

东盈机械

DOING MACHINERY



中国 · 河南
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河南东盈机械设备有限公司
Henan Doing Mechanical Equipment Co., Ltd

**ENJOYING
GROWING UP
FIGHTING**

We are doing !

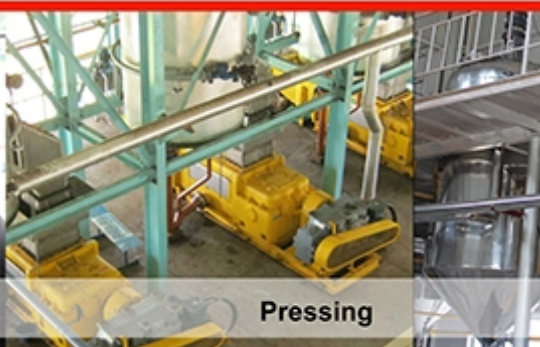




Palm fruits



Sterilizing



Pressing

公司简介 COMPANY PROFILE

河南东盈机械设备有限公司是我国粮油机械成套设备的重点生产厂家、河南省产品质量免检单位。

我公司是一个集粮油、机电工程设计、制造、安装于一体的股份制制造企业。公司具有自主开发新产品研制的科研所及新产品实验基地。不断引进，不断更新，使公司永远处于行业领先地位。

公司作为一家油脂设备设计制造安装的企业，产品通过了国家ISO9001质量管理体系认证并取得银行等级AAA。公司占地面积99000m²，固定资产5000万元，拥有员工480人，其中高级工程师6名，工程师22名，还拥有70多名施工经验丰富的工程安装队伍。公司与北京科技大学、西安油脂科学研究院、郑州工业大学等权威科研机构精诚合作，工程设计全部借助于CAD设计系统，配套公司专用软件，为植物油厂综合利用提供总体设计和专项设计，为国内外提供一流的技术和设备，并可按照客户的要求满足不同层次不同需求的工艺设计和技术服务，公司坚持“质量第一，用户至上”的宗旨为客户提供完善的技术咨询和优质的售后服务。

公司具有先进的加工设备和科学的管理体系，产品荣获多项成果奖及荣誉证书，设备畅销28个省市和地区并出口乌兹别克斯坦、吉尔吉斯斯坦、哈萨克斯坦等中亚各国以及加拿大、智利、阿根廷、埃塞俄比亚、赞比亚、尼日利亚、俄罗斯、土耳其等十几个国家和地区。其中，公司的棕榈油压榨和精炼设备处于行业领先水平，曾出口过菲律宾、印度尼西亚、刚果、泰国等多个国家。

业务范围：

- 0.5-1t/h 小型棕榈压榨设备
- 2t/h 中型棕榈压榨设备
- 5t/h 中型棕榈压榨设备
- 10t/h 大型棕榈压榨设备
- 1-600t/d 棕榈油精炼设备
- 5-600t/d 棕榈油分提设备
- 棕榈仁压榨系列

我公司提供工艺设计、安装、调试、代培技术人员，并承接老厂搬迁、技术改造、交钥匙工程。





Refining



Fractionating



Palm oil

Henan Doing Mechanical Equipment Co., Ltd is one leading producer of oil equipments in our country, also one unit exempt from quality examination.

Our company has research institution which develops new products and we have our own experimental base, and we are one integrated joint-stock production enterprise of oil machinery engineering, production and installation. We are committed to bringing in new technology, renewing products, keeping leading in this field.

Our products have passed international ISO9001 quality and management system certification, and our company has got bank credit rating AAA. Our company covers an area of 99000m², has fixed assets of 50 million CNY, with staffs 480 in which 6 senior engineers, 22 engineers, and more than 70 experienced installation workers. We have good cooperation with Beijing science and Technology University, Xi'an Oil Science Research Institution, Zhengzhou Industry College and other authorized research agencies. All the designing work is on the CAD with the help of our specialized software. We committed to comprehensive utilization of the vegetable oil plant with general design and specialized design, and first-class technology and service home and abroad. We can also supply different levels of technology designing and service according to customer's requirements. We insist the tenet of 'quality first, customer superior'. We committed to supplying customer perfect technology consultant and high quality after-sales service.

We have advanced processing equipments and scientific management system. The products have gained many achievements and awards, and are sold well in 28 provinces and cities. They are also exported to Uzbekistan, Kazakhstan, Canada, Chile, Argentina, Ethiopia, Zambia, Nigeria, Russia, Turkey, etc. Especially the palm oil extraction and refinery technology is the advanced level in the line, we have export the machines to Philippines, Indonesia, DR Congo, Thailand, etc.

Palm oil machine business scope:

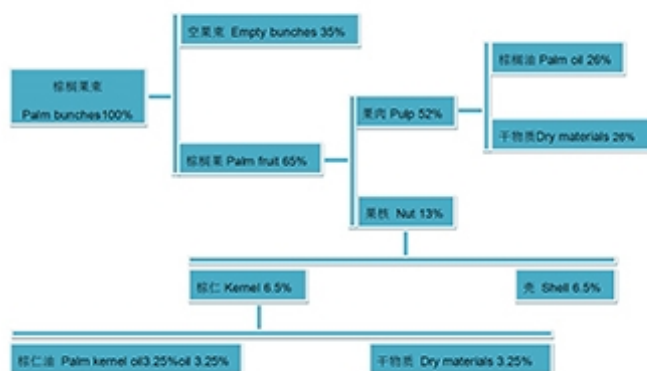
- 0.5-1ton/h small scale palm fruits processing machine.
- 2t/h medium scale palm fruits processing machine.
- 5t/h medium scale palm fruits processing machine.
- 10t/h medium scale palm fruits processing machine.
- 1-600t/d palm oil refinery machine.
- 1-600t/d palm oil fractionation equipment.
- Palm kernel oil extraction system.

Our company service includes technology design, installation and debugging, technical training, relocation of oil plant, technology reform and turnkey project.



棕榈概况 BASIC INFORMATION OF PALM FRUITS

油棕属于棕榈科，主要产地分布在赤道南北5~10度以内的热带地区，它是一种重要的热带油料作物，油棕含油率很高，一般鲜果肉含油46~50%，棕仁含油50~55%，油棕移栽后二年半左右开始结果，早期产量低，8~15年是旺产期，产量达到高峰，20年后逐渐衰老，生长周期大约25~30年。一般每公顷种植约140棵棕榈树，年产约20吨鲜果穗（Fresh Fruit bunches），经加工产生约20%的毛棕榈油（Crude palm oil），和5%的棕仁（Kernel）。



Oil palm belongs to palmaceae plant; its main producing area distributes tropic area between the south latitude 5~10° and the north latitude 5~10° near the equator; It is a kind of important tropic oil seed plant. Rate of Oil in oil palm is very high in oil palm: common fresh fruit flesh :46~50% , palm kernel :50~55%. Oil palm begins to bear fruits about two years and a half after being transplanted. Firstly, the output is very low, 8~15 years is blooming time and output reach maximum; it gradually aging when it grows over 20 years; its growth period is 25~30years. Per-hectare land should plant about 140-palm tree in

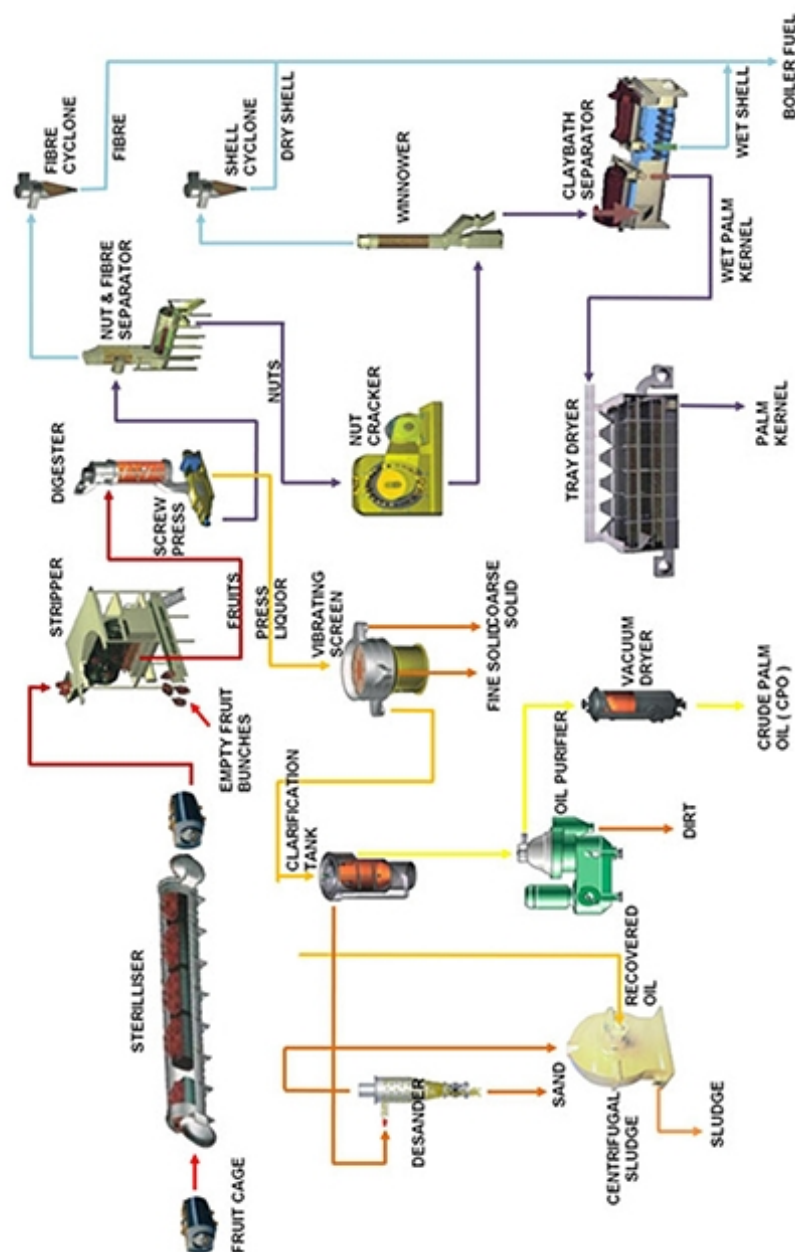
general, annual output is about 20T fresh fruit bunches; after being processed, about percentage 20 is crude palm oil and percentage 20 is kernel.





工艺流程 TECHNOLOGICAL PROCESS

PALM OIL MILL PROCESS FLOW DIAGRAM



1. 鲜棕果 2. 果接收 3. 杀酵 4. 脱果 5. 捣碎压榨 6. 油渣清 (毛棕油) 7. 棕榈仁回收工段 (棕榈仁)
1. Fresh palm fruits 2. Fruits receiving section 3. Sterilization 4. Threshing 5. Crushing & pressing 6. Crude oil clarifying station (crude oil)
7. Palm kernel recovering section (palm kernel)

1. 原料接收贮存工段 RAW MATERIALS STORAGE SECTION

从果园内采集到已经成熟的新鲜果穗用卡车运载，经地中衡称重记录后，将果穗倒入卸料台内。卸料台带有下料通道。每个铁门的上下开关是通过气动控制，气动控制系统由空压机和气动控制装置组成，启动控制阀打开卸料台料门，果穗自由落入果笼车或者输送绞龙内。

Raw materials storage section: Collecting the ripe fresh cluster from the orchard and convey by trucks, then pour the cluster into the discharge door after weighed by ground weigher.

The discharge door has discharging channels, the upper and lower switches of the iron gate are controlled by pneumatic. Pneumatic control system consists of air compressor and pneumatic control devices. Start the control valve to open the gate of the discharge door, then the palm fruits will fall into the fruit basket car or conveyor.

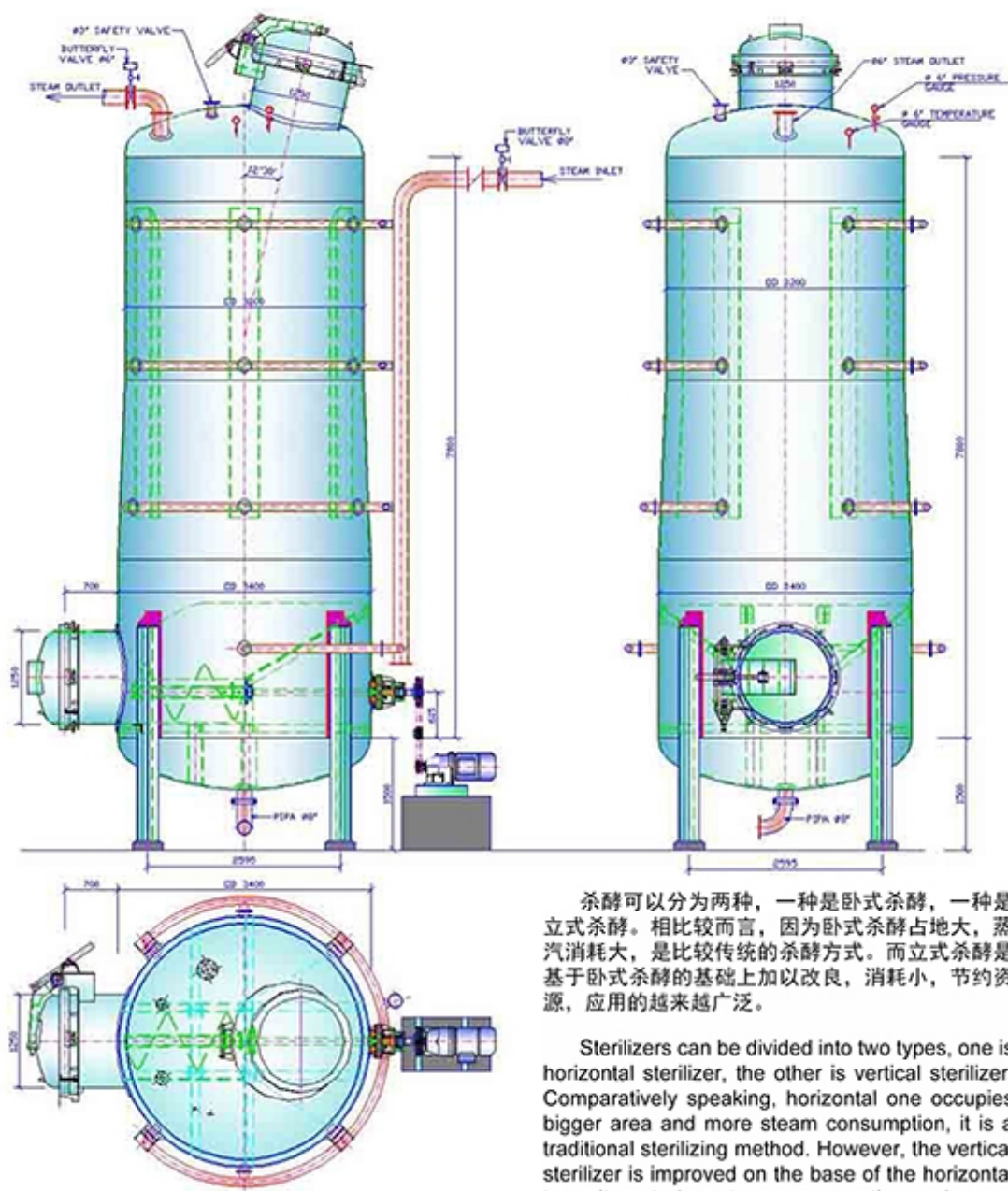


2. 杀酵工段 STERILIZING SECTION



所谓灭菌杀酵是在杀酵设备中用300kPa的蒸汽，对油棕果进行高温蒸煮约60min，破坏果肉中的脂肪酶，以免油中的游离脂肪酸含量升高。此外，高温杀酵可使果实松软，便于机械脱粒，也有利于后续果核的剥壳，减少果仁的破损。

Sterilizing section: fresh palm fruit bunch are airtight sterilized in sterilizer, injecting direct steam (the pressure is 300KPa) to heat 60mins. The purpose is to prevent enzymes broken down, avoiding FFA content in oil further increase. At the meanwhile, the temperature will make the fruits soften, it is easy for threshing, pretreatment peeling, prepared for the following-up process, like pressing, husking, it can also reduce the damaged kernel.



杀酵可以分为两种，一种是卧式杀酵，一种是立式杀酵。相比较而言，因为卧式杀酵占地大，蒸汽消耗大，是比较传统的杀酵方式。而立式杀酵是基于卧式杀酵的基础上加以改良，消耗小，节约资源，应用的越来越广泛。

Sterilizers can be divided into two types, one is horizontal sterilizer, the other is vertical sterilizer. Comparatively speaking, horizontal one occupies bigger area and more steam consumption, it is a traditional sterilizing method. However, the vertical sterilizer is improved on the base of the horizontal type, it costs low steam consumption and saves energy, which is used more and more widely.

3. 脱果 THRESHING SECTION

油棕的果粒占整个果束的60%左右，脱粒的目的是把油棕果从果束上分离出来。机械脱果常采用转鼓式脱粒机。这种脱粒机内部有一个长长的卧式转鼓。分离后油棕果排出进入压榨工段。空果串从转鼓的另一端排出到堆场，或运出厂区做棕榈果园覆盖物循环利用，或现场焚烧作为肥料施于农田。

The palm fruit proportion is about 60% of the FFB(fresh fruit bunch). The purpose of threshing is to separate the palm fruit from the FFB. The drum type thresher is the usual machine to separate the fruit. There is a horizontal turning machine in the inner of the thresher. The separated oil palm fruit is sent into the pressing section. Empty fruit bunch be ejected to the yard from the other side of the revolving drum, or shipped out from the plant as palm orchards slipcover to recycling use, or burning in the locale as fertilizer for agricultural land.



4. 捣碎压榨 CRASHING & PRESSING SECTION

● 捣碎

捣碎和蒸煮的目的在于撕破果表皮，将果肉与果核分离且捣烂果肉组织，同时进行加热使果肉松软，且破坏果肉细胞结构。蒸煮最佳条件为90~100℃，时间大约20min。捣碎蒸煮设备是一个具有加热夹套的圆柱罐体，夹套内通入间接蒸汽进行加热，罐内有直接蒸汽管，以调节水分和温度。罐内有一根装有许多轴

向打棒的中心轴，罐内壁装有多块衬板，上部有进料口，下部有出料口。果粒在搅拌打棒的打击和衬板的碰撞作用下，将果肉捣碎。

● Crashing

The purpose of crashing is used to separate the





pulp and nut and crush the palm pulp. At the same time, the steam is used to cook the palm fruit and broke the cell of pulp. The best condition of cooking is 90~100°C for 20 min. The tubes of the crasher use the indirect steam to heat the crasher and palm fruit. The direct steam is added to the inner of crasher. The direct steam is used to adjust the water content and temperature in the crasher. The central shaft includes lots of blade to crush the palm fruit. The palm fruit is entered the crasher from the top and discharged from the bottom.

● 压榨

杀酵、脱果和捣碎后的果子果肉松软，且果肉细胞结构已被破坏。棕榈果进入连续式螺旋榨油机压榨。油棕果经过压榨后分为两部分：油、水、固体杂质的混合物及压榨饼（纤维和核）。油、水、固体杂质的混合物经毛油槽流入油净化工段；压榨饼经碎饼绞龙进入纤维回收工段



● Pressing

Before pressing, oil palm fruit first be carried out cooking, sterilized fruit must be re-heated to make the pulp soft and damage pulp cell structure.

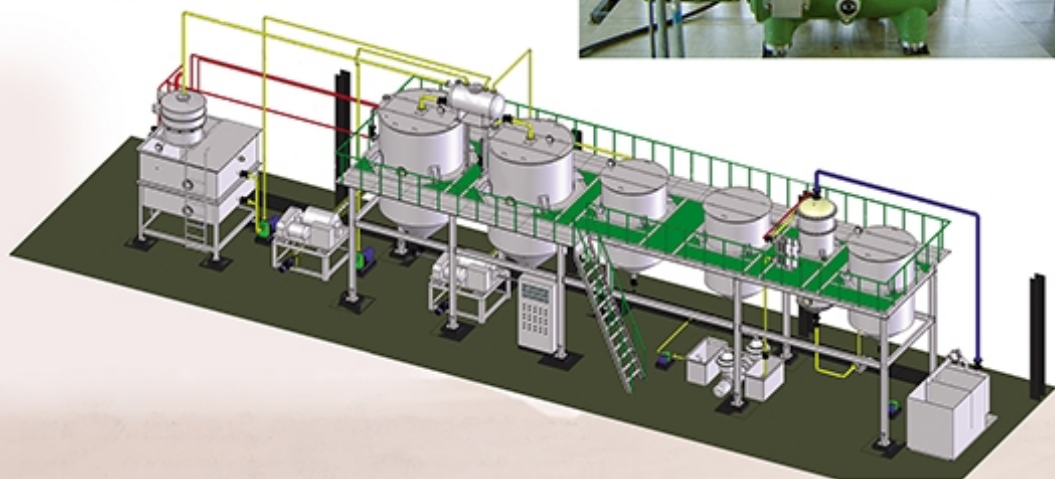
After sterilizing, threshing and crashing, the palm pulp become soft and cell is broken. Then it is sent to continuous screw press. After pressing, oil palm fruit is divided into two parts: the mixture of oil, water and solid impurities, and the press cake (fiber and nut). The mixture of oil, water and solid impurities inflows to oil purification section by the crude oil gutter. The pressed cake is sent to the fiber- recovery section by breaking screw conveyor.



5. 毛油净化 CRUDE OIL CLARIFYING SECTION

机榨毛油用水洗稀释后经过沉降、过滤，把纤维物质从油中除去，然后进行连续沉降，分成上下两部分：油及沉淀物。油经离心分离、真空干燥后泵入储存罐储存；油沉淀物经过滤、污油分离后，油进行二次沉降，污油混合物进行澄清分离，撇出的油再进行二次沉降，污水泵入污水处理池处理。

Machine-pressed crude oil is diluted with water washing, through settlement and filtration, the fiber material is removed from the oil, and then carried out continuous settlement, the whole is divided into two parts: oil and sediment. Oil by centrifugal separation and through vacuum drying pumped into the storage tank for storing; oil sediment by filtration and dirt oil separation, oil process second settlement, dirt oil mixture process clarification separation, Skim oil then carry out a second settlement, sewage is pumped to sewage treatment pond for treatment.





6. 仁回收 KERNEL RECOVERY SECTION

压榨饼经碎饼绞龙破碎后，输送入纤维分离风网及纤维抛光滚筒，进行纤维分离。分离出来的纤维物资送往锅炉房作燃料用；分离出来的果核经气力输送系统输送到核仓暂存。

Press cake broken by breaking screw conveyor and then transported into the fiber separation air net and fiber polishing roller for fiber separating. The separated fiber material is sent to the boiler room as fuel; the separated nut is transported to warehouse by pneumatic conveying system for temporary storage.

核破碎前要经过软化调质，软化后的核经波纹破碎机破碎后分为两瓣或多瓣，仁就被释放出来。破碎后的混合物进入破碎混合物分离系统，分离系统采用两级分离及水浴分离。分离后得到壳，送往储仓暂存，需要时用作锅炉房燃料；分离后得到仁通过热风干燥含水率降至7%以下。干燥后的仁送往仁储仓进行储存。

The nut needs intensive tempering before being broken, the tempering nut be divided into two or more petals by corrugated crusher, kernel was released. The broken mixture enters into broken mixture separation system; separation system adopts two stage separation and water separation. After separation, shell is sent to the warehouse for temporary storage, as boiler room fuel when necessary; the moisture content of separation kernel falls to below 7% through the hot air to dry. Dried kernel is sent to kernel storage warehouse for storing.



棕榈油精炼 PALM OIL REFINING PROCESS

● 毛棕榈油精炼阶段

精炼是提高油的品质的一个重要的步骤。精炼通常根据连续程度可分为间歇式、半连续式以及全连续式。通常来说，吨位较小的话，比如1-20吨我们建议客户采用间歇或者半连续的，吨位较大，30吨或者30吨以上的，我们建议客户采用全连续的，油的品质更稳定。精炼一般分为四个步骤，脱胶脱酸，脱色，脱臭以及冷却过滤。

● Crude palm oil refining process

Palm oil refining is a very important process to improve the oil quality. According to the continue degree, the refineries can be divided into three types, they are batch type refinery, semi-continuous type refinery and continuous refinery. General speaking, the small capacities liking 1-20tons per day, we usually suggest the final users adopt the batch type and semi-continuous type refineries. For 30tons and above, the continuous type refinery will be much better, because the oil quality is much more steady and average. Palm oil refinery processes are divided into 4 steps, degumming and de-acidification, de-colorization, deodorization and cooling filtration.

(1) 脱胶脱酸：过滤毛油用泵打入水化罐（炼油罐）内，一边快速搅拌，一边用蒸汽或导热油（在盘管内）加热。然后加水水化。这是水化脱胶最重要的阶段，要掌握好加水量、温度和加水速度，加水时间，如磷脂较持久悬浮于油中，不易集中结成絮状沉淀，加水可快些，反之则慢。与此同时进行加碱脱酸，烧碱溶液，不仅限于中和油中游离脂肪酸，还可以与油中其他物质，如蛋白质、粘液、磷脂、色素等作用，加之生成的皂脚本身就是一种表面活性剂，具有一定的吸附能



力，因此，也可将油中的其他杂质带入皂脚，所以碱炼具有脱酸、脱胶、脱杂、脱色的综合作用。最后分离油脚。不同的工艺采用不同的分离方式，间歇以及半连续方式通常采用静置沉淀分离法，全连续工艺采用的离心分离法。

(1) Du-gumming and de-acidification: Pumping crude oil into oil refining tank, stirring quickly, and simultaneously heating by steam or heat-transfer oil(in plate pipes). Then the hot water is added for hydration and degumming. You should manage the water amount, temperature and water adding speed. If phospholipid lasts long suspend in oil, it's hard to gather to make flocculent precipitate. When the water is added, the water speed is quick, conversely slow down. At the same time, alkali is added to remove the FFA. NaOH, not only used to neutralize free fatty acid, but also can act with other materials in oil, like, protein, mucilage, phospholipid, pigment, etc. the produced soapstock is a kind of surface active agent itself has some absorption, so, also can bring other impurities to soapstock. All in all, alkali refining has the synthetic action of de-acid, degum, de-impurity, de-color. Finally, oilfoot is added. Different crafts will adopt different separating methods. For the batch type and semi-continuous type refinery, they will adopt precipitation separation method. While the continuous refineries will adopt centrifuge separation method.





(2) 脱色: 把定量脱色剂(活性白土, 活性炭)借真空吸入油中, 并继续搅拌升温, 维持25分钟左右, 然后用泵将油和白土的混合物打入过滤机过滤, 即完成脱色。

(2) De-colorization: Inhaling the definite quantity de-coloring agent (active clay, active carbon) into the oil by vacuum, then they are continue stirred and heated for 25mins. After pumping the oil and clay mixture into vibrating filter to remove the waste clay, the de-colorization is finished.



(3) 脱臭和脱水: 将脱色油吸入脱臭油罐或者脱臭塔时, 即开始加热, (用导热油)待油温达100℃以上时通入直接蒸汽, 利用蒸汽将各种味道带走。与此同时在水洗过程中, 油中残有0.5%左右的水分, 必须进行干燥。由于脱臭在高温的过程中完成, 也实现了脱水的功效。

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(4) 冷却, 过滤: 脱臭油冷却, 可在原罐内进行, 亦可转到真空冷却罐内冷却。若在原罐内冷却, 当达到脱臭时间后, 应立即停止加热, 关小直接蒸汽。当油温将到80℃时, 关闭直接蒸汽, 冷却好的油, 罐内破真空后, 将油用泵送往安全过滤器去杂, 既的成品油。

(4) Cooling, filtering: The cooling of deodorization oil can be finished at the original tank. It's also can be cooled in vacuum cooling tank. If cooling in the original tank, we should turn down direct steam and immediately stop heating after deodorization. When oil temperature nearly 80℃, the oil is pumped to safety filter for removing small impurities. Then we got finished oil.



棕榈油分提 PALM OIL FRACTIONATION PROCESS

● 棕榈油分提阶段

干法分提加工法分四个步骤：预处理；用冷却法形成晶体原子核；晶体增长及成熟；用过滤法把油酸、固体酸分离出来。

在加工过程中，冷却条件将决定原子核结晶的开始、结晶体数量和结晶体大小。冷却效率和有序性无疑是确保晶体的独特形成和可过滤性的决定性因素。只有获得完全可控制的冷却曲线才能生产出稳定、均匀及可过滤的结晶体。

● Palm oil fractionation process

Four procedures of dry fractionation: pre-processing, crystal atomic nucleus using cooling method, crystal accretion and maturation, separating oil acid and solid acid.

During the processing, cooling condition will determine the beginning of crystallization of the atomic nucleus, the number and size of crystals. Cooling efficiency and sequence are the determining factors for the special formation of crystal and the filterability with no doubt. Only by obtaining fully control over cooling curves can we produce stable, filterable and even crystal.

(1) 预处理：需要分提的油脂最好在一只有搅拌的储存罐里储存，以避免固体脂沉淀和确保有均匀的原料油送到车间。

(1) Pre-processing: Oil is to be stored in a storage tank with constant stirring so as to avoid solid fat sedimentation and to ensure even crude oil to be sent to the plant.



(2) 结晶养晶工序：结晶器是筒形容器，它拥有特大的冷面积，并带有独特的搅拌器确保产品的最大均匀性和在整个结晶过程中高效率的热能交换。结晶器带有水循环系统，原料进出口阀门，各种进出水阀门，一切操作及开关程序都是自动化的，由预备软件PLC控制。油浆和水的温度都经过测量并记录下来。水的温度是用一只微信息处理器在逐步程序里控制，确保在所预定的冷却曲线上进行结晶。

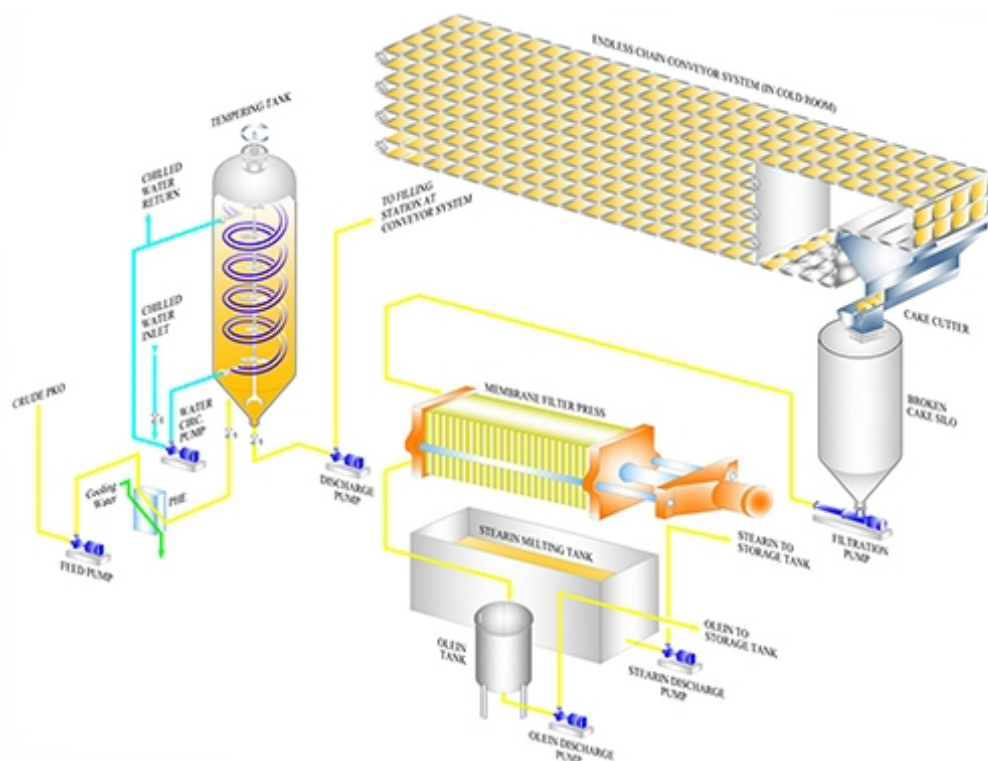
(2) Crystallization, crystal growing: Crystallizer is a cylinder container with big cooling area and special stirrer which ensure the maximum evenness and the high efficiency of heat exchanger in crystallization process. Crystallizer possesses are with water cycling system, material and water in and out valves. All the operation and on-off program are automatic controlled by pre-arrangement PLC software. The temperature of oil slurry and water is measured and recorded. The water temperature is controlled by gradual program using a micro-information processor to ensure the crystallization in the pre-arranged cooling curves.





(3) 过滤工序: 已结晶的RBD棕榈油通过过滤泵输送到隔膜过滤机。隔膜过滤机主要由过滤板、隔膜和间隔板等组成。油浆逐块地通过过滤板进入所有的间隔中, 液态脂透过滤布从橡胶膜的波纹渠道流出, 并通过过滤机框架外面封闭的管道进入软脂罐内, 留下固体脂。最后卸下滤板上的固脂。

(3) **Filtering:** Crystallized RBD palm oil is conveyed to diaphragm filter through a filter pump. Diaphragm filter is composed of filter plate, diaphragm and space plate. Oil slurry gradually enters into the space through the filter plate piece by piece. Liquid fat flows out by the corrugated channel of rubber membrane through the filter fabric and then enters the soft fat tank by closed pipe outside the filter frame, solid fat is leftover. Finally unloading the palm stearin from the plates.



YL-130小型棕榈榨油机 YL-130 SMALL PALMFRUIT OIL PRESS



小型棕榈单机榨油机主要是用来处理小吨位的棕榈果。一般多用于家庭作坊。

The small single oil press is main used for processing small capacities palm fruits. It is usually used for family workshop.

应用范围Application:

YL-130型榨油机结构合理，操作维修方便。电机或者柴油引擎都可以作为动力。每天可以处理8-12T棕榈，是棕榈油客户的首选。当产量增加时，可以采用多台这种榨油机。这种榨油机的产品是红棕油，可以直接食用或者进一步精炼处理。

YL-130 Palm Press structure is reasonable. It is easy to operate and maintain. It can be fitted with motor or diesel engine. Every day can produce palm oil 8-12T. It is the first selection for Palm Oil producing customers. After the production is developed you can increase many the same Press. The final oil is edible red oil. It can be edible directly or further refining..

产量 Capacity (kg/h)	300-500
动力 Main Power (kw)	柴油机 Diesel: 8HP 发电机 Motor: 4kw
主轴转速 Main Shaft Speed	25-35r/min
蒸煮时间 Boiling Time	2h
重量 Weight (kg)	350
运输尺寸 Packed Size (mm)	1500*800*1200



其他小型榨油机 OTHER SINGLE OIL PRESS



6YL-135冷熟榨油机 (带送料机)
动力: 18.5-22 KW
电压: 380 V
生产能力: 180-230 kg/h
外形尺寸(mm): 1750*1700*1550
净重: 1280 kg

6YL-135 Type cold/hot expeller machine (with feeding machine)
Power: 18.5-22 KW
Voltage: 380 V
Capacity: 180-230 kg/h
Size(mm): 1750*1700*1550
Net weight: 1280 kg



6YL-30芝麻香油机
动力: 2.2 KW
电压: 220 V
生产能力: 15 kg/h
外形尺寸(mm): 800*800*1200
净重: 156 kg

6YL-30 Type Sesame oil expeller machine
Power: 2.2 KW
Voltage: 220 V
Capacity: 15 kg/h
Size(mm): 800*800*1200
Net weight: 156 kg



6YL-30家用榨油机
动力: 1.5 KW
电压: 220 V
生产能力: 15-20 kg/h
外形尺寸(mm): 700*700*900
净重: 126 kg

6YL-30 Type household expeller machine
Power: 1.5 KW
Voltage: 220 V
Capacity: 15-20 kg/h
Size(mm): 700*700*900
Net weight: 126 kg



6YL-70多功能一体化榨油机
动力: 4 KW
电压: 380 V
生产能力: 40-50 kg/h
外形尺寸(mm): 1000*1000*1250
净重: 256 kg

6YL-70 Type multifunction expeller machine
Power: 4 KW
Voltage: 380 V
Capacity: 40-50 kg/h
Size(mm): 1000*1000*1250
Net weight: 256 kg



6YL-125冷熟榨油机 (带送料机)
动力: 11-15 KW
电压: 380 V
生产能力: 130-200 kg/h
外形尺寸(mm): 1750*1700*1550
净重: 920 kg

6YL-125 Type cold/hot expeller machine (with feeding machine)
Power: 11-15 KW
Voltage: 380 V
Capacity: 130-200 kg/h
Size(mm): 1750*1700*1550
Net weight: 920 kg

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河南东盈机械设备有限公司
Henan Doing Mechanical Equipment Co., Ltd

ADD : Room No. 3, 4th floor, Building 18 , Area A, Yingxie
Garden, Jinshui District, Zhengzhou, Henan, China

TEL : +86-37156771823

FAX : +86-37186129922

WEBSITE : <http://www.doinggroup.com>

E-mail: trade@doinggroup.com