

1.1 General 介绍

1.2 Related Technical Data of Equipment/Engineering to be supplied by the Seller

卖方提供的设备/设计相关技术资料

1.1 General 介绍

Main part of the Contract is the delivery of the Equipment KP160MN hot forging press for the forging of crankshafts and front axles.
合同主要部分为提供 KP160MN 楔式热模锻压力机设备，锻造曲轴和前轴。

All relevant items respectively main parts and service items of Buyer and Seller are listed in Annex 2.
买方和卖方所有相关主要部件及服务范围，在附件 2 中表述。

1.1.1 Production/Design capacity and product mix 生产/设计能力和产品

1.1.1.1 Annual output 年产量:

Approx. 312,000 parts 约 312,000 件

1.1.1.2 Product mix: automobile crankshaft and front axle etc large closed die Forging parts in the range of press force.

多种产品: 汽车曲轴和前轴等大型模锻件,在压力机额定压力内。

All drawing has to be given and signed as final during contract signing
所有最终图纸必须在合同签订同时提供并签字。

1.1.1.3 Cycle time: 生产节拍

≤ 50 sec./part ≤ 50 秒/件.

Depending on :

Weight of forging part, robot handling time, spraying time and only for crankshaft

依据: 锻造件重量, 机械人操作时间, 喷淋节拍, 而且是无扭拐曲轴

The requirement on cycle time must be taken into account in bolster, die design and the press layout.

模座和模具的设计, 及设备的布置, 必须充分考虑并满足生产节拍要求。

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1.1.1.4 Annual working days:

251 working days, 3 shifts, 8 hours per shift.

年 251 个工作日, 三班生产, 每班生产 8 小时,

1.1.1.5 Electrical component standards should be above protection degree IP54 (related to the international standard)

生产线内所有电气部件保护等级不低于 IP54 (相应国际等级)。

1.1.2 Local environmental situation:使用地点区域自然环境:

1.1.2.1 Altitude:

Below 1000 m above sea level 海拔高度: 1000 米

- 1.1.2.2 **Temperature**
Outside 环境温度
max. lowest temperature : -37.8 °C,室外极端最低温度-37.8°C
max. highest temperature : 37°C,极端最高温度 37°C
different per day : 17°C,昼夜最大温差 17°C
indoor : 5~40°C.室内温度 5~40°C
- 1.1.2.3 **Humidity**
Relative humidity 59%, max. 95% , min. 15%.
相对湿度: 年平均 59%, 最大 95%、最小 15%
- 1.1.2.4 **Rain**
Daily rain fall: max. 300 mm,
降雨量: 日最大降雨量 300mm
max. rain per hour: 100 mm.
时最大降雨量 100mm
- 1.1.2.5 **Max. wind speed: 30m/s. 最大风速**
- 1.1.2.6 **Max. snow: 200mm. 最大积雪厚度**
- 1.1.2.7 **max. frozen earth: 450mm. 最大冻土深度**

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- 1.1.2.8 **Earth quake degree: 6 地震设防裂度: 六度。**
- 1.1.3 **Media Supply 公用设施**
 - 1.1.3.1 **Into plant :V 66 kv, power 3 x 660V±10%/220V±10%, 50Hz±2%**
电力: 中国制式, 进厂供电 66 Kv, 供电电压 3 x 660V±10%
/220V±10%, 供电频率 50Hz±2%。
 - 1.1.3.2 **Water is due city tap water and soft water 给水: 市政自来水或软化水**
 - 1.1.3.3 **Compressed air :0.55~0.7MPa = 5.5 ~ 7 bar, min. 6 m3/h 压缩空气:**
自备空压机自产压缩空气 0.55~0.7MPa = 5.5 ~ 7 bar, 最小: 6 m3/h
 - 1.1.3.4 **Natural gas supplied by bottle 天然气: 灌装天然气**

1.2 Technical Data of Equipment/Engineering to be supplied by the Seller

卖方提供设备/ 设计的技术资料

1.2.1 Main Press KP 16000 – Technical Data 主机技术资料

Wedge Press KP 16000/ KP 16000 楔式压力机型号

Main Data 主要指标

| | | |
|--|---------|----------------------|
| Nominal force 公称压力 | | 160 MN (16000 t) |
| Ram stroke 滑块行程 | | 600 mm |
| Ram adjustment 滑块调整 | | 30 mm |
| Idle speed 怠速 | max. | 25 min ⁻¹ |
| Number of single stroke 打击次数 | max. | 5 min ⁻¹ |
| Shutheight (ram down, adjustment up) 闭合高度 (滑块向下, 调整向上) | approx. | 2,000 mm |
| Horizontal daylight between stands 立柱水平开档 | approx. | 2,500 mm |
| Table surface: width 工作台表面宽度 | approx. | 2,440 mm |
| depth-center 前后 | approx. | 3,000 mm |
| Ram surface: width 滑块表面宽度 | approx. | 2,380 mm |
| depth-center 前后 | approx. | 2,800 mm |
| Side window width X height 侧窗口 | | 1,700 x 2300 mm |
| Drive motor 驱动电机 | | 700 kW |

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| | | |
|---|---------|-------------------|
| Useful energy at 15-% speed drop 15%减速时, 可利用能量 | | 4,150 kJ |
| Construction height above floor 地面上高度 | approx. | 14,000 mm |
| Machine table above floor 工作台到地面高 | approx. | 100 mm |
| Middle working level to floor 上下模具分模 面到地面高 | approx. | 1,100 mm |
| Machine dimension, above floor width x length 机器宽 X 长 | approx. | 9,740 x 12,100 mm |
| Weight of the press 机器重量 | approx. | 1,750 t |

Max weights for the following parts:

以下部件最大重量:

- Machine table 机座 220 t
- Traverse crown 上横梁 430 t
- Left and right columns 左右立柱 each / 每个 72 t
- Connection power 装机容量 1.300 kVA
- Lower ejector technical data 下顶料技术参数
- Ejector number , ejectors in two lines each line 5
(the placement and numbers will be decided according to technology by both parties)
顶料杆数量 ,每排 5 个 X 2 排 (具体位置及数量根据工艺双方来定)
- Ejector stroke, adjustable 0 – 90 mm
顶料行程 0-90mm 可调

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- Ejector force ,each line 400KN
顶出力,每排 400KN
- Upper ejector technical data
上顶料技术参数
- Ejector number , ejectors in two lines each line 5
(the placement and numbers will be decided according to technology by both parties)
顶料杆数量 , 2 排, 每排 5
(具体位置及数量根据工艺双方来定)

- Ejector stroke 40 mm
顶料行程 40 mm
- Ejector force each line 300 KN
顶出力,每排 300KN

| 参数 Parameters | 单位 Unit | 标准 Standard - Tolerances |
|---|------------|-----------------------------|
| Straightness (flatness) of surface of table 工作台表面直线度(平面度) | mm/m | ≤0.1 |
| Straightness (flatness) of surface of die ram 滑块下表面直线度 (平面度) | mm/m | ≤0.1 |
| Parallelness of table and die ram 滑块下表面、工作台表面平行度 | mm/m | ≤ 0.3 |
| Perpendicularity of ram direction to table 滑块行程相对于工作台表面垂直度 | mm/m | ± 0.3 |

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Annex 1 Technical Specification 技术参数

| | | |
|---|----|-------------------------|
| Fly wheel: Jump of end surface and axial 飞轮径向和端面跳动: End play:径向 Axle:轴向 | mm | approx. 0.25 0.5-1.5 |
| Clearance between ram and guide rail 导轨间隙 In hot temperature 热态 In cold temperature 冷态 | mm | 0.2-0.4 0.5-0.7 |

| | | |
|---|----------|---|
| <u>Fly wheel with Max energy.</u> <u>Main power off:</u> 飞轮获得最大储存能量后,关闭主电机, <u>Time up to fly wheel fully stops without brake.</u> 飞轮自由停止转动时间 | 分 min | approx. 25 |
| <u>Fly wheel with max. energy.</u> <u>Main power off:</u> 飞轮获得最大储存能量后, 关闭主电机, <u>Time up to fly wheel is in emergency stop (or control off)</u> 紧急制动状态下飞轮停止转动时间 | 秒 sec | approx. 30 |
| <u>Fly wheel with max. energy.</u> <u>Main power off</u> 飞轮获得最大储存能量后, 关闭主电机, <u>Number of strokes until it stops.</u> Continuously 滑块连续行程次数 | 次 No. | 20-30 |
| <u>Longitudinal spring rate</u> 长度弹性变量 <u>Resistance against tilting left/right</u> 抗倾斜, 左右 | | Approx. 约 29600 kN/mm \pm 10% Approx. 约 54000 kNm/mm/m \pm 30% |

Annex 1 Technical Specification 技术参数

Working areas 功能部分

Other consumption data 其他消耗资料

Air 空气

Air pressure
气压

6 bar

Compressed air flow scale blowing/spraying
压缩空气喷淋使用计量

0.2 Nm³/part

Compressed air flow, total
压缩空气流量

6 m³/h

Water

| | | |
|--|-----|-------------------|
| Cooling water flow for hydraulic power pack 液压站冷却水量 | 9.0 | m ³ /h |
| Cooling water flow for circulating oil unit 油压站冷却水流量 | 0.8 | m ³ /h |
| Cooling water flow for die cooling (water loss) 模具冷却水流量(水损) | 0.2 | m ³ /h |
| Waste water flow in foundation, mixture of water, spray medium, scale and grease, approx. 废水,喷淋液,润滑液在基础上流量 | 1 | m ³ /h |

Lubricants 润滑剂

| | | |
|--|----|---|
| Lubricant volume for central grease 中心油脂润滑流量 | | |
| lubrication system for 1000 press strokes 每1000次打击,润滑系统流量 | 10 | l |

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| | | |
|---|-----|----------|
| Lubricant volume for total-loss gear lubrication system 齿轮油系统润滑油消耗 | 60 | l/1000 h |
| Lubricant volume for total-loss press lubrication system 压力机整体润滑油消耗 | 40 | l/1000 h |
| Lubricant volume Die holder lubrication system for 1000 press strokes 每1000次打击模座润滑液用量 | 0.2 | l |

Die gas heating system 模具燃气加热系统

| | | |
|--|------------|--------------------|
| Gas consumption 燃气消耗 | 3 | Nm ³ /h |
| Gas pressure max. 燃气压力最大 | 35 | mbar |
| Gas specification, calorific value 燃气规格, 卡路里值 | 9.7 – 12.5 | kWh/m ³ |

Exhaust system 排烟系统

| | | |
|--|--------|-------------------|
| Volume flow 空气流量 | 40.000 | m ³ /h |
| Flow velocity in the ducts, max. 烟道最大风速 | 15 | m/s |

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Annex 1 Technical Specification 技术参数**Main electrical data 主要电气数据**

| | |
|---------------------------------|-------------------|
| Operating voltage AC 操作电压-交流 | 3 x 660 V, +/-10% |
| Control voltage AC 控制电压-交流 | 220 V, +/-10% |
| Control voltage DC 控制电压-直流 | 24 V |

| | |
|------------------------|-----------------|
| Frequency 频率 | 50 Hz, +/- 2% |
| Rated current 额定电流 | approx.1150 A |
| Connected load 装机容量 | approx.1300 kVA |

1.2.2 Bar Cutting Machine 下料机

The Seller will give the basic data (without legal responsibility) for a recommendation for the Buyer, which enables the Buyer the procurement of such a machine
推荐先进的下料设备规格型号供买方参考选择(不承担相关的法律责任)

1.2.3 Induction Heater 感应加热炉

The Seller will give basic data (billet data/heat temperature/cycle time/requirement for interfaces)
卖方提供基本数据(料坯规格/加热温度/生产节拍/接口要求)

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Annex 1 Technical Specification 技术参数

1.2.4 Further machines and Equipment needed for the line

生产线需要的其它设备和机器

The Seller should give the main specifications and requirement of interfaces with other machines for
卖方提供生产线所需设备和接口的主要参数:

- Forging roll 辊锻机
- Trimming Press 切边机
- Twister 扭拐机
- Sizing Press 整形机
- also the Robots 机器人

Furthermore for the overhead lifter the max. capacity and lifting height, which enable the Buyer the procurement of such lifter, which is sufficient for machine erection and maintenance

提供设备安装、维修所需行车的最大起重吨位、起升高度等参数，以便买方购买合适天车（作为用户在设备采购、安装时的准确依据）