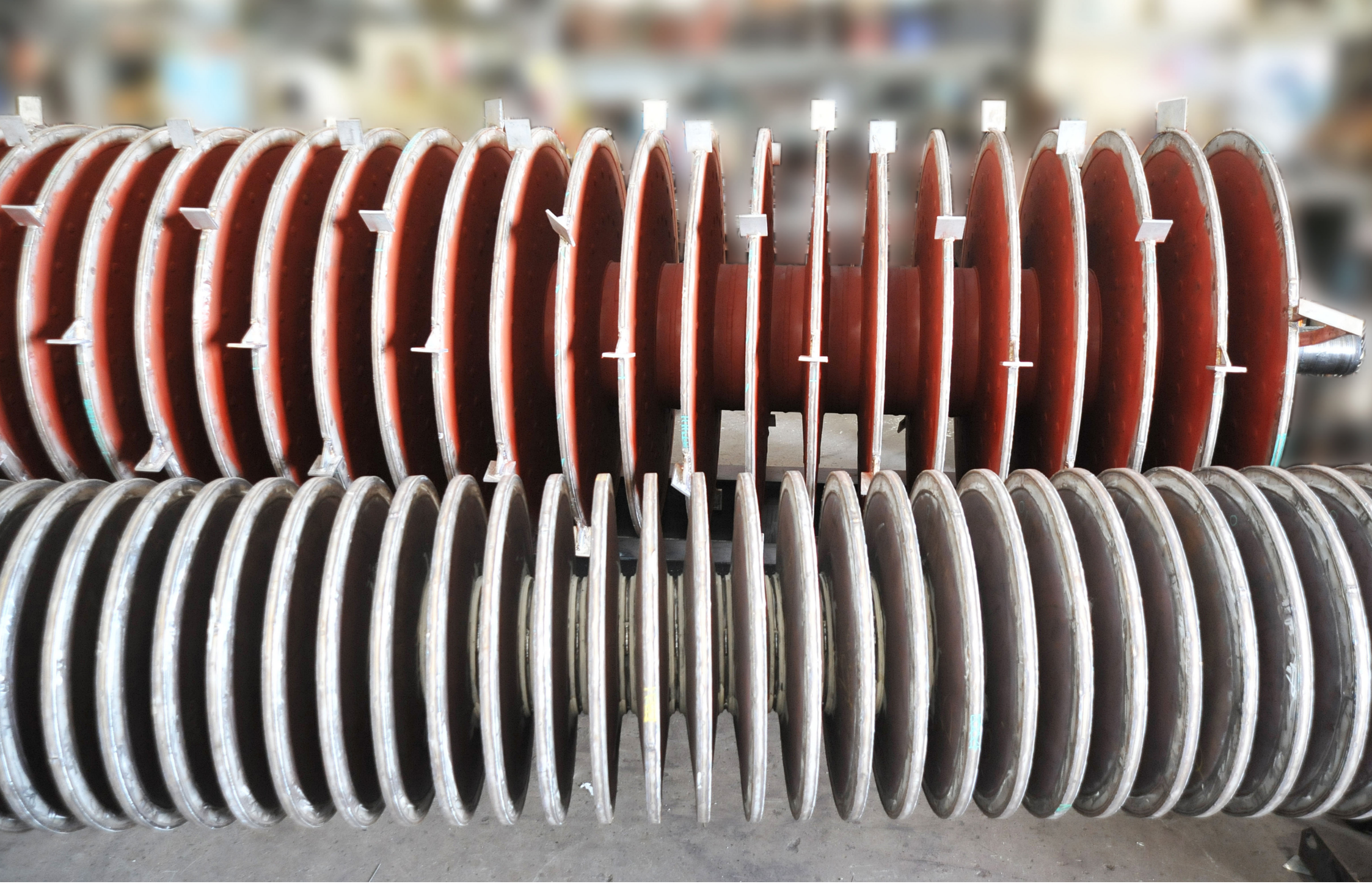
Pre heaters

Pre heaters for low temp plants, disc type with steam jacket type AST/RPH.

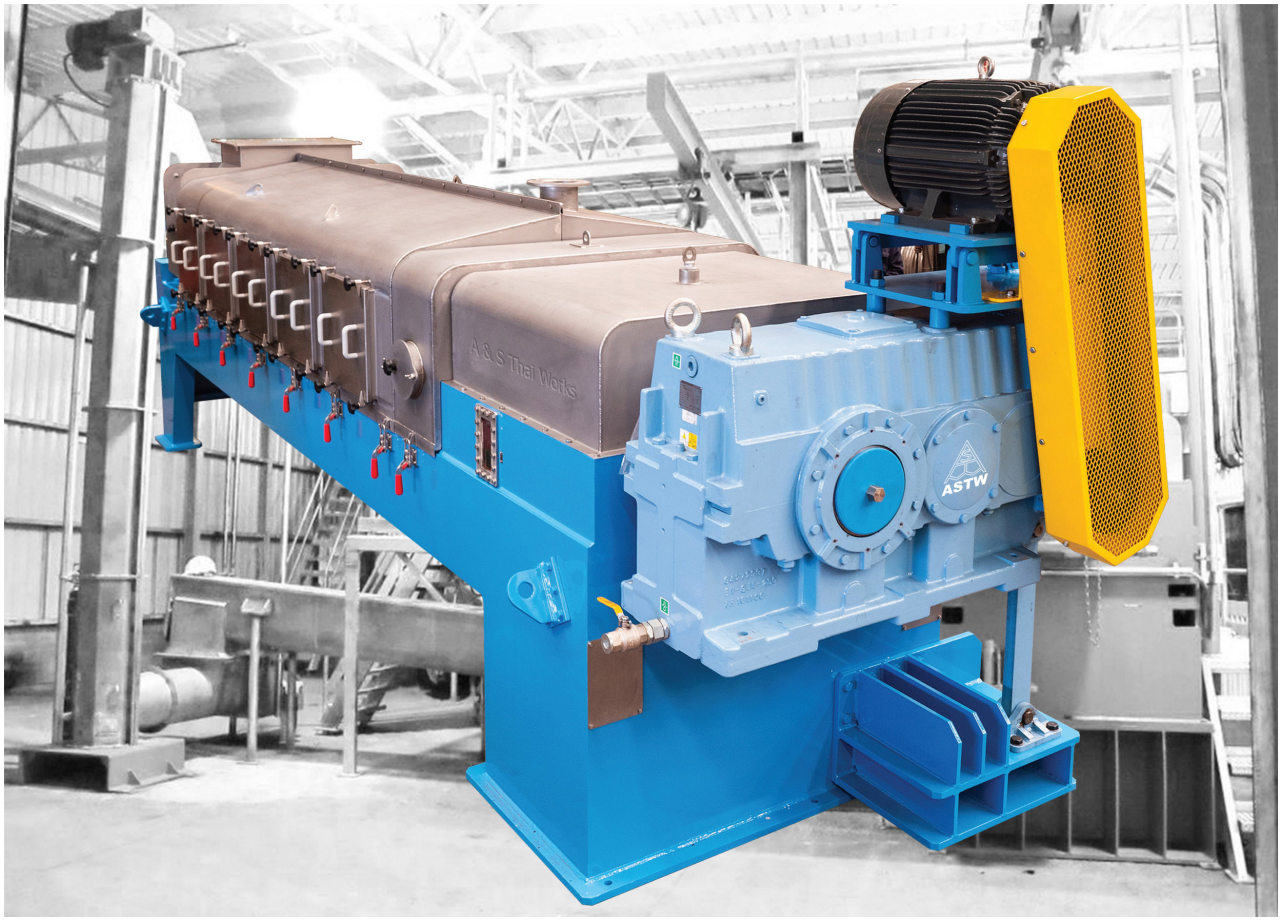
- Proven RPH disc design but with steam jacket.
- Steam jacket, bulb type, provide superior and cheap heating surface.
- Complete with insulation, galvanized walkway and stairway, temperature control, steam system and heavy duty SEW drive.

Type	Capacity (tons/hr.)	Drive (k.W.)
RPH 20+6	9	5.5
RPH 30+8	12	7.5
RPH 50+12	20	22

Pre heater type RPH 30+8 installed at Primo, Scone NSW Australia 2011.



Twin screw presses for Rendering



Twin Screw Presses for low temperature rendering plants
ASTW has modernized the over 50 years old, "Stord type" proven twin screw press design

- Very heavy duty design for max stability – the frame has 40mm plate thickness.
- Shorter distance between the bridges for higher strength.
- Solid stainless steel screws.
- Improved solid screens system to reduce wear andavoid clogging of the screens.
- All large spherical roller bearings in oil bath, no more oil pump, completely sealed off from pressed material and hot vapor.
- Shaft mounted standard SEW gearbox for higher gear efficiency and easy service, internal friction considerably reduced.
- Stainless sump with screw conveyor for tallow and fines.

Type	Nominal capacity raw material tons / hour	Motor KW	H	H1*	H2	W	W1	L	L1	Net weight / kg
AST/BS 35	7.0	18.5	3215	850	2365	1635	1650	5290	4300	7000
AST/BS 41	10	30	2760	850	1910	2300	2200	5500	4780	10000
AST/BS 49	18	45	3060	850	2210	2950	2600	6000	5660	18000
AST/BS 56	25	55	3280	850	2430	2700	2665	8500	7000	24000

Dimensions: mm.

** Optimal capacity load abouth 70%*

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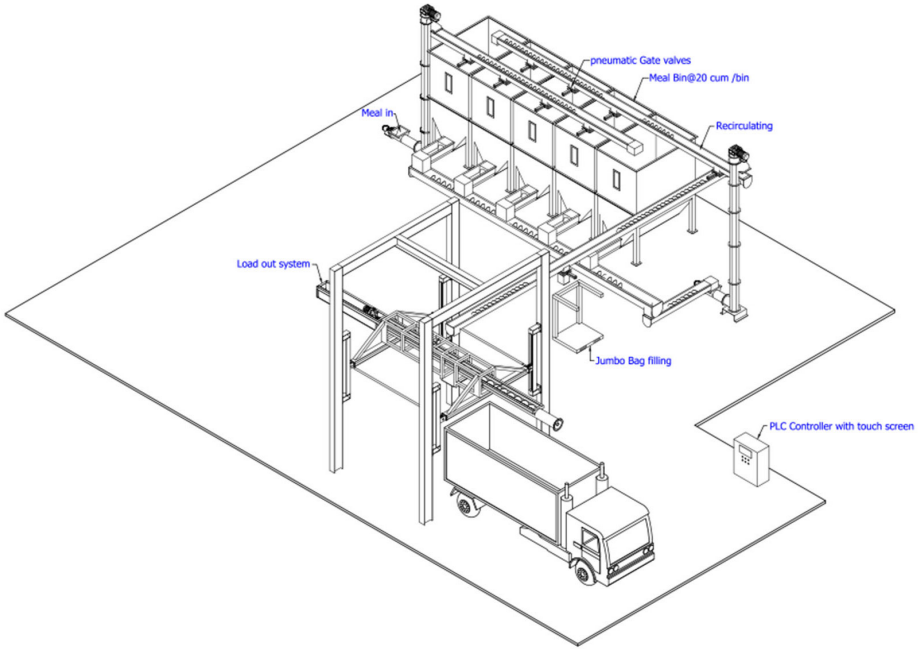
Twin screw presses

Highest Quality Rendering Machines

Meal handling systems

Meal handling systems

- Consist of bins, hoppers, screw conveyors, vertical screw conveyors, hammer mills, shaker screens, meal cooling systems, loading systems.
- Layouts, we have the experience from making hundreds of plants.
- Tailor made or “block” systems, all parts fit into 40 foot containers.
- Manufacture and design to highest standards, no compromises.
- Installation included, mostly while the rendering plant is operating.
- Focus: SALMONELLA PREVENTION.



Meal handling system installed at Taranaki By-Products, Hawera, New Zealand.

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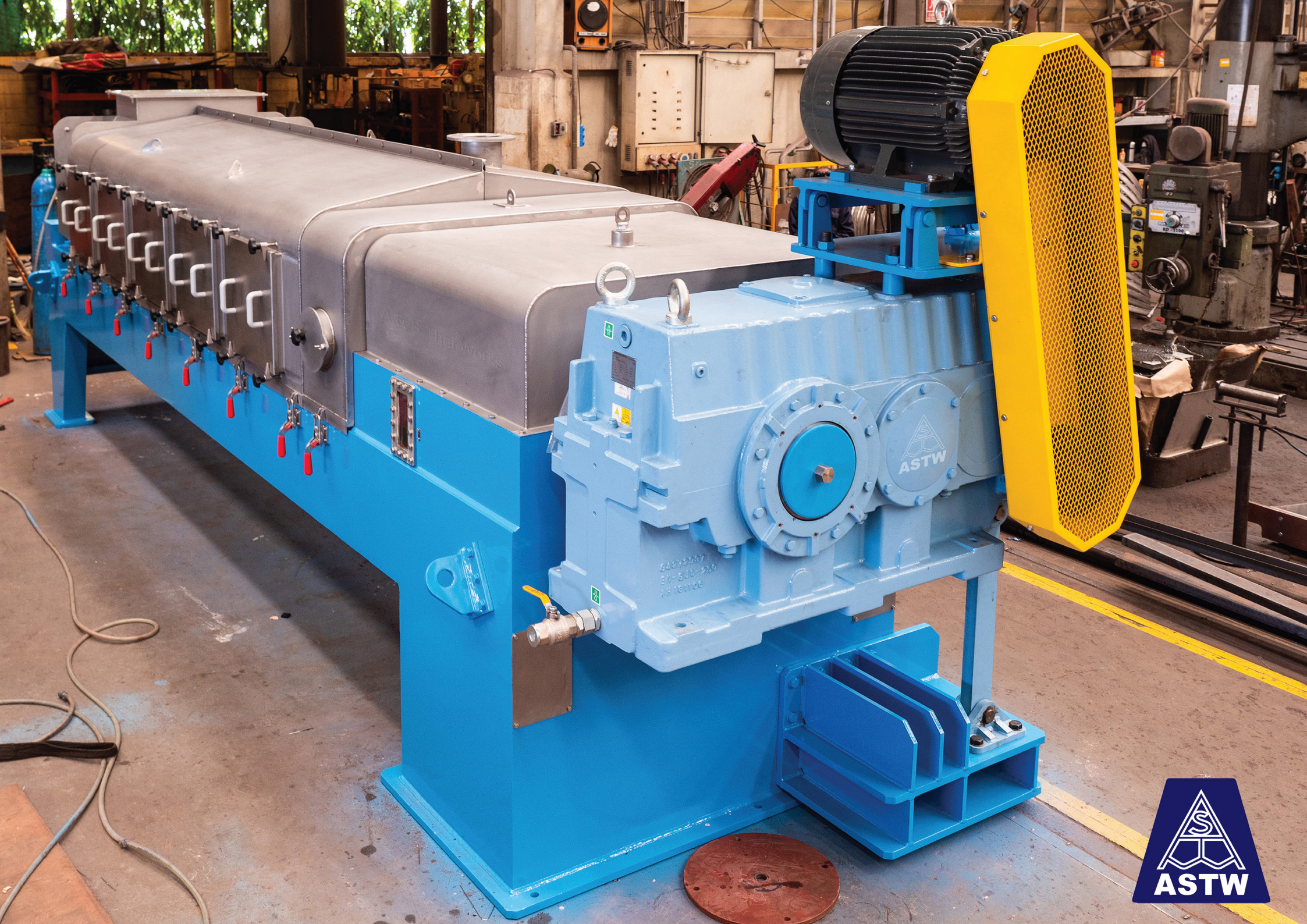
Meal handling systems

Highest Quality Rendering Machines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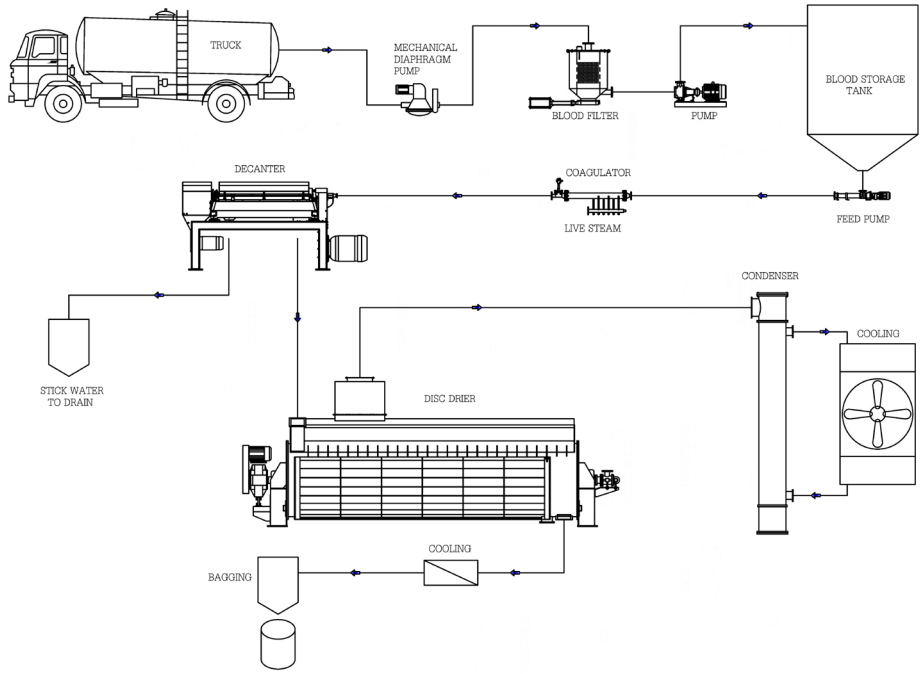
Blood drying plants

Blood drying plants

- Unloading from truck using mechanical diaphragm pump.
- Blood filter, automatic, self-cleaning.
- Second pump to blood tank.
- Feed pump, coagulator (ASTW design) and decanter for solids separation.
- Drying in atmospheric or vacuum disc drier for highest meal quality and digestibility.
- Meal handling, cooling, hammer milling and bagging.



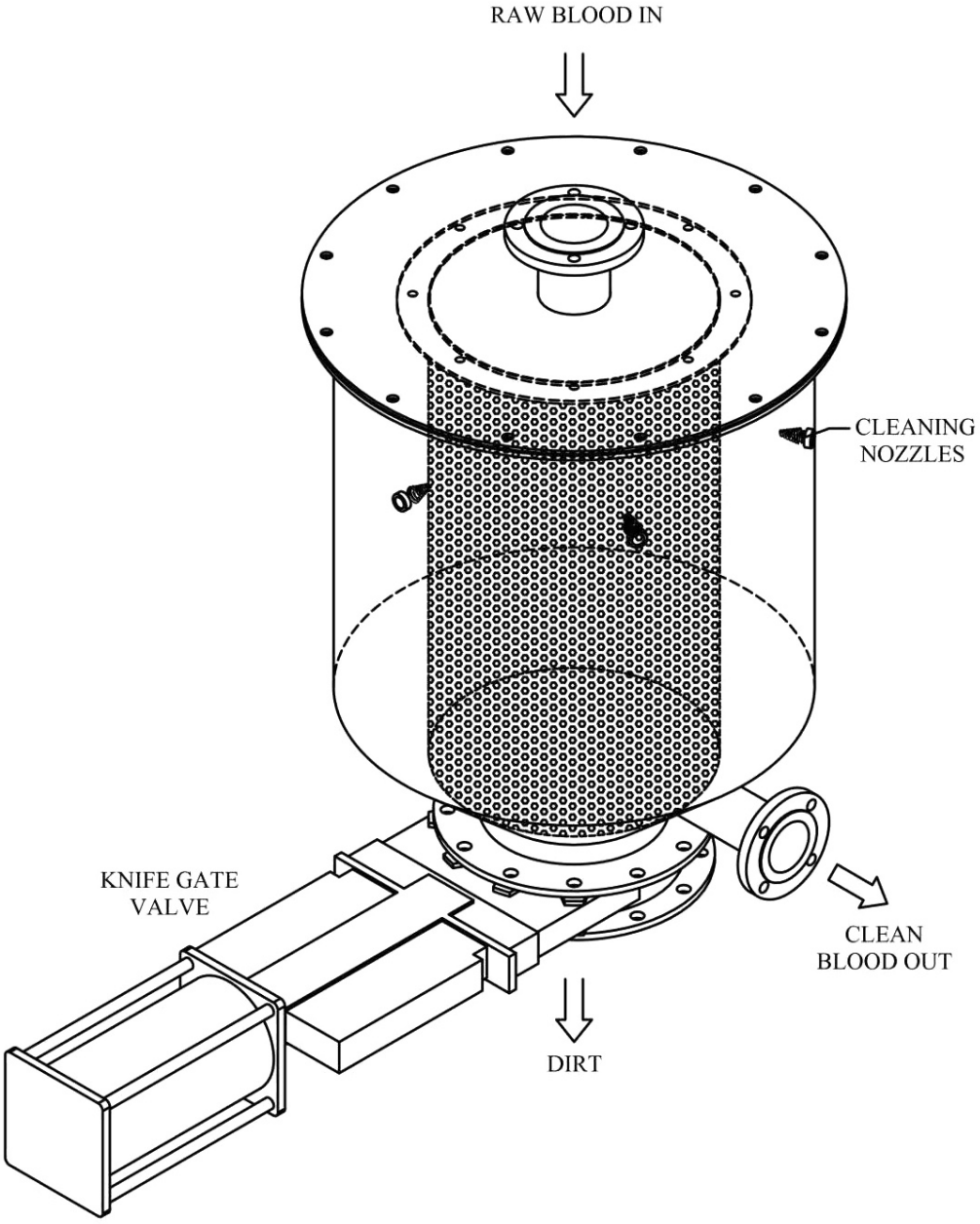
Blood drying system

Vacuum disc drier plant.

Blood filter

Blood filter

- Large screen filter to separate lumps, wool and scrap from raw blood.
- To be installed between truck and storage tank using two pumps.
- Fully automatic and adjustable with timers.
- Interval cleaning by means of high pressure sprays nozzles.
- Can be positioned over raw material bin or a roller bucket.
- All stainless design.

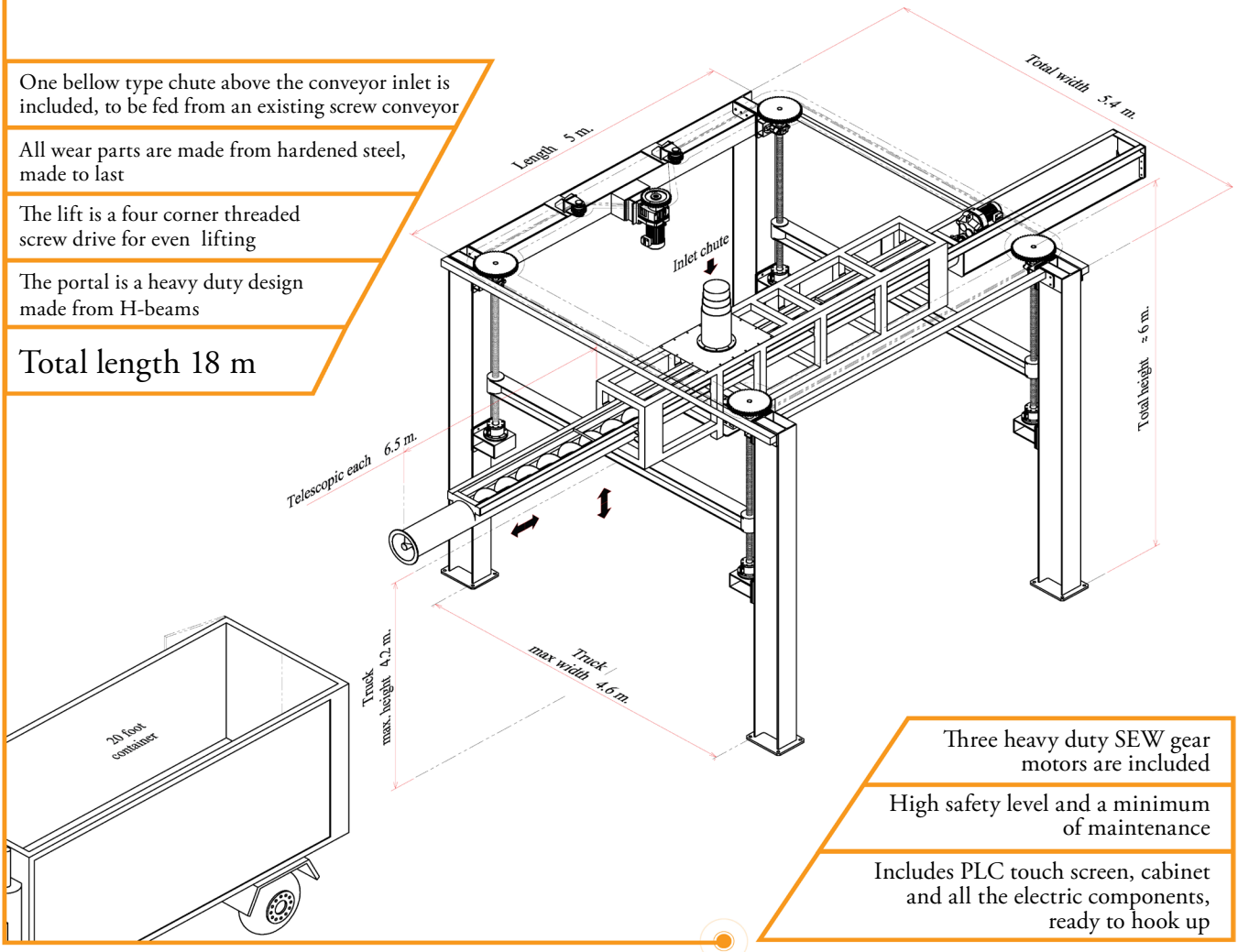


Container and truck Loader
New product from A & S Thai Works

Meat and bone meal loader for 20 foot containers and trucks. Loading a 20 foot container with M&B meal efficiently has always been difficult. We have seen a number of more or less successful prototype screw loaders, and several versions of the "belt-meal-thrower" which gives dust problems. We have therefore developed a sturdy, well engineered and automated container and truck meal loader that we think will benefit all rendering plants.

- One bellow type chute above the conveyor inlet is included, to be fed from an existing screw conveyor
- All wear parts are made from hardened steel, made to last
- The lift is a four corner threaded screw drive for even lifting
- The portal is a heavy duty design made from H-beams

Total length 18 m



- Three heavy duty SEW gear motors are included
- High safety level and a minimum of maintenance
- Includes PLC touch screen, cabinet and all the electric components, ready to hook up

R & D from ASTW

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Container and truck loader

Highest Quality Rendering Machines

Container and truck Loader

Telescopic type container and bulk loader for M&B meal.

- Capacity up to 40 tons/hr. (fills a 20 foot container in 30 minutes)
- Semi-automatic operation, all movements fully adjustable
- Telescoping trough that enters into the 20 foot container and pulls back by controlled pressure and speed for maximum filling
- Height adjustment to suit actual height of container on truck
- Complete container loader unit is hoisted above ground so that trucks can pass under and for bulk loading
- Trough and screw made from high wear resistant material
- Three SEW gear motors, total 18.7 kW

Function

The telescopic screw conveyor feeds through one open (the right hand) container door, goes all the way in close to the ceiling of the container before it starts feeding and then moves slowly backwards.

The feed rate is controlled by the pressure of the meal and 20 tons of meal is filled in about 30 minutes.

The whole telescopic unit is mounted on a strong portal and lifts up and down into preset positions:
a) low position for container loading
b) high position for truck loading, about 4 meters
c) top position 4.2 meters so that trucks can pass underneath

The fully pre-programmed automatic functions are set on a touch screen PLC that can be adjusted by the operator and switched to manual mode if needed.

Operation

1) Stop the container truck (or ordinary truck) at a match mark.
2) Open the container door or remove the truck cover.
3) Push the start button “container” or “truck” function.
4) Have a cup of coffee and after about 30 minutes the container or truck is fully loaded and ready to go.

The unit comes dismantled in one 40 foot container for easy assembly.
A & S Thai Works can supply a team of technicians for installation.


AFETY FIRST
20 t
10 t
ASTW

Container loader for M & B meal

Vertical screw conveyors

Vertical screw conveyors

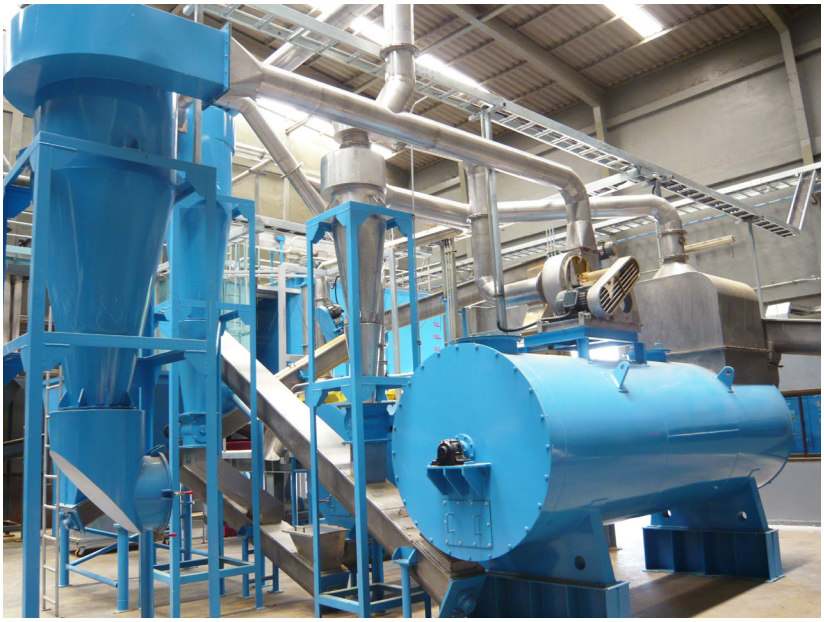
- ASTW has worked for over 11 years to make truly efficient and reliable vertical screw conveyors for meals and cakes, and we feel we have succeeded.
- Eight sided trough made from thick walled stainless steel.
- Separate force feed screw at bottom.
- Heavy duty top and bottom bearings.
- Efficient bottom seal.
- Designed to minimize wear, especially when woolly and other high wear materials are being conveyed.
- Capacity up to 50 tons/hr.
- Can be combined with air cooling.
- Focus: SALMONELLA PREVENTION.

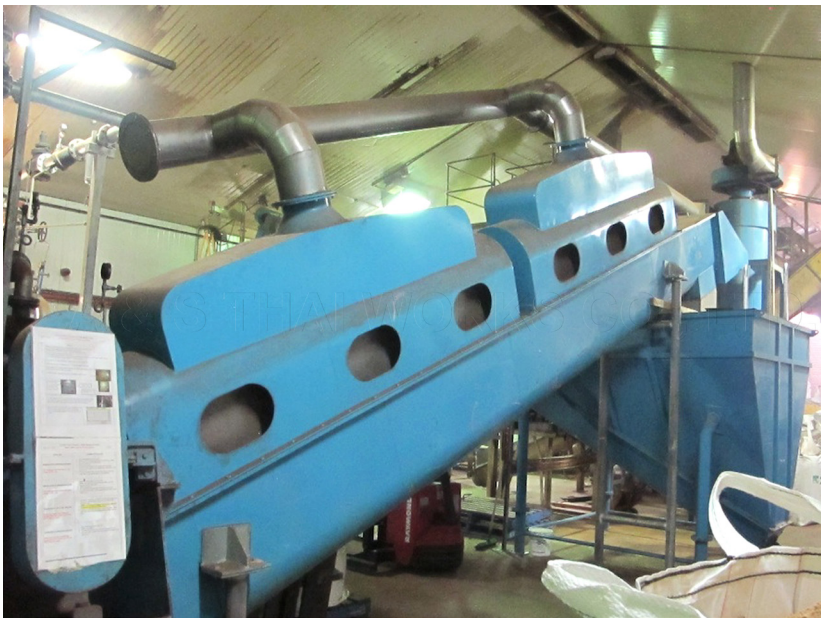

Vicaccess95551116
Haulotte
Haulotte
UNIT 368
4WD
ASTW

Meal coolers

Meal coolers

- Air cooling of cakes and meals gives easier grinding (brittle particles), better flow-ability and easier conveying, and reduces the heat stress on the protein. For fish rendering is meal cooling an absolute must.
- Air cooling also removes vapors that can condense to water and cause salmonella problems.
- The ultimate cooling is a dedicated, full size meal cooler, cakes and meal can be cooled close to room temperature.
- Screw conveyors with cooling domes will also help reduce temperature.

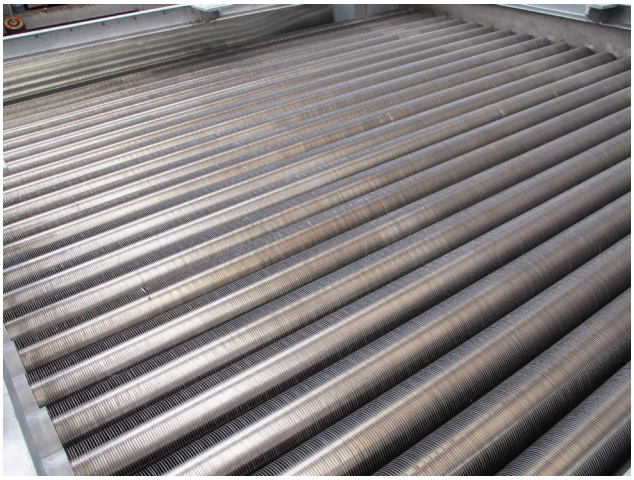




Air cooled condensers type ACC

Air cooled condensers type ACC.

- Air Cooled Condensers are clean, efficient and do not need water, basically install and forget.
- For condensing of vapors from:
  - driers and cookers (atmospheric type)
  - WHE = waste heat evaporators (vacuum type)
  - cooling of too hot gases going to bio filter
- ASTW has optimized a one size Air Cooled Condenser that fits into a 40 foot container for low cost freight and transport.
- ACC 110 = 110 sqm tube cooling surface. (half size 55 sqm can be supplied)
- Tubes are aluminum finned by state of the art machinery.
- Three fans – diameter 2000mm and three direct coupled motors 5.5 kW.
- All surfaces in contact with vapor are made from stainless steel.
- Other surfaces and legs are made from hot dip galvanized mild steel.




BIGLIFT
BIGLIFT
MRC 100,000 kg
BIGLIFT
LIEBHERR
BIGLIFT
ASTW

Shell and tube condensers

Shell and tube condensers

- Traditional shell and tube condensers for condensing of hot vapor from
  - driers and cookers. (atmospheric type)
  - WHE = waste heat evaporators. (vacuum type)
  - making hot water for use in abattoirs or use with cooling towers.
- Material stainless steel grades 304, 316 or 2205 Duplex tubes for water containing high chlorides.
- Generous sized tubes for high through put area of high volume vapors.
- Tubes are extruded and TIG welded to a thick backing plate.
- Shell is made with expansion bellow.
- Bolted hot dip galvanized legs.

Tallow tanks

Tallow tanks

- Two sizes tanks that fit into 40 foot containers for low cost freight and transport.
- Volumes 4 cum and 7 cum.
- Material stainless 316.
- Dish type top and bottom.
- Man hole.
- Heating coil with steam equipment as option.
- Mixer with propeller and motor gear box as option.
- Level controls and switches as option.
- Insulation with TIG welded stainless cladding as option.
- Bolted, hot dip galvanized legs.

Highest Quality Rendering Machines

Raw material bin unloading with sliding cover for "drive through" trucks.

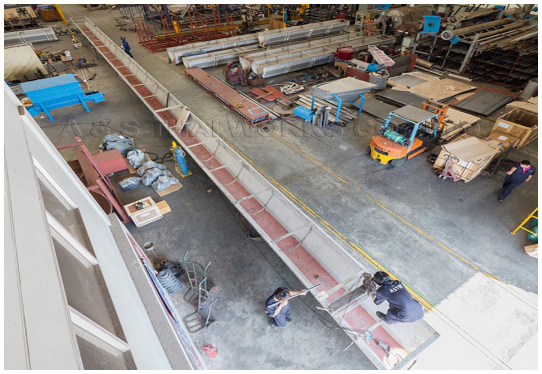
Raw material screw conveyors from ASTW

On several occasions this year, rendering customers have decided to order screw conveyors for transport of raw material from the abattoir building to the rendering plant before hogging, typically a distance of 100-200 metres.

Screw conveyors during installation at abattoir/rendering plant in Australia

The alternative methods would be blow systems and pumps for hogged material. However, some customers claim that tallow FFA rises when material is hogged to early before processing.
In addition:

- There's a risk of clogging
- Blow systems have high power consumption by using compressed air
- Maintenance and spare parts costs are high when using pumps
- There's a risk of damage due to scrap metal



The ASTW raw material screw conveyors are:

- Push type, open end, no end bearing
- Stainless keyhole troughs with 120 degrees hardened steel wear plates
- Have bolted "angle bars" inside the trough for easy removal of the screws
- 400-500mm diameter, 12mm mild steel screw flights
- Have optional automatic CIP system
- Fully covered for outdoor use
- The SEW gear motors are heavy duty, shaft mounted

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Spare parts in stock

Highest Quality Rendering Machines

Spare parts in stock for rendering

Spare parts in stock for rendering (meat and bone) plants

If you are using "Stord Rotadisc" type disc driers and cooker. A&S Thai Works have manufactured over 200 of such improved driers and cookers and strive to keep full stock of major spare parts.

- Ready for urgent freight by air or ship. (Subject unsold, if running out of stock we quickly order new stock) we can also supply a team to carry out the repairs.
- Our concern for customers: Breakdown of a drier or cooker is critical for a renderer and a responsible supplier of machines must make sure major spare parts are in stock at all times as some parts have delivery times of up to 6 months.

Driers/Cookers TST 40R, TST 60(R), TST 70, TST 80, TST 90

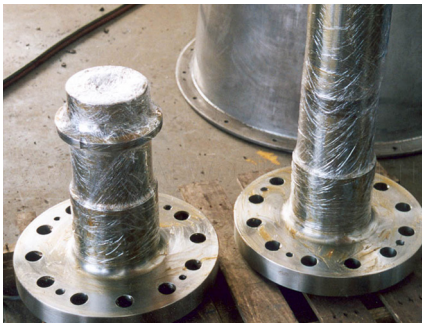
- Gearbox type shaft mounted SEW (Santasalo) 90 kW. with air-oil cooler. Right handed in stock but can be changed to be left handed.
- Stub shafts for gear and steam side, forged from Europe, with special gasket, bolts and washers.
- Bearing housings complete.
- Bearings complete with sleeves and tools.
- Rotating steam joint 6 inches with syphon pipe.

DRIER/COOKER TST 100

- Stub shafts.
- Bearing housings complete.
- Bearings complete with sleeves and tools.
- Rotating steam joint 6 inches.

We also supply other parts and accessories.

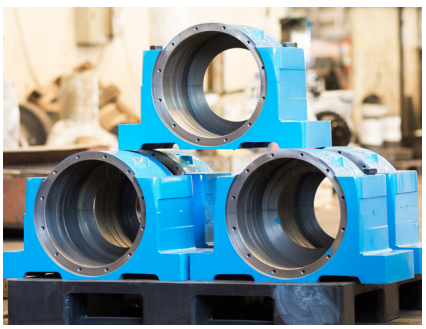
Stub Shafts.



Stub Shafts.

Stub Shafts.

Gearbox.



Bearing Housings

Steam Joint

ASTW

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