

*King Du Pont*<sup>®</sup>

**金多邦成套机械设备(江苏)有限公司**

**KDP MACHINERY JiangSu Co.,Ltd.**



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KDP MACHINERY JiangSu Co.,Ltd.

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## 致辞:

KDP公司自成立以来一直刻苦努力，发奋图强，现已成为全球板式换热器行业的领导者。

KDP公司通过与世界专业科研机构强强联手生产的AK、AR、HBR系列板式换热器产品广泛应用于石油、钢铁、化工、电力、食品饮料、暖通空调、造船等行业，产品以优质高效的品质获得了客户广泛好评。

金多邦成套机械设备（江苏）有限公司现设备有12000吨板片油压机1台，5000吨板片油压机1台，2500吨板片油压机1台，在国内处于领先地位。基于KDP集团强大的技术后援，金多邦成套机械设备（江苏）有限公司将继续保持核心技术的领先地位，将最佳的产品回馈给客户。感谢新老客户继续不断的支持和鼓励。

## Oration:

KDP Company has been working hard since its inception and has become a global leader in the plate heat exchanger industry.

KDP Company's AK, AR, HBR series of plate heat exchangers, which are jointly produced by professional research institutes around the world, are widely used in petroleum, steel, chemical, electric power, food and beverage, HVAC, ship building and other industries. Efficient quality has been well received by customers.

KDP Machinery ( JiangSu ) Co.,Ltd. has one set 12,000 ton plate hydraulic press, one set 5,000 ton plate hydraulic press and one set 2,500 ton plate hydraulic press, which is in the leading position in China.

Based on the strong technical support of KDP Group, KDP Machinery ( JiangSu ) Co.,Ltd. will continue to maintain its leading position in core technology and return the best products to customers.

Thanks to the new and old customers for their continued support and encouragement.







# 生产设备 EQUIPMENT





## 板式蒸发器 PLATE EVAPORATOR

板式蒸发器的优点：

一，热蒸汽走激光焊接通道，减少了胶条密封，使用高温蒸汽更安全可靠；物料侧采用胶条密封，便于设备的清洗和维护。

二，物料在换热通道内湍流强度高，换热能力强，同时不易结垢。

三，滞液量小物料产品在蒸发器内过流时间短，适合热敏感产品的浓缩。

四，相比较管壳蒸发器，板式蒸发器结构紧凑，多样，可以节约运行空间，同时便于拆装和扩容。还可以节约运输，安装等成本。

### Advantages:

First, the hot steam takes the laser welding channel, which reduces the sealing of the rubber strip, and the use of high-temperature steam is safer and more reliable; The material side is sealed with a rubber strip to facilitate the cleaning and maintenance of the equipment.

Second, the material has high turbulence strength in the heat exchange channel, strong heat transfer capacity, and is not easy to scale.

Third, the stagnant amount of small material products in the evaporator has a short overflow time, suitable for the concentration of heat-sensitive products.

Fourth, compared with the shell evaporator, the plate evaporator has a compact and diverse structure, which can save operating space, and at the same time facilitate disassembly and expansion. It can also save costs such as transportation, installation, etc.

## 绿色节能

蒸发装置的运行成本，主要取决于能耗的高低，一般可以采取以下措施中的一项或两项，甚至三项，以达到最大的节能效果。

The operating cost of the evaporation device mainly depends on the level of energy consumption, and one or two or even three of the following measures can generally be taken to achieve the greatest energy saving effect.



### 1. 多效蒸发

Multiple effect evaporation

### 2. 热力蒸汽再压缩蒸发

Thermal vapor compression evaporation

### 3. 机械蒸汽再压缩 (MVR) 蒸发：

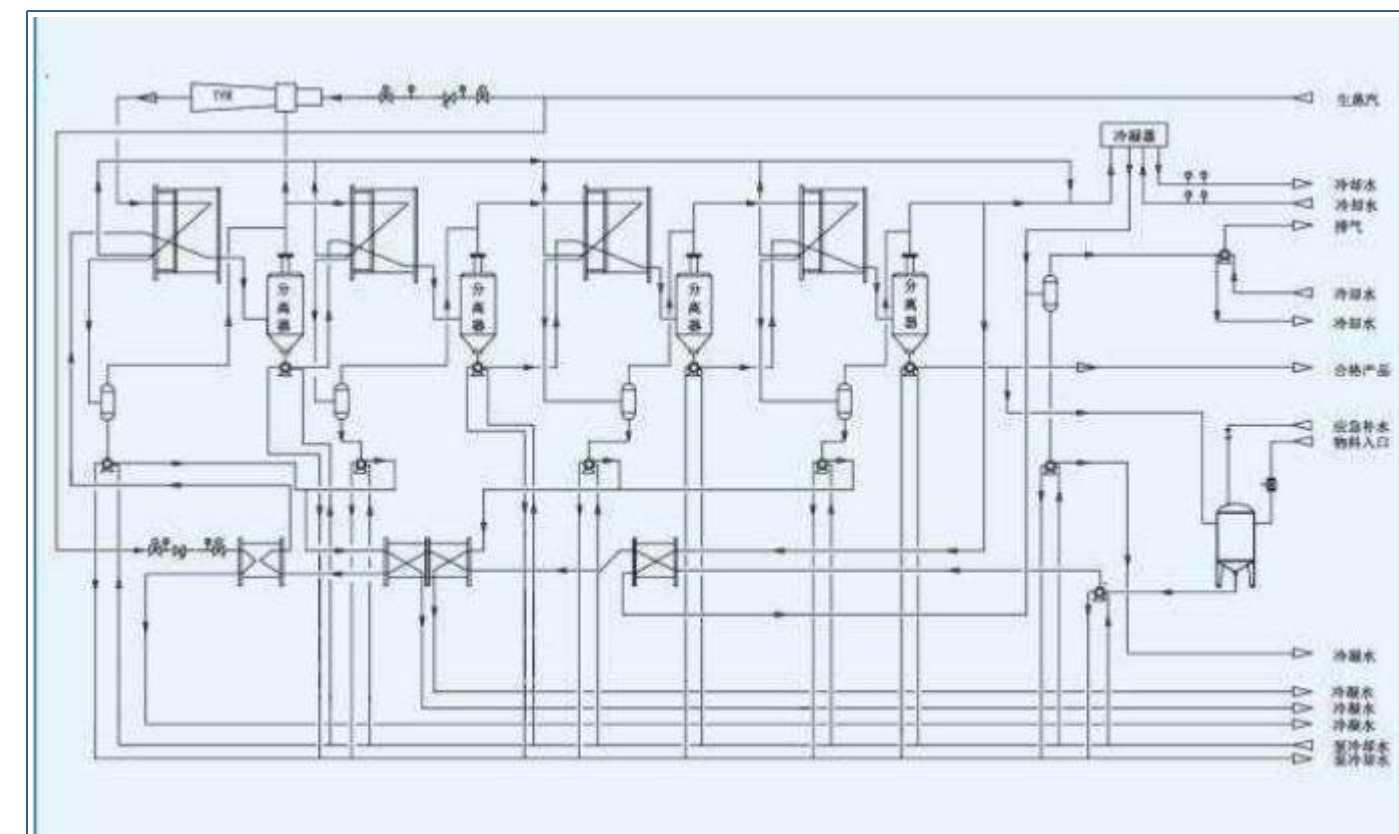
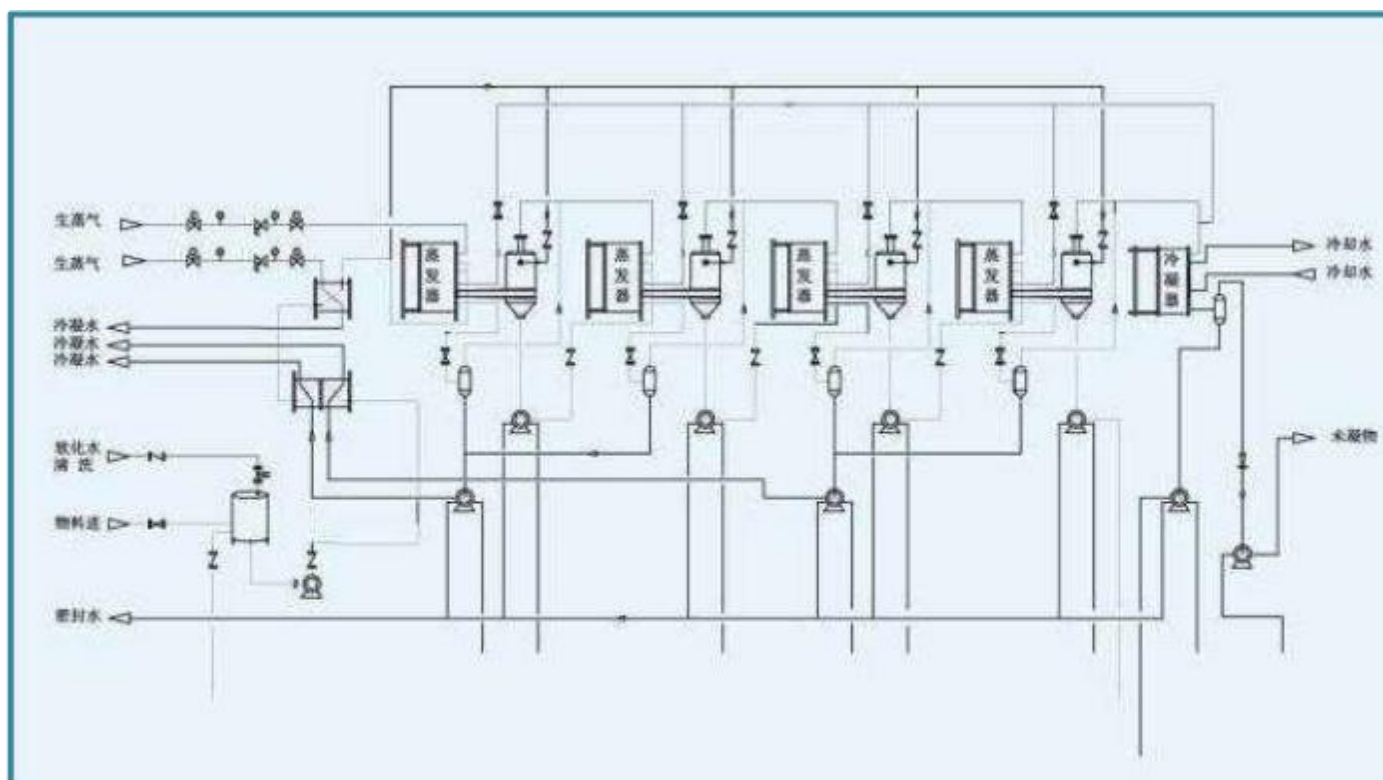
Mechanical vapor recompression (MVR) evaporation

## 1. 多效蒸发

### Multiple effect evaporation

一公斤蒸汽冷凝释放出的热量和一公斤水蒸发需要吸取的热量，基本上是相同的，于是对单效蒸发而言，蒸发物料中一公斤水，需要消耗一公斤新蒸汽；如果把蒸发所得的二次蒸汽用作下一效的加热蒸汽，则二效蒸汽、新蒸汽的耗量比之单效就节省了50%。效数增加，用汽减少，但设备的投资增加很多，所以一般不超过5效。

The heat released by a kilogram of steam condensation and the heat that need to be absorbed by the evaporation of one kilogram of water are basically the same, so for single-effect evaporation, a kilogram of water in the evaporated material needs to consume one kilogram of new steam; if the secondary steam obtained by evaporation is used as the heating steam of the next effect, the consumption of the second-effect steam and new steam is 50% less than the single effect. The utility increases, the steam consumption decreases, but the investment in equipment increases a lot, so it generally does not exceed 5 effects.



## 2. 热力蒸汽再压缩蒸发

### Thermal vapor compression evaporation

热力蒸汽再压缩 (TVR) 蒸发，通常多效的，用热泵 (蒸汽喷射泵) 将部分二次蒸汽进行压缩，提高了物理性能用作加热蒸汽。热泵起到了一效或略高于一效的作用，节省了蒸汽消耗，而设备投资增加很少。

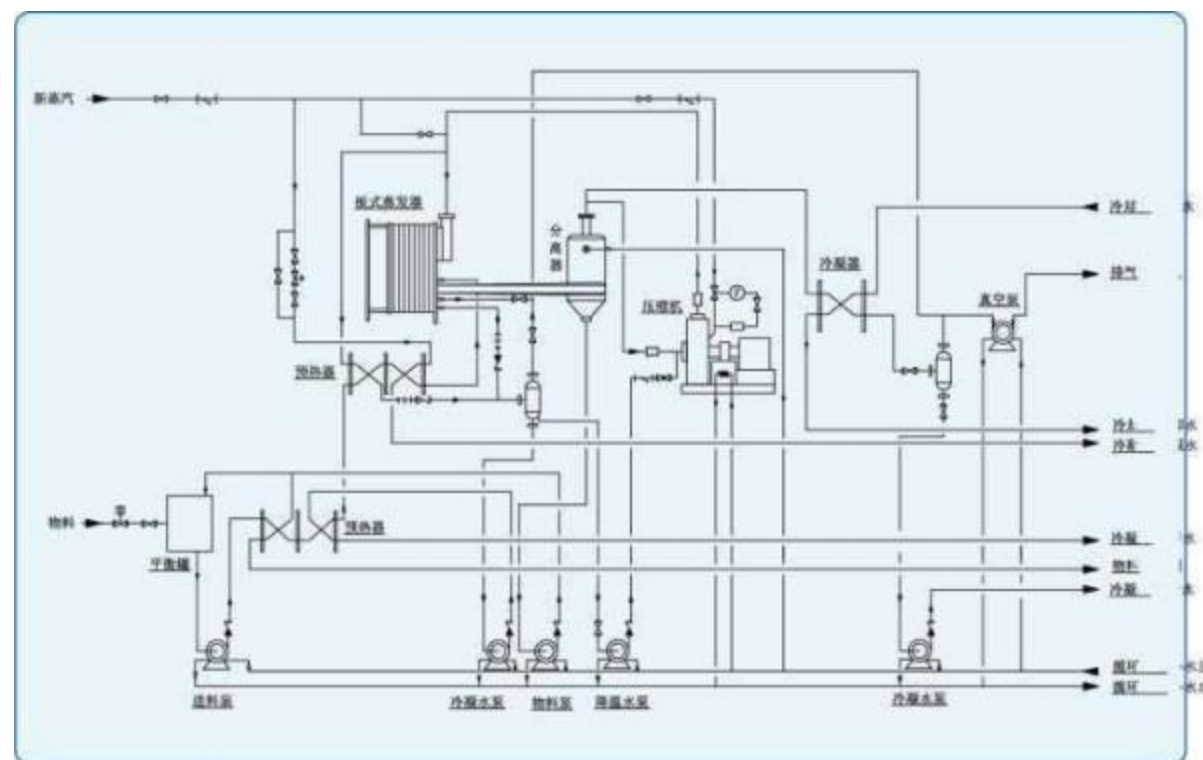
Thermal vapor recompression (TVR) evaporation, usually multi-effect, is used to compress part of the secondary steam with a heat pump (steam injection pump), improving the physical properties of being used as heating steam. Heat pumps act as one or slightly more effective than one, saving steam consumption while the increase in equipment investment is minimal.



### 3. 机械蒸汽再压缩（MVR）蒸发： Mechanical vapor recompression（MVR）evaporation

其工作原理：用离心蒸汽压缩机或其它蒸汽压缩机械，将全部二次蒸汽进行压缩，使其物理性能达到加热蒸汽的要求，把它用作加热蒸汽，这种蒸发工艺，仅在开机时，需输入新鲜蒸汽，正常运行后，不用再输入新蒸汽，也没有（或有极少的）二次蒸汽需要冷凝，因此MVR蒸发极大地节约了蒸汽，但是用电较多。

Its working principle: with centrifugal steam compressor or other steam compression machinery, all the secondary steam is compressed, so that its physical properties meet the requirements of heating steam, it is used as heating steam, this evaporation process, only when starting the machine, need to input new fresh steam, normal operation, no need to input new steam, there is no (or there is very little) secondary steam needs to be condensed, so MVR evaporation greatly saves steam, but more electricity.



MVR板式蒸发装置与4效蒸发装置效益对照表:  
(工艺参数10t/h,进气75度,度排排气85度,10度温升)

	2.9t/h		170 元/t	493元	394.4万	
电耗 Power consumption	50kw/h		0.69 元/Kwh	34.5元	27.6万	
冷却水量 Cooling water	170Vh	0.354kwh/t	0.69 元/Kwh	41.5 元	33.22万	
年运行成本合计（按8000小时计算）： Total annual operating costs (based on 8000 hours):					455.22万	
	0.055t/h		170 元	0元	0万	开机时少量，可忽略不计
电耗 Power consumption	251 kw		0.69 元/Kwh	173.19元	138.55万	
冷却水量 Cooling water	3t/h	0.354Kwh/t	0.69 元 /Kwh	0.733元	0.59万	
年运行成本合计（按8000小时计算）： Total annual operating costs (based on 8000 hours):					139.14万	此运行费用按最大限度预算，实际运行费用应低于此费用

- 一、10吨MVR板式蒸发装置预计投资费用在400万左右
  - 二、10吨蒸发装置年运行费用比10吨MVR板式蒸发装置年运行费用多出316.08万
  - 三、因此10吨MVR板式蒸发装置的总投资比多效蒸发装置年运行减省的费用将在1.3年回收即15个月（400万/316.08万\*12个月）
- 注：各地的汽、电价不一样，工艺不一样，产生的回收期不同，具体以最终的方案而定。

其他配件

OTHER ACCESSORIES

蒸汽喷射器

STEAM INJECTOR



原理/Principle

蒸汽喷射器使用蒸汽来加热水或其他流体。工作时，蒸汽的喷射器将液体从环形孔吸入，混合，再将加热后的热水喷入水箱中。喷射器引起的循环确保了充分的混合，避免了温度分层差异。在要求更高的流量时，可以平行安装两个或多个喷射器。

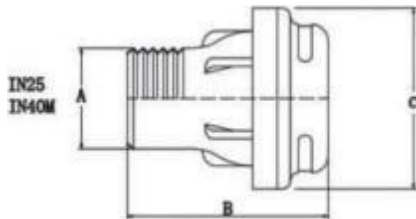
The steam injector using steam to heat water or other fluid. When it works, steam injector suction fluid from the annular hole, mixing, and then the heated water is sprayed into the tank. Causing the injector loop ensures sufficient mixing to avoid the difference in temperature stratification. In the higher flow

主要特点/Feature

- 全不锈钢材质  
All stainless steel material
- 锅炉给水加热和除氧的理想应用  
Ideal for applications in boiler feedwater heating and oxygen
- 水和其他流体的有效的蒸汽加热  
Efficient steam heated water and other fluids
- 加热、混合和循环-无运动部件  
Heating, mixing and circulation no moving parts
- 紧凑的设计-噪声和振动最小化  
Compact design - minimize noise and vibration

型号/Model	A	B	C
IN25	1"	84	71
IN40M	1 1/2"	115	88

- 压力温度限制  
Pressure and temperature limitations
- 本体设计等级 PN25  
Body design level PN25
- 最小工作压力 0.5bar g  
Minimum operating pressure 0.5bar g
- 最大饱和蒸汽条件 17bar g@207° C  
The maximum saturated steam conditions 17bar g @ 207 ° C
- 最高加热温度(开式水箱) 90° C  
The maximum heating temperature (open tank) 90 ° C



流量-选择蒸汽喷射器

蒸汽喷射器依据蒸汽流量来选择。下表中的数据基于一个开式水箱，深度3m。控制阀的选择也会影响蒸汽流量。

Flow Rate – Select Steam Injector

Choose steam injector according the steam flow rate. The following data in the table is based on an open tank, the depth of 3m. Control valve selection will also affect the steam flow.

型号/Model	IN25	IN40M
系统压力/ Saturated Steam Flow kg/h System Pressure bar g		
0.5	75	222
1	135	400
2	175	580
3	280	805
4	350	970
5	410	1125
6	500	1295
7	580	1445
8	640	1620
9	700	1820
10	765	1950
11	830	2250
12	900	2370
13	975	2595
14	1045	2710
15	1095	2815
16	1170	3065
17	1225	3200