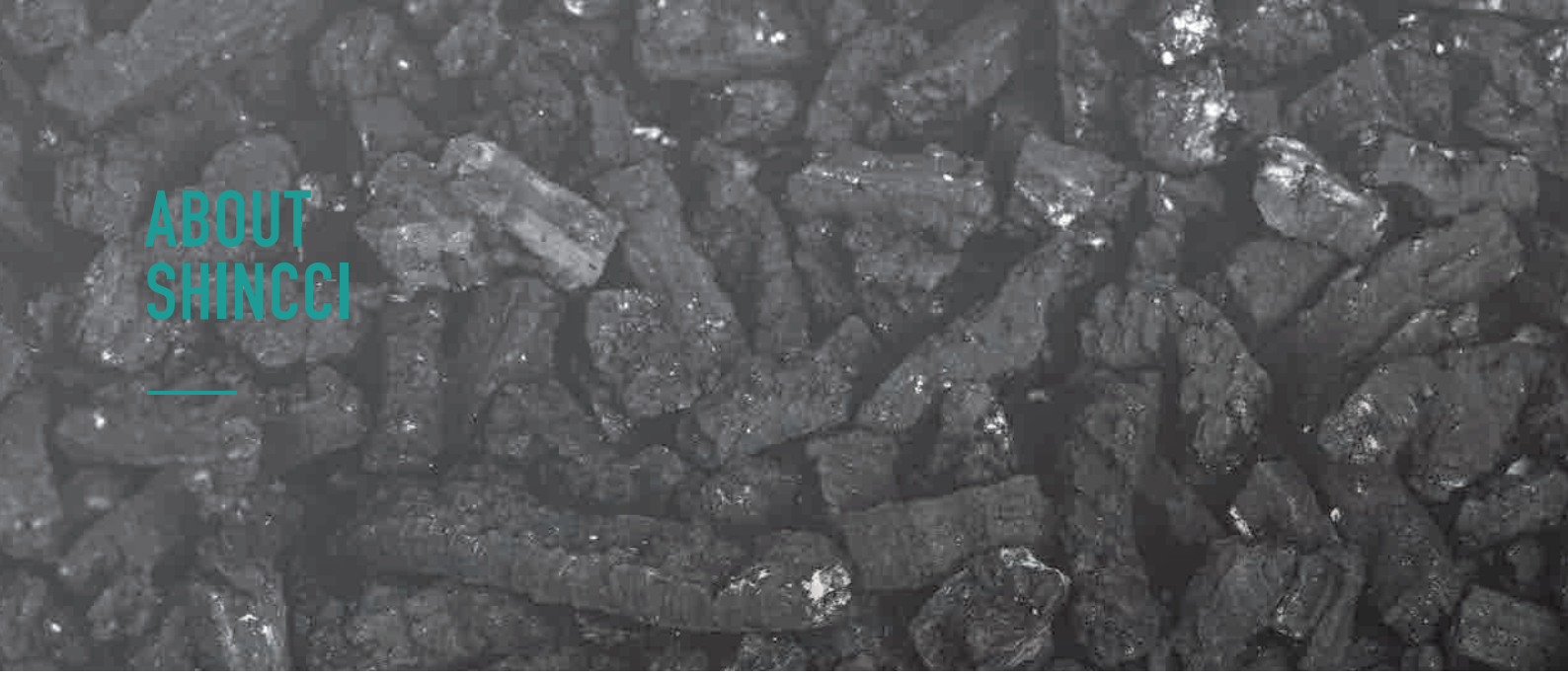
SHINCCI

ENERGY-EFFICIENT
LOW TEMPERATURE SLUDGE DRYING

POWER +
THE WORLD



ABOUT SHINCCI

A LEADER IN LOW TEMPERATURE SLUDGE DRYING

Shincci is a high-tech company devoting itself to the research and application in the field of environmental protection since 2003, who designs and provides the world's cutting-edge Low Temperature Sludge Drying Solution.

With its leading Low Temperature Evaporating-condensing-dehumidification Technology, Shincci creatively combines refrigerating system and thermal energy, making itself a pioneer in the industry. Starting with its first heat pump unit in 2004, Shincci has developed double-effect, triple-effect, quadruple-effect and multiple-effect dehumidification technologies thanks to its continuous innovation.

WE VALUE HIGH QUALITY

Shincci is committed to the upgrading of its production system, improves the collaborative capability of designing and manufacturing in the industrial chain, and has realized high quality standardized production.

WE PROVIDE CUSTOMIZED SOLUTIONS

Shincci has become a leading company with its customized solutions for on-site investigation, project designing, equipment manufacturing, installation, commissioning, and after-sales service.

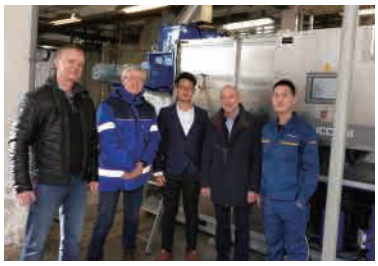
OVERSEAS MARKETING

OVERSEAS FOOTPRINTS

To date, Shincci Sludge Drying Solutions have been successfully applied around the world such as USA, Italy, Poland, Romania, Russia, Turkey, South Korea, Thailand, Vietnam, Indonesia, etc. We are making every project a successful reference with the highest customer satisfaction.













APPLICATION & REUSE

With either electric power or waste-heat as heat source, the Shincci Sludge Dryer can simply reduce the moisture content of wet sludge from 83% to 30-10% (adjustable as required). It is energy-efficient and eco-friendly, and has been extensively applied in municipal and industrial sludge drying. And the dried sludge could be for resource utilization.

Municipal | Printing & Dyeing | Chemical | Pharmaceutical | Papermaking | Plating | Leather

SYSTEM FEATURES

10%

EFFICIENCY

- Sludge moisture content can be reduced from 83% to 30-10% (adjustable as required)
- Sludge volume is reduced by 67% and weight by 80%

1:4.2

INNOVATION

- By originally developed "quadruple-effect dehumidification technology", the dehumidifying capacity reaches as high as 4.2 kg.H2O/kWh, which is the world's leading technology standard
- Energy-consumption saved by 50% compared to the traditional drying equipment

ZERO EMISSION

ENVIRONMENT

- No odor emission during the process in a closed cabinet; No need for any expensive odor removal equipment
  Available to be built inside the factory for sludge centralized processing
- The clear condensate water from the drying process can directly drain to sewage pool without any secondary treatment.

100%

UTILIZATION

- No heat waste during the drying process in a closed loop system
- No need for high temperature heating like other open-type drying equipment

180 kwh/T

ECONOMICAL

- The running cost of drying wet sludge from 83% moisture to 30% is only 180 kWh/t

SAFETY

- Low processing temperature 40-75℃ in a closed cabinet, no need for nitrogenization
  Oxygen content < 12%, Dust concentration < 60g/m3, Dried sludge temperature < 70℃
- Outlet Sludge < 50℃, no need secondary cooling and can be stored directly

DURABILITY

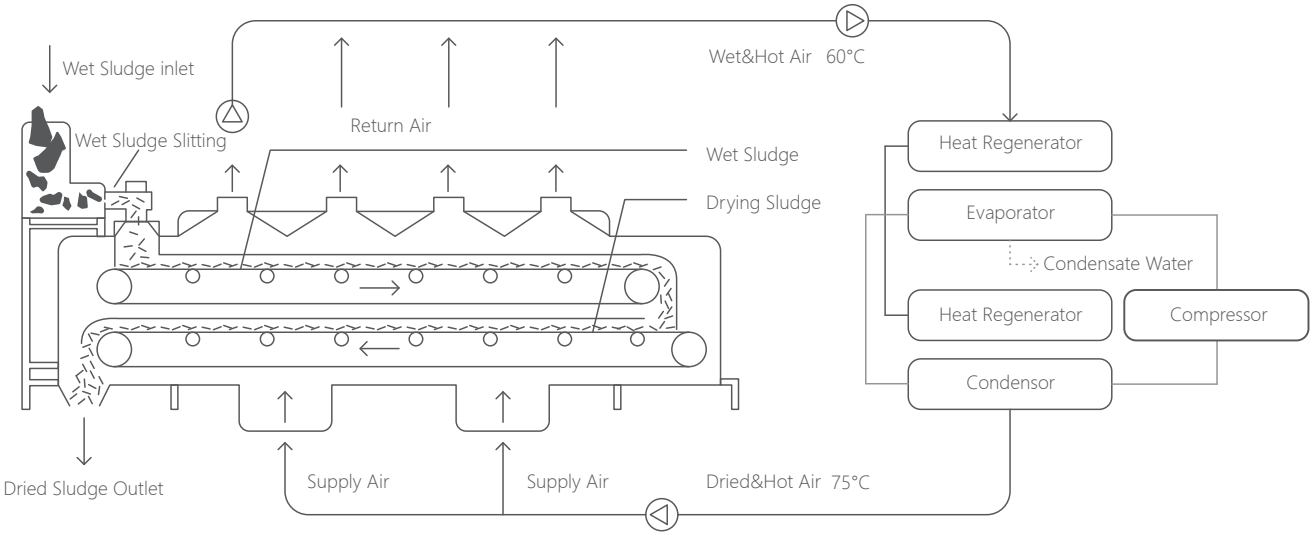
- Adopting durable and anti-corrosive material to make sure a service life as long as 15 years
- Modularization design for easy assembly while saving floor space; Suitable for any working condition at high or low temperatures

STERILIZATION

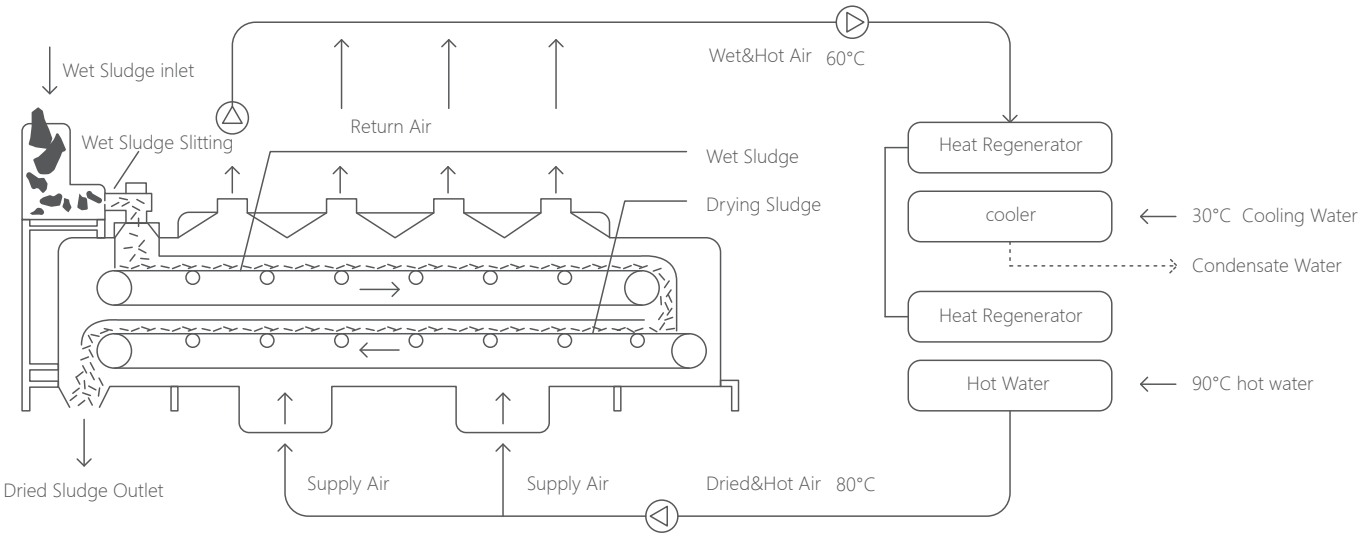
- With pasteurization (low temperature heating sterilization) at 70℃ drying for 90-120 minutes, it can sterilize over 90% bacteria effectively

LOW TEMPERATURE DRYING PRINCIPLE

The Low Temperature Sludge Dryer works by the principle of Dehumidification Heat Pump. This system makes the circulating hot air go through the wet sludge laid on the conveyor belt, which evaporates the moisture of the sludge. Since the whole system is proceeded in a closed loop, there is no waste of any heat during the process.



Waste-Heat-Exchanger Sludge Dryer makes use of waste heat source via hot water to remove the moisture out from sludge through hot air in the closed convectional recycling, condensing, dehumidifying and drying. Waste heat source can be low grade heat source, such as steam, hot water from anaerobic digestion gas, cooling water from generator set.



LOW TEMPERATURE BELT-TYPE SLUDGE DRYER

Innovative High-tech
Twice that of the current industry standard

FEATURES

10%	1:4.2	ZERO EMISSION	100%	180 kWh/T	
EFFICIENCY	INNOVATION	ENVIRONMENT	UTILIZATION	ECONOMICAL	SAFETY

TECHNICAL PARAMETERS

Model	SBDD600SL	SBDD1200SL	SBDD2400FL	SBDD4800FL	SBDD7200FL	SBDD9600FL	SBDD14400SL
Standard Dehumidification Capacity/24h	600kg	1200kg	2400kg	4800kg	7200kg	9600kg	14400kg
Standard Dehumidification Capacity/h	25kg	50kg	100kg	200kg	300kg	400kg	600kg
Working Power	8kw	14kw	26kw	51kw	75kw	106kw	156kw
Dehumidification Heat Pump Module	1set	1set	1set	2set	3set	2set	3set
Compressor Amount	1set	1set	4set	8set	12set	8set	12set
Cooling Method	Water cooling SL		Forced-air cooling FL			Forced-air cooling FL	Water cooling SL
Flow of cooling waterΔt=15℃	0.2m³/h Δt=20℃	0.4m³/h Δt=20℃	//	//	//	//	9m³/h
Size(mm) (L*W*H)	2625*1277*1850	3170*1580*2080	3810*2215*2420	6800*2215*2420	9500*2215*2420	8150*3110*3200	11400*3110*3200
Structure	Whole set	Whole set	Whole set / Assembled set	Assembled set	Assembled set	Assembled set	Assembled set
Weight	1.5t	2.0t	3.2t	5.8t	8.0t	9.1t	12.3t

Model	SBDD19200SL	SBDD24000SL	SBDD28800SL	SBDD33600SL	SBDD38400SL	SBDD43200SL	SBDD48000SL
Standard Dehumidification Capacity/24h	19200kg	24000 kg	28800 kg	33600 kg	38400 kg	43200 kg	48000 kg
Standard Dehumidification Capacity/h	800kg	1000kg	1200kg	1400kg	1600kg	1800kg	2000kg
Working Power	208kw	260kw	312kw	364kw	416kw	468kw	520kw
Dehumidification Heat Pump Module	4set	5set	6set	7set	8set	9set	10set
Compressor Amount	16set	20set	24set	28set	32set	36set	40set
Cooling Method	Water cooling SL						
Flow of cooling waterΔt=15℃	12m³/h	15m³/h	18m³/h	21m³/h	24m³/h	27m³/h	30m³/h
Size(mm) (L*W*H)	14650*3110*3200	17900*3110*3200	21150*3110*3200	24400*3110*3200	27650*3110*3200	30900*3110*3200	34150*3110*3200
Structure	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set
Weight	15.5t	17.7t	21.9t	25.1t	28.3t	31.5t	34.7t

Appendix:

Refrigerant	R134a
Power Supply	(220V\380V\440V)/3H/50Hz(60Hz)
Drying Temperature	48 ~ 56℃(recycle air)/ 65 ~ 80℃(supply air)
Control System	Touch screen + PLC programmable control system
Applicable Range for Inlet Sludge	Water rate (40%-82%)(others is available for customization and testing)
Applicable Range for Outlet Sludge	Variable Frequency control to realize outlet range (10%-60%)
Shaping Method	Slitting (70%-83%)

TECHNICAL PARAMETERS (QUADRUPLE EFFECT)

Model	SBDD10800FSL	SBDD16200FSL	SBDD21600FSL	SBDD27000FSL	SBDD32400FSL	SBDD37800FSL	SBDD43200FSL	SBDD48600FSL	SBDD54000FSL
Standard Dehumidification Capacity/24h	10800kg	16200kg	21600kg	27000kg	32400kg	37800kg	43200kg	48600kg	54000kg
Standard Dehumidification Capacity/h	450kg	675kg	900kg	1125kg	1350kg	1575kg	1800kg	2025kg	2250kg
Working Power	105kw	155kw	205kw	255kw	305	355kw	405kw	455kw	505kw
Dehumidification Heat Pump Module	2set	3set	4set	5set	6set	7set	8set	9set	10set
Compressor Amount	8set	12set	16set	20set	24set	28set	32set	36set	40set
Cooling Method	Water cooling SL								
Flow of cooling waterΔt=15℃	8.5m³/h	12.8m³/h	17m³/h	21m³/h	25.5m³/h	30m³/h	34m³/h	38m³/h	42.5m³/h
Size(mm) (L*W*H)	8150*3110*3200	11400*3110*3200	14650*3110*3200	17900*3110*3200	21150*3110*3200	24400*3110*3200	27650*3110*3200	30900*3110*3200	34150*3110*3200
Structure	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set
Weight	9.1t	12.3t	15.5t	17.7t	21.9t	25.1t	28.3t	31.5t	34.7t

Appendix:

Refrigerant	R134a
Power Supply	(220V\380V\440V)/3H/50Hz(60Hz)
Drying Temperature	50 ~ 60℃(recycle air)/ 65 ~ 80℃(supply air)
Control System	Touch screen + PLC programmable control system
Applicable Range for Inlet Sludge	Water rate (75%-81%)(others is available for customization and testing)
Applicable Range for Outlet Sludge	Variable Frequency control to realize outlet range (10%-60%)
Shaping Method	Slitting (70%-83%)

LOW TEMPERATURE WASTE-HEAT SLUDGE DRYER

Waste-heat Utilization
Sludge Drying being More Economical

FEATURES

WASTE-HEAT SOURCE

EFFICIENCY

ENVIRONMENT

UTILIZATION

ECONOMICAL

SAFETY

TECHNICAL PARAMETERS

Model	SBWHD5000	SBWHD10000	SBWHD15000	SBWHD20000	SBWHD25000
Standard Dehumidification Capacity/24h	~ 5000kg	~ 10000kg	~ 15000kg	~ 20000kg	~ 25000kg
Standard Dehumidification Capacity/h	~ 208kg	~ 416kg	~ 624kg	~ 832kg	~ 1040kg
Working Power	13kw	26kw	39kw	52kw	65kw
Standard Heat - supplied power	200kw	400kw	600kw	800kw	1000kw
Hot water flow rate	8.6m³/h	17.2m³/h	25.8m³/h	34.4m³/h	43m³/h
Standard cooling power	180kw	360kw	540kw	720kw	900kw
Cooling water flow rate Δt=12℃	13m³/h	26m³/h	39m³/h	52m³/h	65m³/h
Heat exchanger module quantity	1set	2set	3台	4set	5set
Size(mm) (L*W*H)	4900*3110*3200	8150*3110*3200	11400*3110*3200	14650*3110*3200	17900*3110*3200
Structure	Whole set	Assembled set	Assembled set	Assembled set	Assembled set
Weight	5.7t	8.6t	12.3t	14.8t	16.5t

Model	SBWHD30000	SBWHD35000	SBWHD40000	SBWHD45000	SBWHD50000
Standard Dehumidification Capacity/24h	~ 30000kg	~ 35000kg	~ 40000kg	~ 45000kg	~ 50000kg
Standard Dehumidification Capacity/h	~ 1248kg	~ 1458kg	~ 1667kg	~ 1875kg	~ 2083kg
Working Power	78kw	91kw	104kw	117kw	130kw
Standard Heat - supplied power	1200kw	1400kw	1600kw	1800kw	2000kw
Hot water flow rate	51.6m³/h	60.2m³/h	68.8m³/h	77.4m³/h	86m³/h
Standard cooling power	1080kw	1260kw	1440kw	1620kw	1800kw
Cooling water flow rate Δt=12℃	78m³/h	91m³/h	104m³/h	117m³/h	130m³/h
Heat exchanger module quantity	6set	7set	8set	9set	10set
Size(mm) (L*W*H)	21500*3110*3200	24400*3110*3200	27650*3110*3200	30900*3110*3200	34150*3110*3200
Structure	Assembled set	Assembled set	Assembled set	Assembled set	Assembled set
Weight	20.4t	23.4t	26.3t	29.3t	32.2t

Appendix:

Standard Heat - supplied conditions	90℃/70℃ (hot water)
Cooling condition	33℃/45℃ (condensate water)
Electric power source	(220V\380V\440V) /3H/50Hz (60Hz)
Standard drying temperature	50 ~ 65℃(recycle air)/ 68 ~ 85℃(supply air)
Heat power source	1. Flue gas waste heat ;2. Steam / Steam condensate water; 3. Anaerobic digestion ; 4. Sludge pyrolysis ; 5. Gen-set waste heat
Control System	Touch screen + PLC programmable control system
Applicable Range for Inlet Sludge	Water rate (40%-82%)(others is available for customization and testing)
Applicable Range for Outlet Sludge	Variable Frequency control to realize outlet range (10%-60%)
Shaping Method	Slitting (70%-83%)

LOW TEMPERATURE CONTAINER-TYPE SLUDGE DRYER

Movable Container-type
Feasible for small project with sludge from filter press

FEATURES

EFFICIENCY

MOVABLE

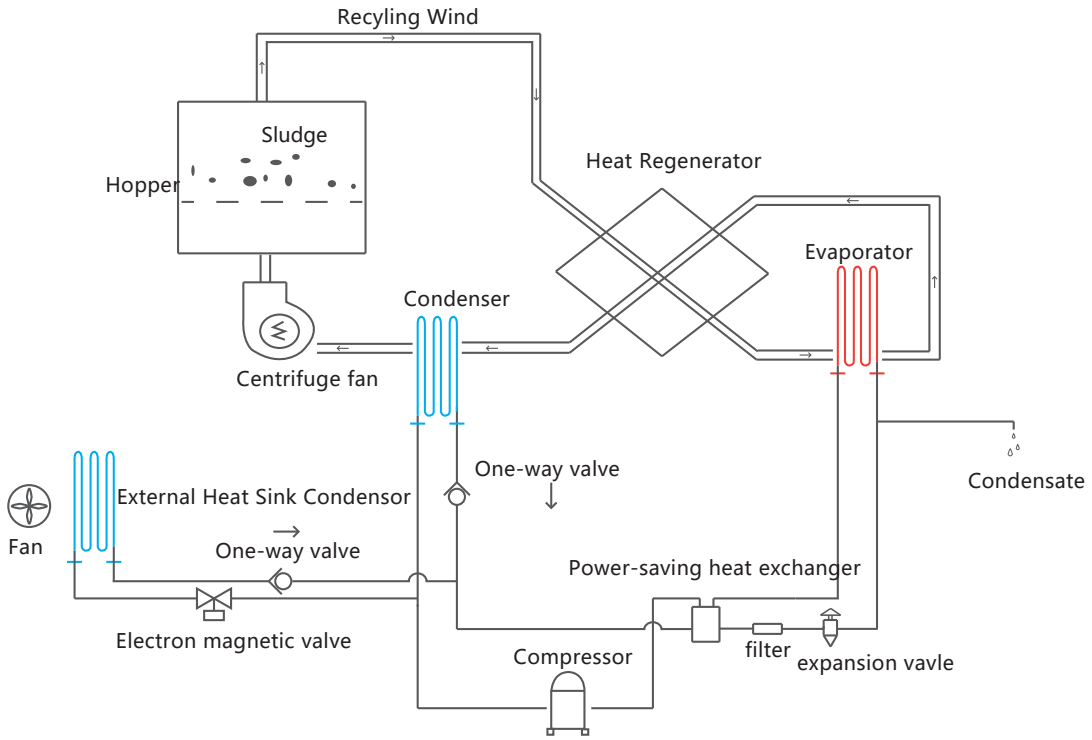
ENVIRONMENT

UTILIZATION

FLEXIBLE

SAFETY

FLOWSHEET



TECHNICAL PARAMETERS

Model	SCODD200FL	SCODD400FL	SCODD800FL
Standard Dehumidification Capacity/24h	200kg	400kg	800kg
Standard Dehumidification Capacity/h	8 ~ 13kg/h	15 ~ 23kg/h	30 ~ 46kg/h
Working Power	3.5kw	6.0kw	12kw
Hopper Size(mm)(L*W*H)	800 (L) *800 (W) *750mm (H)	1000 (L) *1000 (W) *900mm (H)	1200 (L) *1200 (W) *1100mm (H)
Size(mm) (L*W*H)	1650*1150*1500	2200*1350*1700	2600*1500*2000
Structure	Whole set	Whole set	Whole set
Weight	580kg	900kg	1430kg
Compressor Amount	1set		
Cooling Method	Forced-air cooling FL		

Model	SCODD1600SL	SCODD3200SL
Standard Dehumidification Capacity/24h	1600kg	3200kg
Standard Dehumidification Capacity/h	60~92kg/h	120 ~ 184kg/h
Working Power	24kw	48kw
Hopper Size(mm)(L*W*H)	1560 (L) *1560 (W) *1500mm (H)	1560 (L) *1560 (W) *1500mm (H)
Size(mm) (L*W*H)	3380*2150*2820	4000*3485*3200
Structure	Whole set	Whole set
Weight	2800kg	5000kg
Compressor Amount	1set	2set
Cooling Method	water cooling	

Appendix:

Energy consumption	2.0 ~ 3.5kg.H2O/KW.h
Refrigerant	R134a
Power Supply	220V\380V\440V/3H/50Hz(60Hz)
Drying Temperature	40 ~ 50℃(recycle air)/60 ~ 80℃(supply air)
Control System	Touch screen + PLC programmable control system
Applicable Range for Outlet Sludge	10%-40%

PROJECT REFERENCES

With its mission of "Solving the sludge problem", Shincci is proud to play its part for the sustainable development of cities and industries in the globe, by which enabling itself to be an admirable brand.

For the past years, Shincci has achieved rapid development in Low Temperature Drying Technology, with hundreds of project references all over the world.

> Just review some of our customers and projects as below

深圳水务 · 光大水务 Everbright Water · CSD Water Service 中持水务 · BEWG 北控水务 · 杭州水务 HANGZHOU WATER

中南市政设计院 · 华北设计院 · 上海市政设计院 · 西北市政设计院 · 西南设计院

北京排水集团 BEIJING DRAINAGE GROUP CO.,LTD · 北京首创股份 · sembcorp 胜科集团 · 中国节能 · VEOLIA

HITACHI Inspire the Next 日立 · MITSUBISHI ELECTRIC · Haojue

鲁抗 LUKANG PHARMACEUTICAL · 齐鲁制药 QILU PHARMACEUTICAL · LUXI 鲁西集团 · RUNTU 閏土 · Sinopec

BEKAERT better together · 健康元 Joincdre · FOXCONN · 京东方 BOE · BASF

FOSHAN JIALIDA EPC

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Textile	1000T/D	Screw Press	85%	30%



SHENZHEN, BINHE WWTP

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Municipal	250T/D	Screw Press	80%	50%



SHENZHEN, FUTIAN WWTP

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Municipal	250T/D	Filter Press	70%	40%

JIAOZUO JOINCARE BIOTECHNOLOGICAL

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Medicine residue	180 T/D	Screw Press	65%	30%

YUMA SEWAGE TREATMENT PLANT (USA)

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Municipal	6.5m³/d	Screw Press	98%	30%

NAPLES SCALEA WWTP (ITALY)

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Municipal	3T/D	Filter Press	75%	20%

POLAND PHARMACEUTICAL PLANT

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Pharmaceutical	5T/D	Filter Press	83%	30%

SIGHISOARA SEWAGE TREATMENT PLANT (ROMANIA)

SLUDGE TYPE	SLUDGE SCALE	DEWATERING TYPE	MOISTURE OF WET SLUDGE	MOISTURE OF DRIED SLUDGE
Municipal	20T/D	Screw Press	80%	10%

STATEMENT:

We reserve the right to alter the specifications in case of technological upgrading without prior notice.

VERSION: 201907001

GUANGZHOU SHINCCI ENERGY EQUIPMENT CO., LTD.

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Budgetary Proposal

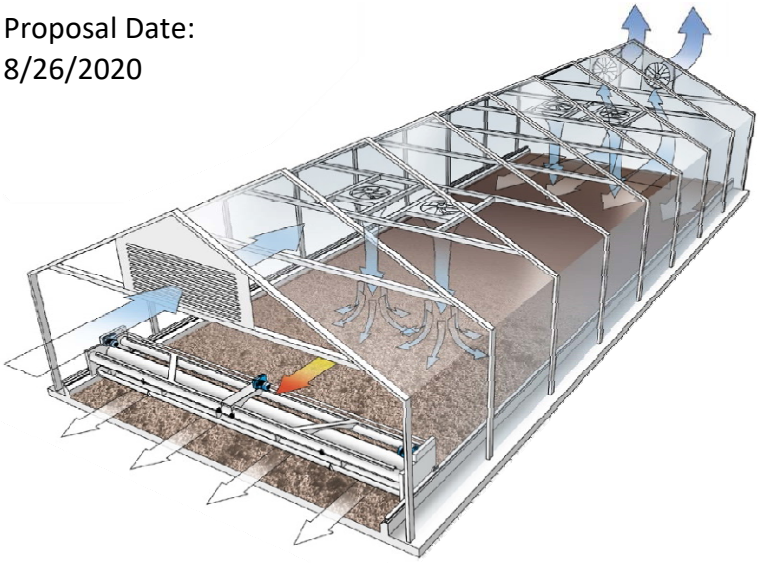
Project Name:
Fort Bragg, CA

Proposal Number:
460254

Equipment Type:
Solstice SRT 11

90% Product Dryness

Proposal Date:
8/26/2020



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WASTE WATER Solutions

Huber Technology, Inc.

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Solstice Design Summary

Fort Bragg, CA August 27, 2020

Sludge Characteristics:

Upstream Process:	Activated Sludge with Secondary Clarifier
Digestion Process:	Aerobic Digester
Sludge Type:	Waste Activated Sludge
Sludge VSS:	Information not provided
Sludge Protein Content:	Information not provided

Project Design Parameters:

Sludge Feed Rate (given):	1,084 ton/yr	
Inlet Cake Concentration:	20%	
Calculated Sludge Loading Rate:	1,084 dry ton/yr	(1,000 dry tonne/yr)
	5,421 wet ton/yr	(2,700 wet tonne/yr)

	Temperatur	Relative Humidity	Global radiation	Complete	External Input	Evaporation
January	48.8 °F	84.5%	0.19 kWh/ft²/d	0.19 kWh/ft²/d		0.005 ton/ft²
February	49.1 °F	84.1%	0.26 kWh/ft²/d	0.26 kWh/ft²/d		0.007 ton/ft²
March	49.9 °F	84.1%	0.39 kWh/ft²/d	0.39 kWh/ft²/d		0.011 ton/ft²
April	51.3 °F	82.5%	0.52 kWh/ft²/d	0.52 kWh/ft²/d		0.014 ton/ft²
May	54.5 °F	80.7%	0.63 kWh/ft²/d	0.63 kWh/ft²/d		0.018 ton/ft²
June	58.1 °F	74.9%	0.68 kWh/ft²/d	0.68 kWh/ft²/d		0.020 ton/ft²
July	61.6 °F	68.3%	0.66 kWh/ft²/d	0.66 kWh/ft²/d		0.021 ton/ft²
August	62.0 °F	67.8%	0.58 kWh/ft²/d	0.58 kWh/ft²/d		0.019 ton/ft²
September	61.3 °F	66.8%	0.48 kWh/ft²/d	0.48 kWh/ft²/d		0.016 ton/ft²
October	57.5 °F	71.6%	0.35 kWh/ft²/d	0.35 kWh/ft²/d		0.012 ton/ft²
November	52.4 °F	80.3%	0.22 kWh/ft²/d	0.22 kWh/ft²/d		0.007 ton/ft²
December	48.9 °F	82.5%	0.17 kWh/ft²/d	0.17 kWh/ft²/d		0.005 ton/ft²
Average			**0.43 kWh/ft²/d**			**0.013 ton/ft²**
Annually			**156 kWh/ft²/a**			

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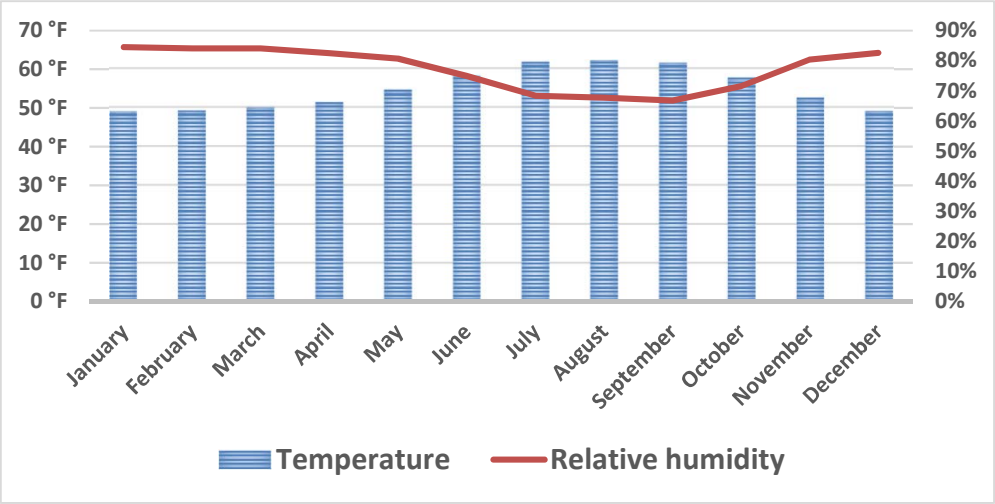

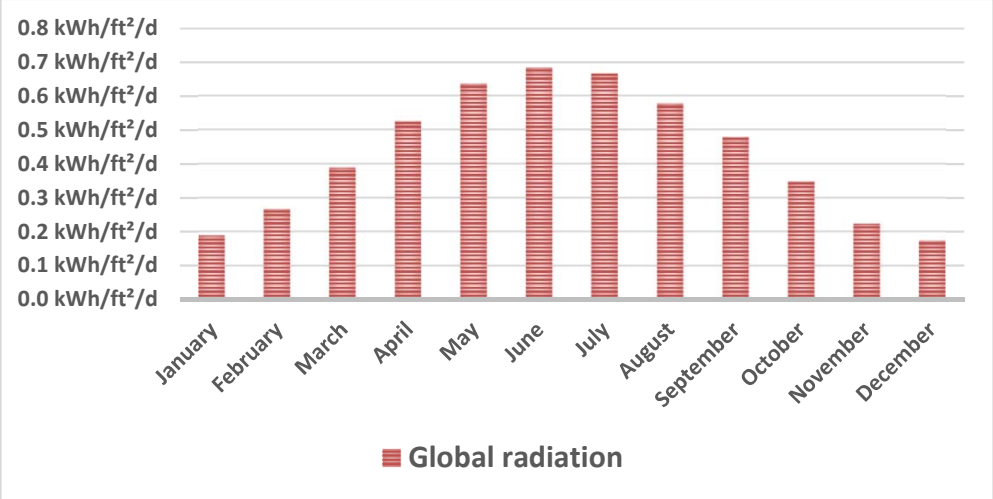

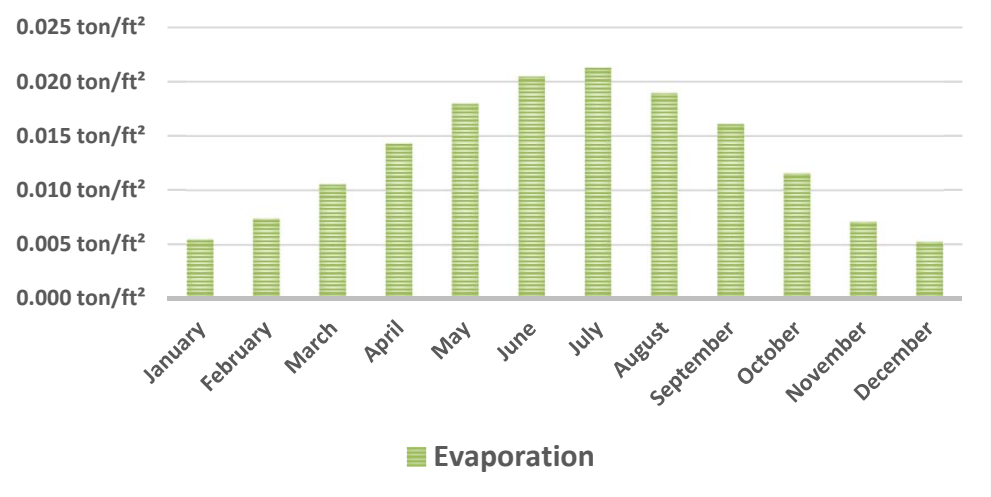

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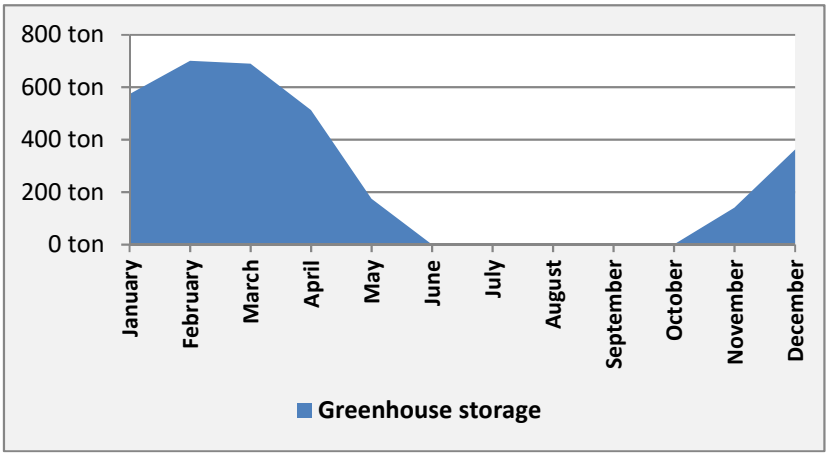
Equipment Recommendation:

Recommended unit model:	Huber Dryer Solstice 11	
Recommended unit quantity:	3	
Recommended width of greenhouse:	118 ft	(36 m)
Recommended length of greenhouse:	354 ft	(108 m)
Length of drying field:	317 ft	(97 m)
Drying area (per unit):	11,438 ft²	(1,063 m²)
Total drying area (per greenhouse):	34,315 ft²	(3,188 m²)

Project Design Calculations:

Estimated Dry Cake Solids Out:	90%
Solids Loading Rate Out:	1,205 ton/yr
Annual Water Evaporation Requirement:	4,216 ton water/yr

	Input	DSIn	Output	DSOut	Water evaporation	Sludge level
January	452 ton	20%	53 ton	90%	187 ton	10 in
February	452 ton	20%	72 ton	90%	252 ton	12 in
March	452 ton	20%	103 ton	90%	361 ton	12 in
April	452 ton	20%	140 ton	90%	489 ton	9 in
May	452 ton	20%	176 ton	90%	615 ton	4 in
June	452 ton	20%	139 ton	90%	487 ton	2 in
July	452 ton	20%	100 ton	90%	351 ton	2 in
August	452 ton	20%	100 ton	90%	351 ton	2 in
September	452 ton	20%	100 ton	90%	351 ton	2 in
October	452 ton	20%	100 ton	90%	351 ton	2 in
November	452 ton	20%	69 ton	90%	242 ton	4 in
December	452 ton	20%	51 ton	90%	179 ton	7 in
Sum/average	**5421 ton**	**20%**	**1205 ton**	**90%**	**4216 ton**	**6 in**



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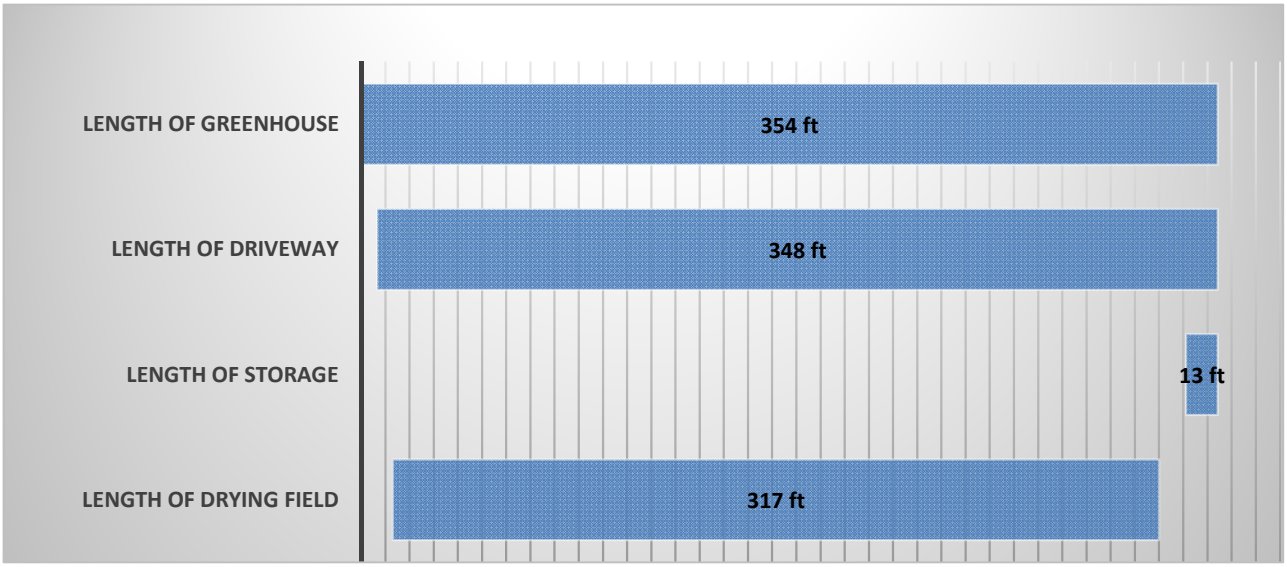

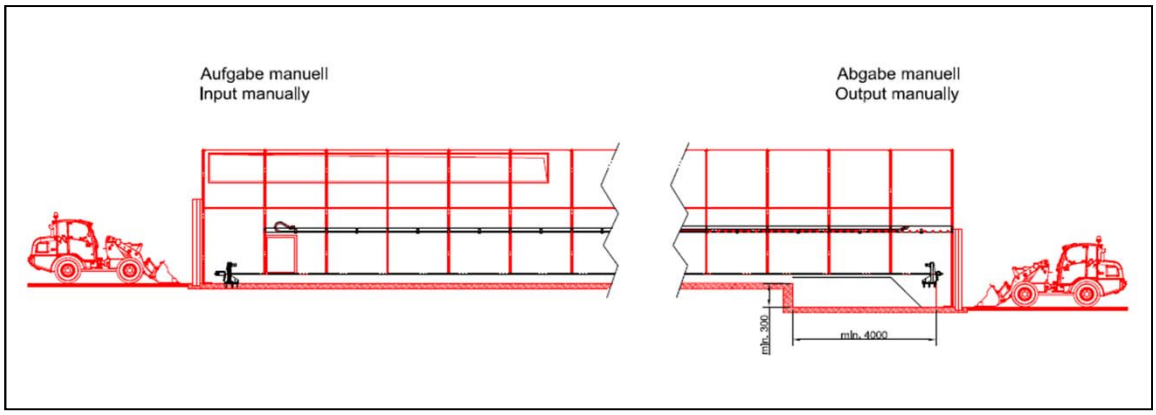

Electrical Consumption (Estimation):

	Numbers	Operation time	Effective power	Electrical consumption
Traction drive	3	2,292 h/a	2.20 kW	7,893 kWh
Sludge turning drives	3	1,146 h/a	5.50 kW	9,866 kWh
Lift drive shield	3	287 h/a	0.50 kW	43 kWh
Installation (estimation)	3	1,000 h/a	1.00 kW	3,000 kWh
Ventilators (all)	30	4,085 h/a	0.80 kW	98,040 kWh
SUM				**118,843 kWh**

Notes and Assumptions

Fort Bragg, CA August 27, 2020

1. Equipment specification and drawings are available upon request.
2. If there are site-specific hydraulic constraints that must be applied, please consult the manufacturer's representative to ensure compatibility with the proposed system.
3. Huber Technology warrants all components of the system against faulty workmanship and materials for a period of 12 months from date of start-up or 18 months after shipment, whichever
4. Budget estimate is based on Huber Technology's standard Terms & Conditions and is quoted in US dollars unless otherwise stated.
5. Equipment recommendations are based on information provided to Huber Technology. Subsequent information which differs from what has been provided may alter the equipment
6. Pricing is based on Huber's standard control panel arrangement.
7. Greenhouse lengths may vary based on the required automation of the sludge input and discharge.
8. The offer is based on normal, homogenous municipal sludge with a minimum organic content of 45% and a maximum organic content of 70%. Sludge with organic content around 70% is assumed to have less than 45% protein value.
9. Feed sludge must be free of any pollutants which could be hazardous, toxic, radioactive, corrosive, flammable, or explosive.
10. Feed sludge must be free of lime which may have been added to stabilize or improve storage of the sludge. Sludge stabilized with lime can only be treated in drying plants which are specifically designed for this purpose.
11. Annual solids loading is based on 200,000 gal/wk at 2.5% feed solids to dewatering process with 100% capture rate.

Equipment Summary

Fort Bragg, CA August 27, 2020

Dryer System:

Three (3) Huber SRT 11 Dryer, including:

- 304L stainless steel construction; pickled and passivated in acid bath
- Traction drive system and chain
  - 3HP, 460VAC, 3PH, 60Hz, VFD Motor
- Sludge turning unit
  - 10HP, 460VAC, 3PH, 60Hz, VFD Motor
- Galvanized steel rail system
- 21 Recirculation Fans
- 9 Exhaust Fans
- Dust Encapsulation
- Scraper Plate
  - 1.0HP, 460VAC, 3PH, 60Hz Motor

Control System - Solar Dryer, including:

- Solar Dryer Main Control Panel
- Solar Dryer Transfer Control Panel
- Junction Box

Greenhouse:

- Width and length to meet design criteria above
- Roof and side walls twin wall polycarbonate
- Galvanized steel frame
- Two (2) passage doors
- Two (2) overhead doors

Freight and Startup:

- Standard Huber Recommended Start-up Services
- Freight to jobsite.

Total Price: $ 2,190,000 (for all units)

Dryer Options

Fort Bragg, CA August 27, 2020

Optional Items which can be supplied by Huber (but are not included in the above pricing):

- Cake conveyance to the dryer
- Discharge and Dry Storage System
- Odor Control System

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Items Not Supplied by Huber

Fort Bragg, CA August 27, 2020

Items not included in the above offering:

- Wiring and piping between all supplied equipment
- Installation
- Concrete work
- Site Preparation
- Maintenance platforms and cranes

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Sludge Treatment System Proposal

Project Entity	Fort Bragg
Project Description	Domestic Wastewater Sludge Drying
Project System	Low Temp Dehumidification Solids Treatment System
System Sludge Inlet	28,600 Gallons a day at 1.5% solids dewatered to 15% solids.
System Outlet Sludge	Approximately 2.3 Tons of dried solids per 24 hour day.
Project Designer	USA Sludge
Date	12/28/2020

Content

USA Sludge

USA Sludge

USA Sludge is a High-Tech Enterprise devoted to dehumidification heat pump sludge drying.

This new line of dehumidification heat pump sludge dryers are the most advance sludge drying machines in the world.

USA Sludge has broken through the difficulties and the high costs associated with traditional gas drying equipment by implementation of a fin-type regenerative cycle with advance slitting, combined with double and triple effect heat pump cycling which dramatically lowers the cost of sludge drying by reusing the heat that would normally be discarded in a traditional sludge drying system.

This high-tech drying system has a small foot print, effectively treats many different kinds of sludge, requires no odor control equipment and doesn't require an fossil fuel emissions permit.

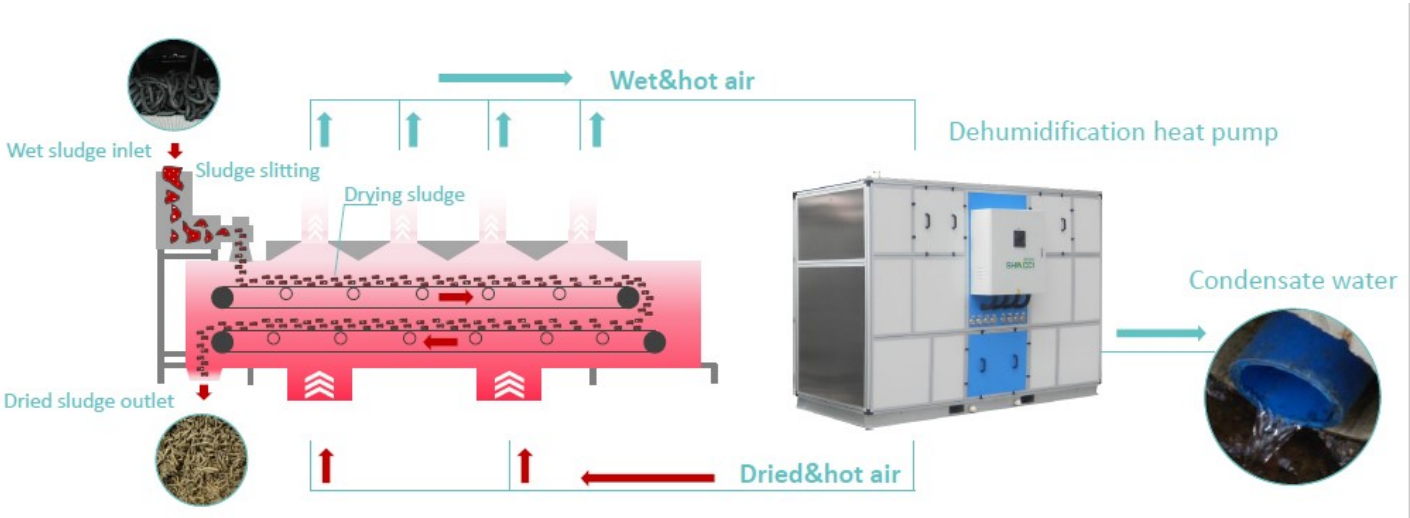
Dryer Overview

Below is a schematic of the USA Sludge Dryer. The dehumidification heat pump dries the wet sludge to dried Class A Fertilizer. The hot air and the condensate water are captured within the system.

There are no odor issues when using this closed cabinet drying system. The heat transferred from the compressor and fan motor is dissipated using a fan coil unit. The condensate water is captured and can be reused or recycled to the headworks of the treatment facility.

The dehumidification heat pump used in the proposed USA Sludge dryer utilizes the refrigeration principal to cool and dehumidify hot wet air. Through the heat pump principal, the heat pump recycles the latent heat released from steam congealing to water liquid. A dehumidification heat pump is equal to the dehumidification process (moisture removal or moisture dehumidifying) plus a heat pump process (energy recycling). A dehumidification heat pump can internally collect all the latent heat and sensible heat during air exhaust, bringing no waste heat to the outside.

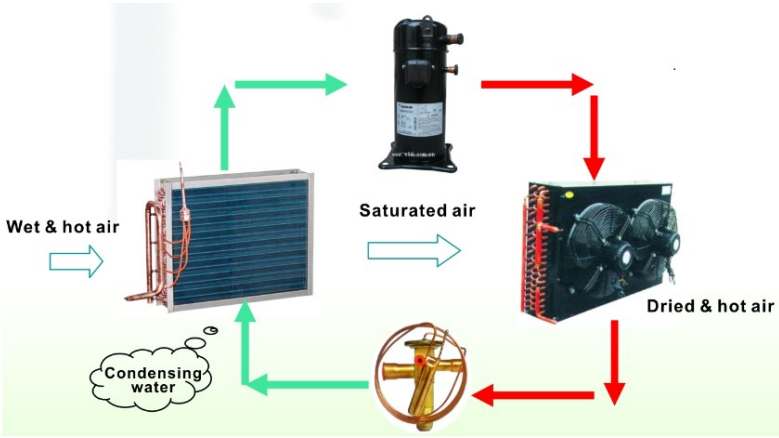
The evaporation of sludge moisture absorbs latent heat; and the condensation of the generated vapor on the heat pump cycle releases latent heat. The evaporation process absorbs the same quantity of latent heat that the condensation process produces, according to the laws of thermodynamics and the law of conservation of energy. As a result, the drying process does not require additional heat capacity, resulting in the reduction of energy costs. The energy consumed during the process is only the electricity needed to operate the compressors and the air handlers.

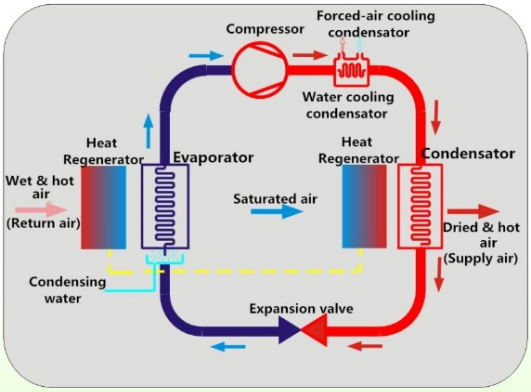


Material used in construction is anti-corrosive 304 stainless steel while the heat exchanger surface is specifically electroplated with an anti-corrosion material which extends the service life. The service life of the dryer is 20 years since there's no mechanical wear and tear during operation.

Triple effect and quadruple effect patented dehumidification technology can effectively maintain the air humidity lower than 10% which enables high drying efficiency and saves electrical consumption. The Independent layered blower system can satisfy the requirement of high-speed dehydration which shortens the period of low temperature drying. Modularized structure design enables high regulating capacity and easy installation. Conveyance motors and outlet conveyor have a frequency converter and infinitely variable speed enables regulated dried sludge moisture of between 10 and 50%

This heat pump system is designed to recycle the heat and reuse it in a closed cabinet dryer. One kilowatt hour is capable of drying 4 kg of H2O. With a quadruple affect heat pump, electricity consumption of the dryer for 1 metric ton of sludge from 80% moisture to 10% moisture is 180 kilowatt hours . Electricity consumption of drying one metric ton of sludge from 80% moisture to 60% moisture is 118 kilowatt hours





Product Specification

Model USA TSD 400E Sludge Drying System

Model	USA TSD 400E
Dehumidification Capacity Kg/Hr	400
Max Dehumidification Capacity T/24	9.6
Electric Consumed	104 kWh
Length	36feet (Required 46ft) Does Not included Conveyor
Width	8.5 feet (Required 20ft) Does Not include Conveyor
Height	9.1 feet (Required 16ft)
Weight (Full)	24,000 lbs.
Dehumidification Heat Pump Module	2 sets
Number of Compressors	16
Cooling Method	Forced Air
Refrigerant	R-134a
Power Supply	480 Volt 3PH 60Hz
Drying Temperature	118 - 132F (Recycle Air) / 148 - 176F (Supply Air)
Control System	Touch Screen + PLC Programmable Control System
Outlet Sludge	75% Solids

Operating Cost Heat Pump

Electrical consumption to dry to 75% solids

Energy consumption of low temperature heat pump drying system
(dry from 15% to 75% solids)

1. Per hour electricity consumption: 104 kWhs

2. Daily electricity consumption: 2496 kWhs

Water

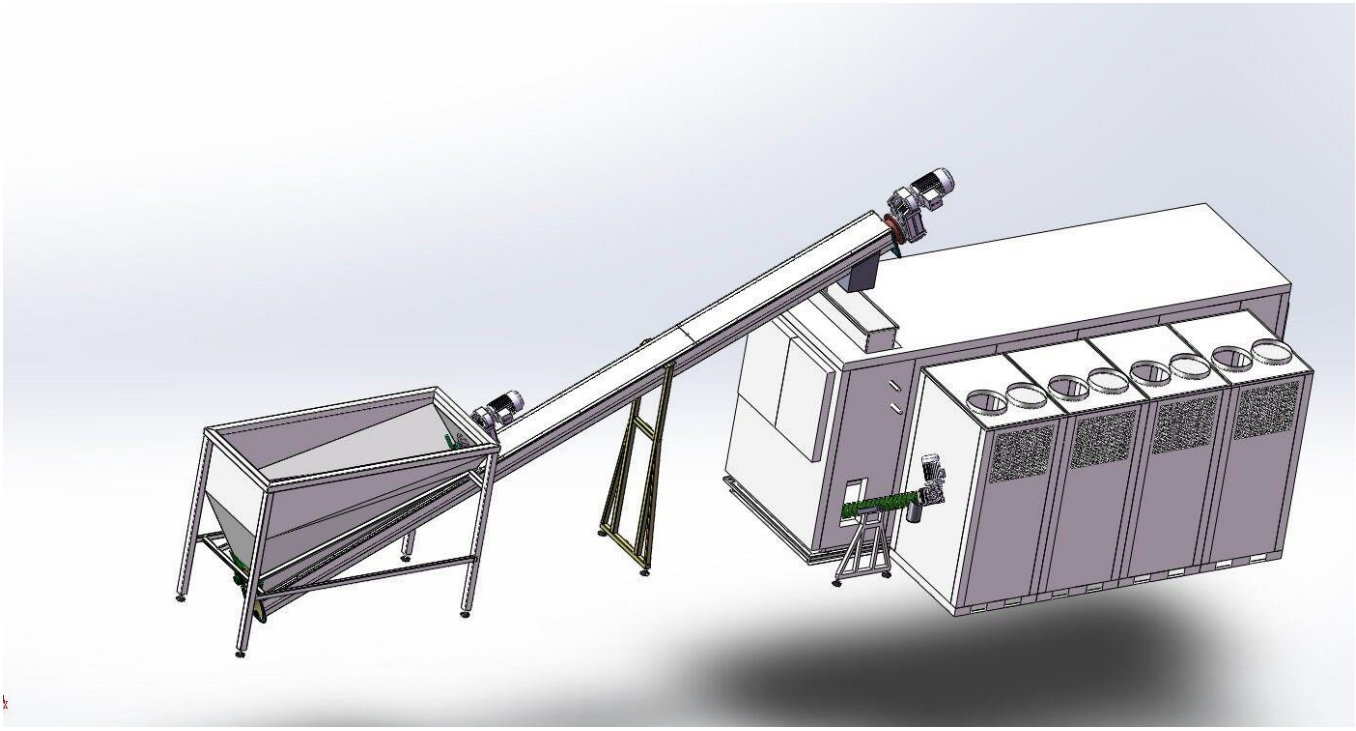
System will condensate 105 gallons of water an hour or 2,520 Gallons a day.

Labor

The machine can operate unattended but pellet storage needs to be managed and the machine should be checked every hour. Filters need to be cleaned once a week and replaced every 90 days. Condensing coils need to be cleaned every 6 months and overall inspection once a year. Slitter combs need to be replaced once a year.

System Cost Heat Pump Dryer	$499,800.
Inlet Conveyor 304 SS	$40,000.
Total Project Cost	**$539,800.**

Feed Hopper Inlet Conveyor



Belt Conveyor Pulled from Container

Second Forklift placed underneath Belt Conveyor

Truck drives away and Belt Conveyor transferred to forklift

Heat Pump Unit removed from Container

Belt Conveyor placed in Building

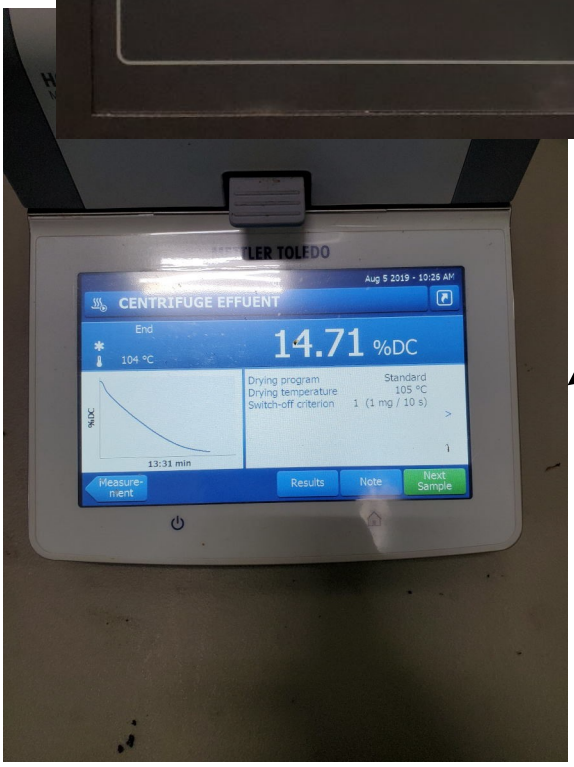
Compressors

Evaporators

Belt Section

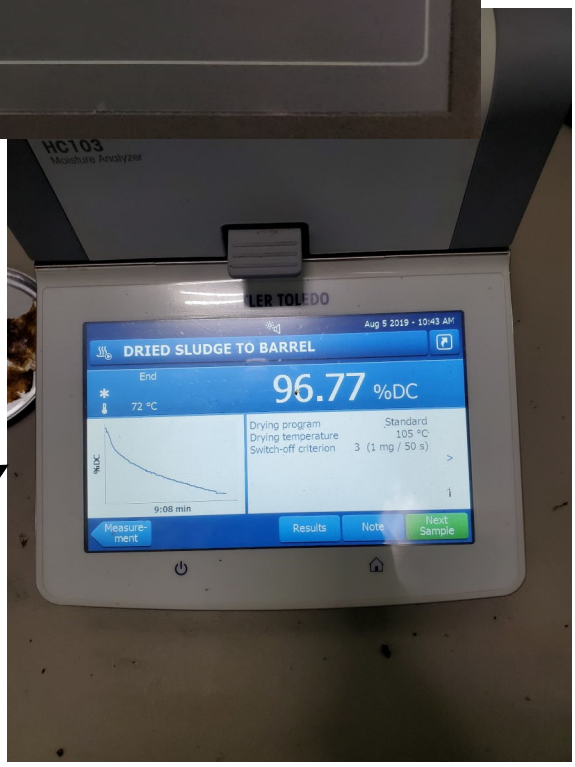
USA Sludge

Touch Screen



Sludge From Centrifuge

Sludge After Drying



Delivery:

The unit will take 140 days from date of order to be delivered to your facility...Hopefully earlier.

Warranty:

5-year guarantee. USA Sludge Guarantee's Class A quality dried biosolids per the EPA 503 standards provided the sludge does not have "forever chemicals in the sludge.

Installation:

USA Sludge will have one engineer to help commission the unit. Commissioning will last no longer than 30 days. A Rigging company must be supplied to help install the unit.

Connections:

Plumbing connects 1" from the machine need to be completed by outside plumbing contractor.

Electrical connects to the machine need to be performed by outside electrical contractor.

A 200 Amp 480 3 Phase Disconnect.

A slab will need to be poured for the unit.

ELODE USA, Inc | 97 Oak St., Norwood NJ 07648 | (201) 568-7778 | www.ELODEUSA.com

Date: December 10, 2020

To: Fort Bragg, CA WWTP

Proposal: ELODE Proposal No. FBCA-00010

Project: ELODE 2 Meter Unit, EODS-2000

Subject: ELODE Non-Thermal Sludge Dryer for Fort Bragg, CA WWTP

We are pleased to offer the following equipment and supply for your consideration relative to the above subject project.

ELODE USA, Inc. is located in Norwood, NJ (20 minutes outside of New York City) with our factory located in South Korea. ELODE has multi-installations throughout Asia and we are proud to introduce ELODE to US market with our proven track record. ELODE (Electro-Osmosis Dehydrator) is a Heat-less sludge dryer that dewater sludge cake using the lowest energy possible. Mechanisms of electro-osmosis and electrophoresis creates an ideal condition to apply 2nd stage dewatering process after your 1st stage dewatering press to further reduce water from your sludge cake. ELODE takes the sludge cake in between two electrically charged surfaces where it instantly starts to pull moisture away from the sludge, resulting in a moisture level far below any mechanical means.

Item #1

One (1) ELODE USA – 2 Meter ELODE Drying System. We are pleased to provide a preliminary budget estimate for electro-dewatering. Preliminary estimates are based on a sample testing conducted at ELODE USA, Norwood, NJ location on Nov. 24, 2020. Client supplied the sample via overnight carrier and test completed the following day.

The system includes the ELODE dewatering dryer, sludge leveling distribution system, cake entrance hopper, PLC based control panel (owner to specify control voltage/hertz).

Included: Some consumable parts *[3 sets of filter belt, scraper, nozzles and 1 set of high pressure turbo nozzle hose]* and Factory Limited Warranty, Commissioning of ELODE, (optional – central monitoring connection is an extra)

Preparation by Buyer:

- Foundation & Weather Enclosure
- Washer Water Supply
- Remove water and wash water drain system
- Vent Duct & Order Capture System
- Electrical Supply (180kw / unit, 3 phase, 240VAC or Higher)
- Compressed Air (low usage)
- Temperature Controlled Room for Control Unit
- Feed Pump or Conveyor to ELODE
- Conveyor to the dumpster from ELODE
- Unload Equipment & Move to site
- Hook up Power, Vent, Air, Control Panel and Plumbing

Item #2

The services of a factory trained representative for the purpose of installation supervision, inspection, startup, and operator training will be provided for a period not to exceed **five(5) days on-site, and to be completed in two (2) trips.**

Item #3

Final Information and Pricing for items listed above:

We propose to furnish the above described equipment for the Total Lot Net Selling Price of **$763,000.00 USD** , to major US from shipping port – Busan, South Korea]. Customer is responsible for inland trucking & from receiving port and insurance.

Additional service may be requested at a rate of $150 per hour, plus all travel and lodging expenses.

Please Note:

Except as otherwise noted herein, the following are not included in our offering:

Installation or off-loading, local, state or federal taxes, permits, or other fees, anchor bolts, local motor disconnects or lockouts, platforms, walkways, handrails or any structural and/or safety materials.

Warranty:

Our equipment shall be warranted against defects in workmanship and materials for a period of **eighteen (18)** months after delivery or **twelve (12)** months after start-up, whichever comes first. This warranty is based upon compliance with ELODE USA's handling, storage, installation, startup, operating and maintenance procedures.

Unless otherwise specified our standard payment terms are as follows;
Terms & Conditions:

- Payment schedule is as follows:
  - 25% with the purchase order
  - 35% after submittal of shop drawings
  - 35% upon equipment inspection at the factory (S. Korea)
  - 5% upon delivery of equipment and O&M manuals & commissioning. [Max. 4 weeks after delivery]

Early shipments and partial shipments will be invoiced as shipped on a prorated basis to be determined by ELODE USA.

Unless otherwise specified this proposal is offered for acceptance for (90) ninety days and is subject to review thereafter. Pricing is firm based upon receipt of a Purchase Order within this (90) ninety-day period. Delays in shipments caused by slow return of submittals or other delays caused by the contractor, owner, owner's agents or engineer may result in additional charge of 1% per month.

Submittal Schedule:

Approval submittals can be forwarded approximately **6-10 weeks** after our receipt and acceptance of your purchase order.

Delivery Schedule:

Shipment of equipment can be made approximately **20-24 weeks** after our receipt of approval and your release to manufacture.

These lead times are based upon typical Engineering and Shop loading, which may vary to some degree.

Offering Basis:

Please note that our offering, as described herein, is based upon ELODE standard model. Should the contents of any addenda (or other applicable documents) have an effect on our offering, we must reserve the right to modify that offering (and pricing/terms) accordingly. We request your assistance in keeping us abreast of all changes to the contract documents.

We wish you a success on this project and look forward to the opportunity of working with you.

Sincerely,

SIGN: _____

Hahn Min
President
ELODE USA, Inc.