

	
3200L/hARP	REGENERATION PLANT ARP/2022-011

ANNEX 1

附件 1

PRODUCTION GRADES, PRODUCTION CAPACITY

AND

TECHNICAL DATA OF THE LINE

产品等级，生产能力和技术数据

	
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1 TECHNICAL DATA 技术数据

1.1 DATA OF INQUIRY 基本数据

Pickling capacity:酸洗能力

Pickling Line 酸洗线 550,000t/year

Pickling loss 酸洗铁损 0.4%

Pickling Line hour:酸洗线时间 6,480 hr/year

waste pickle liquor coming from the pickle line:

来自酸洗线来酸洗废液 3.03131 m³/h

Composition of waste acid:废酸组成

HCl (total 总量) approx. 约 200 g/l

HCl (Free 游离量) approx 约. 25~30g/l


Fe approx 约. 120 g/l

Density 密度 approx. 约 1.2kg/dm³

Fluoride:氟化物..... less than 低于 5ppm

No Pb or Zn is present 包括 No Pb 或 Zn

Temperature 温度 approx 约. 85°C

	
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1.2 CAPACITY Calculation 能力计算

The dimensioning of the plant is based on the above-mentioned data:

基于上述数据计算的机组各类能力数据如下:

550,000 tons/year x 0.4% pickling loss

酸洗铁损: 550000 吨/年 x 0.4%

Regeneration plant: 6,480 h/y

再生机组: 6480 时/年

resulting in 2,200,000 kg/year of iron to be dissolved in acid

溶解在酸液中的铁: 2200000 千克/年

Since one liter of waste acid contains 115 g Fe, due to the chemical and physical facts, only 112g/l approx. of the iron contained in the pickle acid can be separated from the pickle acid.

尽管每升废酸中含有 115 克的铁, 但由于物理化学原因, 酸洗液中可以分离出来的铁只有约 112g/l。

the quantity of pickle acid to be regenerated is therefore calculated as follows:

所以再生的酸洗液量计算如下:

2,200,000 kg Fe x 1000

————— = 19642857.14 l/year waste acid

112 g/l Fe


铁 2200000 千克 x 1000

————— = 废酸 19642857.14 升/年

铁 112 g/l

In theory, the necessary regeneration capacity would be

理论上必需的再生容量是:

	
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$$\frac{19642857.14\text{l/year}}{6,480\text{ h/year}} = 3031,31\text{ l/hr}$$

$$\frac{19642857.14\text{ 升/年}}{6480\text{ 时/年}} = 3031.31\text{ 升/时}$$

According to this calculation,we suggest to install a plant with a capacity of max3200l/hr.

根据以上计算，我们建议建设一套最大能力为 3200 升/时的机组。

1.3 DESIGN OF CAPACITY OF THE PROCESS UNITS 生产装置能力设计

we suggest to install a twin plant having a Nominal capacity of 3,200 l/hr.

我们建议建设一套能力为 3200 升/时的机组。

1.4 PRODUCTS 产品

when processing 3,200 l/hr of waste pickle liquor
 处理时 酸洗废液 3200 升/时

1.4.1 REGENERATED ACID 再生酸

Amount: approx.3,200 l/hr

总计: 约 3200 升/时

Total HCl-content: approx.18%(bound+free)

HCl 总量: 约 18% (化合的+游离的)

Fe-contentration: approx.5 g/l(not including Fe from the rinse water)

Fe 浓度: 约 5 g/l (不包括漂洗水中的铁)

	
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Temperature approx.85°C
温度 约 85°C

1.4.2 OXIDE 氧化物

QUANTITY: approx.528 kg/hr
总量: 约 528 千克/时
Oxide quality: see Annex6
氧化物质量: 请见附件 6

1.5 UTILITIES, CONNECTED LOADS AND CONSUMPTION FIGURES

公用工程、连接负荷及消耗值

1.5.1 UTILITIES 公用工程

The following properties of utilities are basis of the proper performance of the Acid regeneration plant.

以下公用工程的特性是基于酸再生的相应性能


1.5.1.1 Electric Power: 电

Power supply grade: AC 3*380V(+5%/-5%), 50(+0.5/-1.0) Hz, 3-phase
电源供应等级: 3*380V (+5%/-5%), 50(+0.5/-1.0) 赫兹, 三相

1.5.1.2 Compressed air:

Item	Used point pressure	Dew point	Temperature
Actual	0.6-0.8 Mpa (gauge pressure)	-20°C(normal)	Ambient temperature

项目	使用点压力	露点	温度
实际值	0.6-0.8 MPa (表压)	-20° C (正常值)	室温

	
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Dry Air --- Solid particles: Max. 0.58 g/Nm³
 Grain size: Max. 10 μ m
 Oil content: Max. 3~ 5 mg/Nm³

干空气 --- 固相颗粒: 最大值 0.58 g/Nm³
 晶体大小: 最大值 10 μ m
 油含量: 最大值 3~ 5 mg/Nm³

1.5.1.3 Cooling water

PH-Value 酸碱值 7 - 8
 Suspended solids 悬浮物 < 2 mg/l
 Total hardness(CaCO₃) 总硬度 (碳酸钙) < 110mg/l
 Calcium hardness(CaCO₃) 钙质硬度 (碳酸钙) 95 mg/l
 Basicity(CaCO₃) 盐基度 (碳酸钙) 80 mg/l
 Chloride ion 氯根离子 <60 mg/l
 Temperature: 温度: 32°C
 Pressure: 压力 0.3 Mpa

1.5.1.4 Deionized water 去离子水

PH-Value 酸碱值 6.5 - 9
 Suspended solids 悬浮物 < 1 mg/l
 Total hardness(CaCO₃) 总硬度 (碳酸钙) < 0.01dH
 Calcium hardness(CaCO₃) 钙质硬度 (碳酸钙) Trace 微量
 Chloride ion 氯根离子 <1 mg/l
 Total iron 总铁量 Trace 微量
 Silica(SiO₂) 硅 (二氧化硅) 0.1mg/l
 Electrical conductivity 导电率 <10s/cm

	
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Temperature: 温度: 32°C
Pressure: 压力 0.40 Mpa

1.5.1.5 Industrial water 工业用水

PH-Value 酸碱值 7 - 8
Suspended solids 悬浮物 < 2 mg/l
Total hardness(CaCO₃) 总硬度 (碳酸钙) 110mg/l
Calcium hardness(CaCO₃) 钙质硬度 (碳酸钙) 95mg/l
Basicity 盐基度 80mg/l
Chloride ion 氯根离子 <60 mg/l
Sulfuric acid ion 硫酸 Non-detect 未检出
Total iron 总铁量 <1mg/l
Silica(SiO₂) 硅 (二氧化硅) <6mg/l
Evaporated residue 蒸发残留物 <200mg/l
Electrical conductivity 导电率 <250s/cm
Temperature: 温度: 32°C
Pressure: 压力 0.25 Mpa

1.5.1.6 Potable water 饮用水

PH value 酸碱值 7-8.5
Turbidity 浑浊度 3 dh
Total hardness (CaCO₃) 总硬度 (碳酸钙) 6.6-7.8 dh
Temporary hardness 暂时硬度 ≤5
Total basicity 总盐基度 ≤100 mg/l (calculated by CaCO₃) 由 CaCO₃ 计算
Chlorine 氯 < 20 mg/l
Total Fe 总铁量 < 0.5 mg/l

	
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Water temperature 水温 Lowest in winter 冬季最低温度 5 °C
Highest in summer 夏季最高温度 32 °C

Pressure: 压力 0.1Mpa

1.5.1.7 Softened water 软水

PH value 酸碱值 8.3

Total hardness (CaCO₃) 总硬度 (碳酸钙) 0.077 dh

Ca²⁺ 0.96 mg/l

Mg²⁺ 0.34 mg/l

Cl⁻ 48 mg/l

SO₄²⁻ 135 mg/l

Suspended matter 悬浮物 0.042 mg/l

Soluble matter 可溶物 248 mg/l

Conductivity 传导率 365 μs/cm

Temporary hardness 暂时硬度 0.072 dh

Water temperature 水温 Lowest in winter 冬季最低温度 5 °C
Highest in summer 夏季最高温度 32 °C

Pressure: 压力 0.2~0.3MPa


1.5.1.9 Nature gas 天然气

Heat value: 热值 8400Kcal/Nm³

Pressure: 压力: 12-18 kPa

1.5.1.10 Nitrogen 氮气 (Compressed air can be used 可以使用压缩空气)

Item	Pressure of main pipe	Max. O ₂	Purity	Min. dew point
Low pressure N ₂	0.2~0.8 MPa	0.1 %	≧98.0 %	-60°C

				
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项目	主要管道压力值	最大氧气值	纯度	最小露点
低压氮气	0.2~0.8 MPa	0.1 %	≥98.0 %	-60° C

1.5.1.11 Rinse water 漂洗水

HCl max.15.0 g/l 最大值 15.0 g/l
 Fe ≤5g/l

1.5.1.12 Make-up acid 新酸


HCl (technical grade 工业级) 32% b.w

1.5.2 CONNECTED LOADS AT TOP FOR ARP 界区连接负荷

Take over points of all utilities for the regeneration plant and acid storage station will be arranged next to the regeneration plant (max. 1m outside of the battery limits), ending 1m above floor level with a shut off valve each.

再生机组和酸存储站的公用设备的位置接近再生机组（最大距离界区 1 米），高于地面 1 米且与每个阀门安装同一水平高。

	Connected Loads	Consumption Figures	
Electric current	400KWhr/hr	256 KWhr/hr	
Compressed air	150Nm ³ /hr	100 Nm ³ /hr	
Cooling water	----	----	
Deionized (or Soft)water	3m ³ /hr	1.0 m ³ /hr	
Industrial water	5m ³ /hr	1m ³ /hr	
Potable water	10m ³ /hr	no continuous for safety showers	

			
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		only	
Steam	----	----	
Natural gas	300Nm ³ /hr(8400Kcal/Nm ³)	285Nm ³ /hr(8400Kcal/ Nm ³)	----
Rinse water	6m ³ /hr	3.2 m ³ /hr	----
Make up acid	truck load	no continuos	----

	连接负荷	消耗值	
电	400 KW hr/hr	265 KW hr/hr	
压缩空气	150 Nm ³ /hr	100 Nm ³ /hr	
冷却水	----	----	
去离子水（或软水）	3m ³ /hr	1.0 m ³ /hr	
工业用水	5m ³ /hr	1m ³ /hr	
饮用水	10m ³ /hr	仅安全喷淋不连续	
天然气	350Nm ³ /hr (8400Kcal / Nm ³)	285Nm ³ /hr (8400Kcal / Nm ³)	----
冲洗水	6m ³ /hr	3.2 m ³ /hr	----
补偿酸	货车负荷	不连续	----

1.6 POLLUTION CONTROL 污染控制

1.6.1 EXHAUST GAS 废气

1.6.1.1 REACTION GAS 反应气体

amount 总计: approx.6255Nm³/hr 约 6255Nm³ /hr

HCl: less than 20 mg/ Nm³(wet exhaust gas)

	
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HCl: 低于 20 mg/ Nm³ (湿废气)
 Fe₂O₃: less than 35 mg/ Nm³(wet exhaust gas)
 Fe₂O₃: 低于 35 mg/ Nm³ (湿废气)

1.6.1.2 OXIDE CONVEYING AIR 氧化物输送空气

amount: approx. 4,695m³/hr
 总计: 约 4,695 m³/hr
 Fe₂O₃: less than 20 mg/ Nm³(wet exhaust gas)
 Fe₂O₃: 低于 20 mg/ Nm³ (湿废气)

1.6.2 LIQUID EFFLUENTS 液体废水

from the ARP 来自 ARP 的液体废水

quantity 数量 approx.2 m³/day 约 2 m³/天

composition: 组成

HCl	5-200g/l
Fe	0-160g/l
Others 其他	as it comes from cleaning the floors 来自清洁地板的废水
Temperature 温度	max.70°C 最大值 70°C

1.6.3 SOLID RESIDUE 固体残渣

Item	Out flow/time(t)	Emit system	temperature (°C)
roaster bricks	Max.80	Fifteen years	≤40

项目	输出/次(t)	排放系统	温度 (°C)
焙烧炉砖	最大值 80	15 年	≤40

	
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1.7 NOISE PROTECTION 噪音防护

noise as working area. ≤80 dBA 工作区噪音 ≤80 dBA

Any equipment producing a noise level higher than 85 dBA is installed in a soundproof room. This not be considered as working area.

任何噪音超过 85 dBA 的设备都安装在隔音室里。此区域不作为工作区

1.8 OPERATING PERSONNEL 操作人员

process manager 生产管理员 1

engineer 工程师 2

操作员 2/shift 4 人/轮班

(not include cleaner maintenance package persons.etc.

(不包括清洁工、维修人员等)