

09/13 Expert communication

Communication channel	Wechat
Date	09/13
Time	12:00PM-18:00PM
Attendees	Minghui Zhang John Xu (expert)

Agenda

1. Understand the working principle of the overall Sensitar design
2. Discuss the importance of purification equipment.
3. Basic information, including working principle and working parameters toward to key components in the processing.

Notes

1. Poultry rendering process cannot work continuously. After one batch finish, the other batch can start.
2. There are two types of equipment can be used to provide heat. The first one is electricity and the second one steam.
For the electricity, the electricity heat the heating pipe first. The heating pipe heat the electricity conduction oil. The electricity conduction oil and then go into the cooker jacket. The jacket heat the raw material. The electricity heating pipe requires about 120KW.
For the steam source, the electricity heat the water into steam. The steam go into the cooker jacket and shaft inside to heat the material. They are equally safe. But, the manufacture suggest to use the electricity source in the design because it is easily to transport based on their experience. To handle the transportation issues, machine are fixed by using screw. There will not any transportation issues.
3. The oil from the fat press is crude oil. Depend on the applications, the purification machines are different. Thus, it is not necessary to include them in the whole container.

Action Items

Action item	Owner	Deadline
Decide the heating equipment	All team	09/15
Remove the purification machines (including percolator, decanter and separator)	All team	09/15

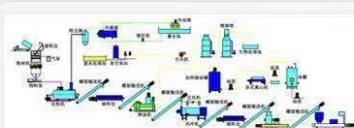
Screenshots of communication with experts

< WeChat

John Xu

...

Are the completed mobile design cover all the machines in this diagram?



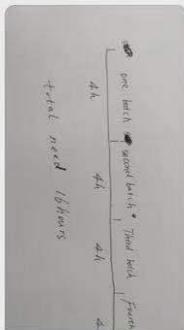
And does it have more than 1 batch?
We want our design to work
continuously. So we are preparing to
put more than one batch?



Wednesday 下午6:05



Yes, our smallest input capacity is 1 ton. The batch cooker are working for about 4 hours all the time, and then the meal come out. input another 1 ton material, start another batch work.



< WeChat

John Xu

...

This is really cool. Does the exist product have 6 batch to work 24 hours a day?



Wednesday 下午6:11



Yes, 6 batches for 24 hours

Wednesday 下午6:14

Ok I will check with my boss! This is really helpful! Thank you



ok, you are welcome. Contact me if any question

Wednesday 下午6:33



send you some descriptions



Sensitar 1T rendering plant description.pdf



1.52M

WeChat for Windows



< WeChat

John Xu

...

Thank you so much. This is really helpful.



Yesterday 上午9:11



you are welcome

Yesterday 上午10:50



You can use 0.5 ton steam boiler, no need 1ton steam boiler.



i did not see the steam boiler in the PDF you sent me. What is this component?



You need prepare boiler by yourself



it provide heat source for rendering plant

Yesterday 上午10:56



If you have steam source, it is also ok.



< WeChat

John Xu

...



If you have steam source, it is also ok.



the function of the steam boiler is only the heat source? I do think we have one. Does your company sell similar component?



steam boiler to provide hot steam to cook and dry raw material.



Oh, is it a part in the cooker?



The other thing is we are worrying about will the product can satisfy Australian standard. Maybe we need to modify a little bit of the existing mobile plant.

Yesterday 上午11:01



boiler is not part of cooker, it is individual part, just provide steam source



The other thing is we are worrying



< WeChat

John Xu

...

The other thing is we are worrying about the transportation issues. We will transport this whole mobile plant from one farm to another one. So we are worried about the stability and structural integrity.



We probably need to do some computational simulation to test it?



Oh I think I got it. Boiler will provide steam.



Yesterday 上午11:08



do not worry transport, we fix machine on container



< WeChat

John Xu

...



We are wondering do we need some more structural reinforcement.



Can we look at the ventilation component?



We also want this to be easily access and maintenance.



What is the lifetime roughly of the whole system?



I am also talking with my team do we really need 6 batch and let it work 24 hours per day. Because we



< WeChat

John Xu

...

I am also talking with my team do we really need 6 batch and let it work 24 hours per day. Because we are farming the insects. The production of the insects is not that big.



I am also waiting for my team. They are doing some research about the Australian standards. Have you ever sell this product to Australia before?



Yesterday 上午11:13



Yesterday 上午11:13



< WeChat

John Xu

...



this is ventilation component



it is easy to assemble, just need connect pipes between machine



Design working life is about 15-20 years

Will you provide a detailed manual and teach us how to manipulate the whole system?



< WeChat

John Xu

...



Yes, Our engineer come to customer site, guide to install machine, adjust machine, and teach your worker to operate machine

Just like you mentioned before we need a boiler. This component is not included in the pdf file. Is there any other components we need?



Could you send me a more detailed document.



We are checking the Australian standards. I am waiting for my team's response. The other thing is the financial analysis.



You just prepare electricity, boiler, a water pool (with water) for cooling tower. If you are very near to sea, you do not need cooling tower

Yesterday 上午11:25

We are not near the sea. Haha



Optus 4G

下午7:18

11% 

WeChat

John Xu

...

We think we need the cooling tower.



Yes



Sensitar poultry
rendering...t catalog.pdf



13.25M

 WeChat for Windows

Yesterday 上午11:26



please check our product catalog

This is really cool.



 ,thanks

I will communicate with boss. I think
this is the product we are looking
for.



Hope it is helpful for you

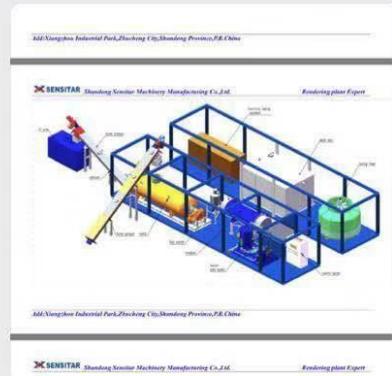
This helps a lot.



< WeChat

John Xu

...



This figure seems like not very clearly.



Do you have a more clearly version



Our boss really want us to do the computational simulation and detailed 2D and 3D drawing. This is because we want to make sure all the component can satisfy the Australian standards.



Let me check



Is it possible to provide some helps towards to this

Thank you.



< WeChat

John Xu

...



Your heating source is steam, right?

Yesterday 下午4:59

Is there any other options?



can use electricity conduction oil,
use electricity heating

Which one is more safer? We want
this can be easily maintenance and
operated and easily transportation



the electricity heating pipe is about
120KW, not include machine power
consumption

which one do you recommend?



Yesterday 下午5:05



i think steam is better because the
heat area is uniform

How about safety consideration?



< WeChat

John Xu

...

How about safety consideration?



We are also wondering about the efficiency of the production line?



Yesterday 下午5:20



Electricity conduction oil is circulation of cooker jacket, it is more safe. But oil can fire when it meet oil. The boiler has pressure, it can explode.

What do you mean oil can fire when it meet oil?



Sorry



Electricity conduction oil is oil



oil will burn when it meet fire

Yesterday 下午5:25



they should be same safe, has thier



< WeChat

John Xu

...



they should be same safe, has thier own advantage and disadvantage

Yesterday 下午5:38



Lily, i just checked the heating pipe for conduction oil is more than 180KW, it is ok for you ?

Yesterday 下午5:41

Except for the cost, is there anything difference between 180kw and 120kw?



More than 180 KW is better. The power is smaller , the heating speed is lower



180KW only for heating pipe for oil, not includes machine power consumption



If you use steam heating type, your boiler can remove form one farm to another farm ? Or you have steam source in every farm?



< WeChat

John Xu

...



If you use steam heating type, your boiler can remove from one farm to another farm ? Or you have steam source in every farm?

Yesterday 下午5:55



your email ID is u6065938@anu.edu.au, right?

Yesterday 下午9:23

Yes. We don't have a steam source in every farm.



Does this mean we must use electricity conduction oil? Right?



Yes. You can contact me via this email



if your boiler can move from one farm to another farm ,you can use steam heating

Yesterday 下午9:30



< WeChat

John Xu

...

Yesterday 下午9:30

Yes. We do not have similar experience. So, we are wondering which one is better. As you mentioned before, they are in similar safety level. But, boiler can heat uniformly.



Yesterday 下午10:06



Yes, if your boiler can move, you can use steam heating



If not, you can use electricity heating

Yesterday 下午10:31

For the existing product. Do you use the boiler or electricity heating?



We have two types. recently we sent electricity heating type to customer because it is easy to transport. We supplied steam heating type to customer before.



< WeChat

John Xu

...

I think electricity seems good. As it can be easily transported.



We are wondering can we get some more detailed for the design. We need to check if it can satisfy the Australian standards and do some computation simulation. We got there will be some IP issues. So, we are wondering is it possible to provide some more dimension details?



Yesterday 下午10:37



we send you two layout drawings



Do you have a clearly version of this diagram? It's a little bit hard to read.



< WeChat

John Xu



We are wondering can we get some more detailed for the design. We need to check if it can satisfy the Australian standards and do some computation simulation. We got there will be some IP issues. So, we are wondering is it possible to provide some more dimension details?

Yesterday 下午10:37



we send you two layout drawings



Do you have a clearly version of this diagram? It's a little bit hard to read.



This drawing is just for your reference, we need do exact drawing after order.



< WeChat

John Xu

...

We received a work flow from another company. They also include decanter, separator in the whole system. We found your product do not include these machines. Do you mind explain a bit?



We also found the oil from your system is industrial oil. We want the oil can be used to feed livestock.



下午12:37



If you need decanter and centrifuge to get pure oil, we can provide you



The oil can be used to soap, can use for animal



The oil is crude oil from press. you can use decanter and centrifuge if you want to get pure and high quality oil

下午12:46



< WeChat

John Xu

...



You can use oil to animal feed, it depend on your raw material, not depend on rendering machines



will you redesign a system for us if we need decanter and percolator? Because it cannot be put in 2 shipping container right?

下午12:51



it need another containers. more machines need more containers



you can transport all oil into one place, use one decanter and centrifuge to process in one place

下午1:04



Yes. we will design them if you need decanter



I think collect all the industrial oil and then process them is a good idea. Because we want the final product to be used in industry area



< WeChat

John Xu

...

I think collect all the industrial oil and then process them is a good idea. Because we want the final product to be used in industry area an cosmetics



The crude oil is industrial oil?



 not industrial oil, just insect oil

But in the file you sent me, it said the final oil is industrial oil?



 No, it will become industrial oil after another type machine to process crude oil from poultry

下午1:10

What kinds of machine do we need?



 Our machine only produce crude oil from insect

I got it.



Optus 4G

下午7:20

11% 

WeChat

John Xu

...



not industrial oil, just insect oil



But in the file you sent me, it said
the final oil is industrial oil?



No, it will become industrial oil after
another type machine to process
crude oil from poultry

下午1:10

What kinds of machine do we need?



Our machine only produce crude oil
from insect

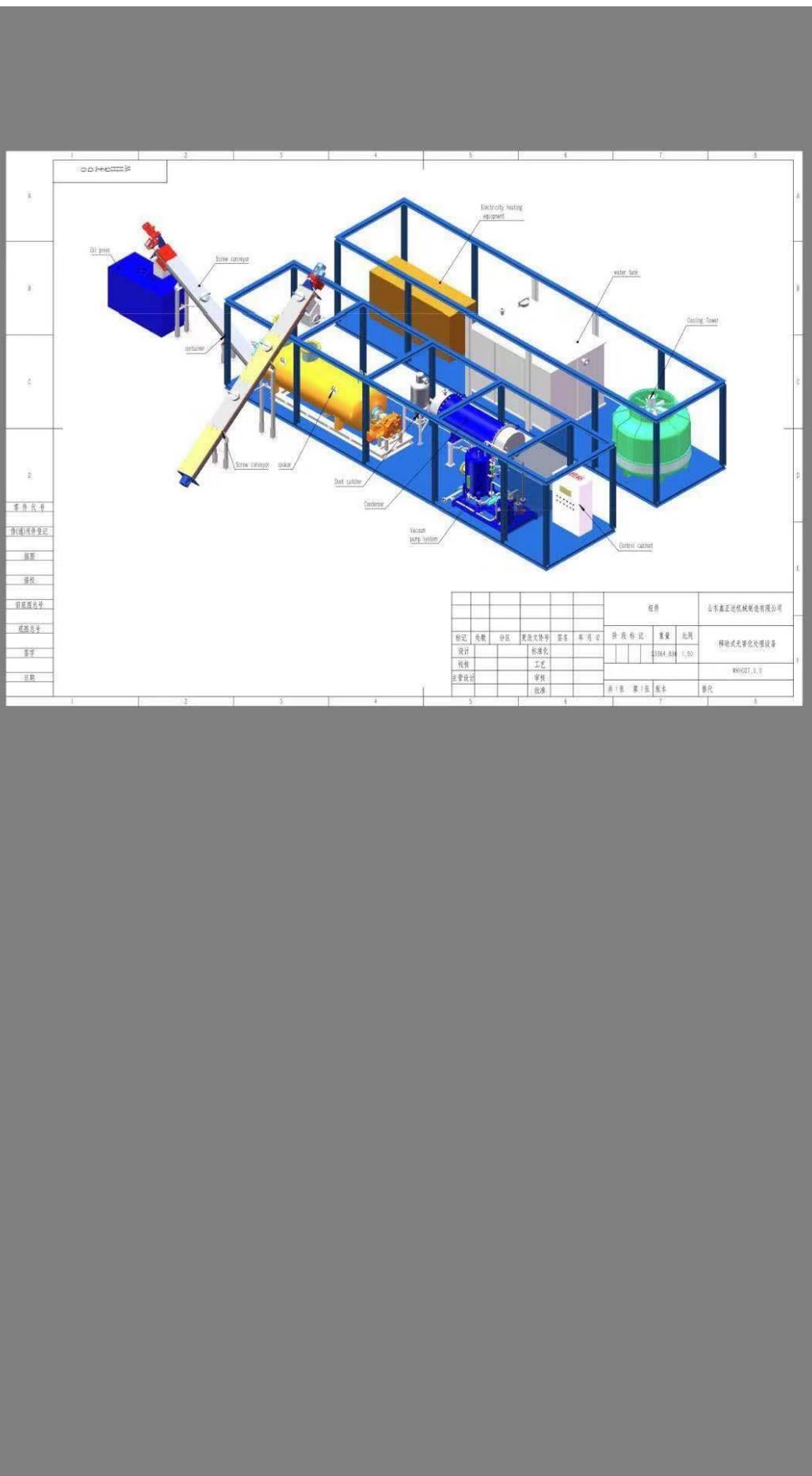
I got it.



I do not know, it is soap making
machine, not our machine, i am not
professional in soap manufacturing.

Ok, I got it



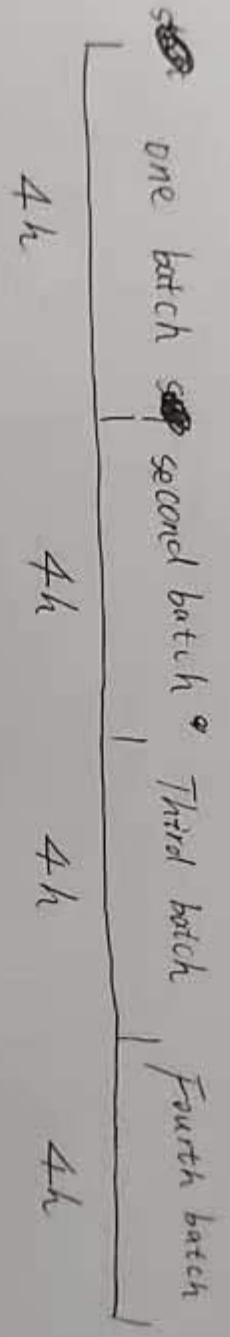












total need 16 hours

Optus WiFi 下午5:47 56% 🔋 ⚡

WeChat (1) John Xu ...

 我是John Xu, from Sensitar rendering plant

Greeting shown above

下午12:16

You have added John Xu as your WeChat contact.
Start chatting!

You've recalled a message.

 Hi, it's really nice to meet you. I am lily from Australian Goterra company

 Hi Lily, nice to meet you

 Our machine can prcess insect.

 what is your cooking and drying temperature? what is the working pressure?

 Also please tell me what is your process craft for insect now

< WeChat (1)

John Xu

...

I can briefly introduce our product first. Our project is designing and building the mobile rendering plant. So we want our whole system can fit in one or more modular unit. So they can fit in 40 feet shipping box.



下午12:23



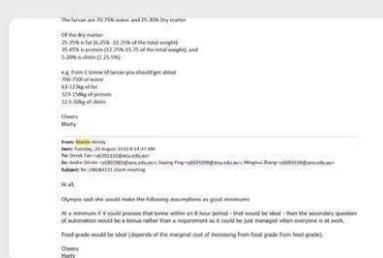
Your material is only insect?

下午12:29

Yes



It's black soldier fly larvae



let me check



Ok that's will be really good. One more question is do you mind



< WeChat (1)

John Xu

...

Ok that's will be really good. One more question is do you mind explain more details what the key function of your product and what's the final product.



下午12:36



your material is same to our Singapore customer.

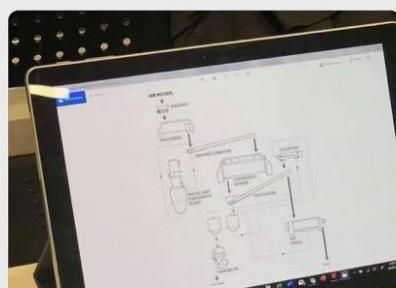


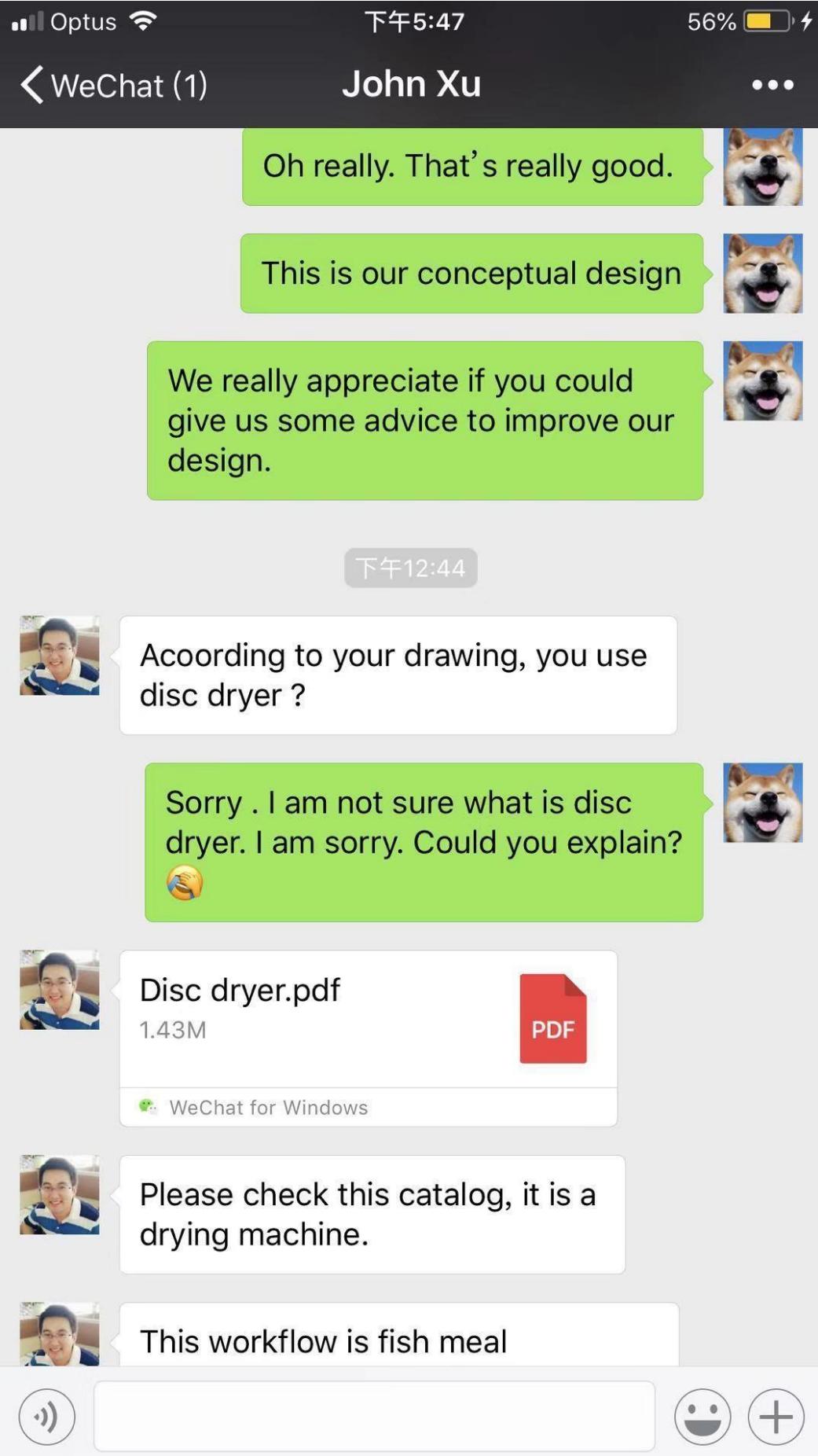
Your put larvae into machine ? Or you use our machine to dry powder ?

下午12:38



you need use batch cooker if you cook and dry insect. you use our disc dryer if you dry insect powder. Which type do you choose?





< WeChat (1)

John Xu

...



This workflow is fish meal processing work flow in your picture

下午12:50



crush-cook-press-dry-decanter-centrifuge



Did you have experience in this project?



Our team do not have similar experience. So, we really need some advice from some industry experts.



What is your cooking temperature ?

下午12:56



It will destroy your insect protein if cooking temperature is high



I am checking with our team. Could you wait me a few mins?



< WeChat (1)

John Xu

...

Thanks!



What's the tem and pressure of
your product?



the cooking temperature maximum
is up to 120-140 °C, drying
temperature maximum is up to 160-
180 °C. Working pressure is
0.6MPa. You can adjust temperature
and pressure

下午1:02



it is better that you tell us your work
flow and data, such as cooking
temperature and pressure, drying
temperaure and pressure, raw
material content and percentage,
final product content and
percentage, and so on.

下午1:09

Ok i will talk with my colleagues and
send you a summary of these
information. Thank you for your



< WeChat (1)

John Xu

...

180 °C. Working pressure is 0.6MPa. You can adjust temperature and pressure

下午1:02



it is better that you tell us your work flow and data, such as cooking temperature and pressure, drying temperaure and pressure, raw material content and percentage, final product content and percentage, and so on.

下午1:09

Ok i will talk with my colleagues and send you a summary of these information. Thank you for your patience and advice.



You are welcome. You can contact me via wechat or email if ay question. My email ID is john@xzdjx.com

Thank you!



Hi, I have already get some data. The pre-cooker temperature is 30-100 degree celsius and the pressure is about 10-15 psi. For the continue cooker, the temperature is about 120 degree celsius. Pressure is about 145 Psi.

For the raw material, larvae insect is about 70% to 75% water.

The dry matter have 25%-35% fat (6.25%-12.25% of te total weight)

35%-45% protein (12.25%-15.75% of the total weight)

5-20% is chitin (1.25%-5% of the total weight)

From one tonne of larvae, we should get 700-750ml water

62-123 kg fat; 123-158kg protein 12.5-50kg chitin

16:03

For the working process, this is the schematic diagram we drawn before.



we hope all the machines can work 24 hours a day and it can process one tonne insect per 8 hours.



this is fish meal process

Yes, I think the product can also feed the livestock based on the standards

But, we are not sure is it the best option for the process and what can we do to improve the process.



please see this workflow



I remebered you mentioned before, your customer from Singapore use the same raw material. Did they use the similar process to manage the insects?

Or totally differenct process?

when my boss mentioned the protein, I think it is the tallow.

I think the process you sent me for managing fish is still a little bit different with our designed process?

No, i advice him to use batch cooker. beacuse your cooked insect viscosity is very high. the fish meal press it twin-screw press, maybe has not effect to get oil

Do you mind explain a bit which component did you replaced by batch cooker?

Fat press?

No, it is same to your process, break fish , and then go to pre-cooker- dryer



"John Xu" recalled a message

You dry insect, and then fat press?

Yes. Other manufauters told us the insect must need to be dry before extracting the oil

So you should poultry rendering plant, not fish meal plant

Do you have machines which can be used in poultry rendering plant?

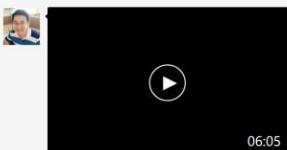
this is similar to your process. the batch cooker cook and dry insect in batch cooker



Yes, we have machine to be used for poultry rendering plant

I am a litte bit confused where is the meal (protein) output

the meal come out from press(榨油机)



please check this video

I have already checked this video. This is really cool. In our system, we want our oil from the fat press continutously go to decanter and separtor. Do you sell similar machines?

Yes, we have many customers in China and oversea, it mainly for poultry. We do not test insect. according to your information, i think you should use poultry rendering plant, not fish meal plant. So you need check this with your team.

Another question is we got most rendering plant are processing livestock. The size of the machine is extremely big. But, we are working on processing the insects. So, we are wondering is it possible to customize the size of the machines. Because we want our machine can fit in one or more modular units. So, most components need to fit in 40 feet shipping box.

Is it possible to explain a bit what is the key difference between the fish rendering plant and the poultry rendering plant? What the key difference of the function in the process?

Or, could you provide a video introduction of the fish meal plant

Although I think we should use the poultry rendering plant.

1. poultry rendering: cook and dry raw material in batch cooker(same machine)
. fish meal: use cooker to cook raw material, use dryer to dry raw material powder.
3. poultry rendering use single screw press, fish meal use twin screw press
4. poultry rendering work as batch, normally one batch working time is about 4 hours. finish one batch, start other batch. fish meal work continuously.
5. poultry rendering is suitable for chicken,pig, feather and animal offal. fish meal plant is suitable for fish and fish offal

let me find a video for you

That's will be really helpful. Thank you so much!

You are welcome

Please check this video, maybe it will be helpful

what is the product composition difference between poultry rendering plant and fish meal plant?

is it possible for the poultry rendering plant to work 24 hours per day?

product composition is same, composition depend on raw material

The poultry rendering plant can work for 24 hours, has 6 batch work.

I got the batch machine use high temperature and high pressure to dry the material. How does the dryer in the fish meal plant work?

The fish meal dryer also use high temperature to dry raw material

the temperature is higher when steam pressure is higher between dryer disc

Is it possible to customize the size of each components?

now our poultry rendering minimum input capacity is 1 ton. What is your input capacity?

we want our rendering plant to process one ton insect per 8 hours.

I think one ton will be fine.



You can use our smallest size, one ton input capacity , need about 4 hour to process them.

This sounds really good.



Can we have some more specifications and engineering drawings of each components?



i can send you some specifications

It will be the best if it can be like the PDF you sent me before



and a overall plant design



this is our design for our china customer



It seems like the overall deisgn can fit in two modular unit?



Yes, put them into two 40" HQ containers

Can we get some more dimension specifications? Our boss need the engineering drawing for each component in 2D and 3D first and the overall design drawings first.



Did you do any evaluation and testing before you built the physical prototype?



Did you do the simulation before to simulate the overall process?



We have more than 30 customers in China, machine work very well. Do not worry the machine running effect.



But your raw material is insect, we do not test it.



You can take your insect to our customer site to test if you can prepare insect in china.

Oh, that's will be great.



One more question is does the whole system can automatically control?



Yes, if you need automatic control , we can design for you, use one computer to control all machines, but the cost will be higher than ordinary control

So, based on the picture I sent you before. It only can be fish meal plant or poultry rendering plant? My boss is wondering is there any process can achieve it?



this is fish meal plant work flow

For the prototype picture, is it for poultry rendering plant?



which picture?



this one



yes, poultry rendering plant, can process pig, cow, chicken, offal, meat etc.



make them to meat and bone meal as protein , just like insect powder.

So, if we can send the raw material insects to you. Could you test it?



yes, but we need about 3 ton insects, and pay testing fee to our customer. It is ok for you?

I will talk with my boss.



ok

Another question is for the mobile rendering plant you have already completed. How many batch are they? Is it possible to work continuously?



17:42



yes, we sent mobile rendering plant to our customer, and machine start work in customer site. We also are manufacturing them in our factory shop. it is 2 ton and 7 ton per batch. one batch cooker can not work continuously. you can prepare 2-3 batch cookers if you want them to work continuously. for example, batch cooker 1 work stop , batch cooker 2 start work.

