



Hengyi Industries Sdn Bhd  
恒逸实业（文莱）有限公司

HYBN-T3-07-0007-2024-2

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## Standby Pump Turn And Periodic Switch Management System

备用机泵盘车和定期切换管理制度

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## Version Information 版本信息

1 Rev 1 released on December 31, 2018.

第一版发布时间为 2018 年 12 月 31 日。

2 Rev 2 released on April 1, 2024.

第二版发布时间为 2024 年 4 月 1 日。



	Hengyi Industries Sdn Bhd 恒逸实业（文莱）有限公司			
	Standby Pump Turn And Periodic Switch Management System 备用机泵盘车和定期切换管理制度			
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1 Purpose

目的

This System is formulated in order to standardize the related requirements of the rotating equipment turning and periodic switching, effectively maintain the standby equipment, timely detect hidden faults and eliminate defects, and ensure the safety of continuous production equipment.

为了规范动设备盘车和定期切换的相关要求，对备用设备进行有效维护，及时发现隐蔽故障消除缺陷，保证连续生产装置的安全，特制定本制度。

2 Scope of Application

适用范围

- 2.1 This System is applicable to pump turning and periodic switching management of each device in the company.
- 本制度适用于公司范围内各装置机泵的盘车和定期切换管理。
- 2.2 This System is not applicable to idle pumps.
- 闲置停用机泵不适用本制度。

3 Terms and Definitions

术语和定义

- 3.1 Turning refers to hand turning of equipment before startup of the motor to judge whether the motor-driven load (i.e. the Equipment Management or transmission part) is stuck leading to resistance increase, so as not to damage the equipment due to the increase of startup load of the motor.
- 盘车：指在启动电机前，用人力将设备转动，用以判断由电机带动的负荷（即机械或传动部分）是否有卡死而阻力增大的情况，从而不会使电机的启动负荷变大而损坏设备。
- 3.2 Switching: switching between the standby equipment and the running equipment within a certain period.
- 切换：在一定周期内，将备用设备和运行设备进行切换运行的工作。

4 Management Responsibilities

## 管理职责

### 4.1 Specified administrative authority

#### 归口管理部门

4.1.1 The Equipment Management Dept. is the specified administrative authority of this System, which shall be responsible for reviewing, preparing and revising the standby pump turning and periodic switching system and inspecting and assessing this system.

机械动力部是本制度的归口管理部门，负责备用机泵盘车和定期切换制度的审核、编制、修订，负责本制度的检查与考核。

4.1.2 The Equipment Management Dept. shall be responsible for reviewing and approving the *List of Standby Pump Turning Frequency and Switching Period* submitted by each operation department.

机械动力部负责对各运行部上报的《备用机泵盘车频次和切换周期一览表》进行审核、批准。

### 4.2 Executive departments

#### 执行部门

4.2.1 Each operation department shall ensure that all pumps within the area under jurisdiction works as per the standby pump turning frequency and switching period and report the *List of Standby Pump Turning Frequency and Switching Period* to the Equipment Management Dept.

各运行部负责对所辖区域所有机泵按照备用机泵盘车频次和切换周期，向机械动力部上报《备用机泵盘车频次和切换周期一览表》。

4.2.2 Each operation department shall be responsible for determining relevant persons in charge and organizing the implementation of the standby pump turning and periodic switching.

各运行部负责落实相关责任人，并组织实施备用机泵的盘车和定期切换。

4.2.3 Each operation department shall be responsible for the self-inspection of the standby pump turning and periodic switching within the area under jurisdiction, and for the assessment in accordance with the relevant provisions.

各运行部负责对所辖区域内备用机泵的盘车和定期切换执行情况进行自检，并按照相关规定进行考核。

4.2.4 The Electrical Operation Dept., Instrument Control Dept. and Equipment Maintenance Dept. shall be responsible for the professional inspection and confirmation of equipment.

电气运行部、仪表控制部、设备检修部负责设备的专业检查和确认。

## 5 Management Content

### 管理内容

#### 5.1 Standby pump turning procedures

## 备用机泵盘车程序

### 5.1.1 Purpose of pump turning

机泵盘车的目的

5.1.1.1 Periodic turning: to prevent hot deformation or bending deformation of the rotor of the standby pump by periodic turning.

定期盘车：通过定期盘车防止备用机泵转子热变形或弯曲变形。

5.1.1.2 Turning prior to startup: to prevent the motor from being burnt due to dynamic and static friction or overload during pump startup by checking whether the standby pump is stuck through turning prior to the startup.

启动前的盘车：通过启动前的盘车检查备用机泵是否存在卡涩现象，防止机泵启动时发生动静摩擦或因过载烧毁电机。

### 5.1.2 Provisions on standby pump turning

备用机泵盘车规定

5.1.2.1 The following equipment is not subject to hand turning during standby period: the canned pump, the vertical pump, the reciprocating pump (the metering pump), the stand blender, the self-starting pump, the pump that runs intermittently and frequently each day, and the air cooling fan.

所有的屏蔽泵、立式泵、往复泵（计量泵）、立式搅拌器、带自启动的机泵、每天频繁间断运行的机泵、空冷风机，备用期间不盘车。

5.1.2.2 During the standby period of the unit equipped with independent lubricating oil station, the oil pump of lubricating oil station should be in operation, and the standby lubricating oil pump should be switched once a month. During the standby period, the reciprocating unit shall be turned once a month.

配有独立润滑油站的机组在备用期间，润滑油站的油泵应处于运行状态，备用润滑油泵应每月切换一次。往复机组在备用期间，每月盘车一次。

5.1.2.3 Other standby pumps shall be turned once a day. The pump to be preheated after repair shall be turned during the preheating period as per the heating rate and turning frequency specified in the specification or manual, and it shall be turned once a day during the normal standby period.

其余备用机泵的盘车按规定每天盘车一次。对检修后需预热的机泵，在预热期间按照说明书或操作法规定的升温速率和盘车频次盘车，正常备用期间再改为每天盘车一次。

5.1.2.4 Each turning shall be no less than one circle and a half (for a pump with a gearbox, the number of turning circle(s) of output shaft of the gearbox shall prevail), i.e., 540°. After the turning, the white mark shall be upwards in odd days and the red mark upwards in even days (based on the current day). In case the last day of the previous month is an odd day, the turning on the first day of the current month shall be no less than two circles and the white mark shall be upwards after the turning. The turning shall be conducted between 12:00 and 18:00.

每次盘车不得少于一圈半（对带变速箱的机泵，以变速箱输出轴转动圈数为准），即 540°。盘车

后状态：单日白线朝上，双日红线朝上 (以当日日历单双为准)，当遇到上月最后一天日历为单日时，则当月第一天盘车不得少于二圈后白线朝上。盘车时间统一规定：12:00 至 18:00。

5.1.2.5 Each operation department shall make the turning marks and turning frequency marks with a unified specification for all the pumps requiring turning in the devices under jurisdiction, so as to facilitate the implementation by the team/group.

各运行部对所辖装置内所有需要盘车的机泵标识统一规格的盘车线及盘车频次标识，以方便班组执行。

5.1.2.6 The turning shall be flexible and free from deviation. Any abnormality if occurring shall be recorded in the EM of the equipment management system every day, and the Equipment Maintenance Dept. shall be contacted for treatment.

盘车应灵活自如无偏重现象，若有不正常现象，应当日在设备管理系统 EM 上进行记录，并联系设备检修部处理。

5.1.2.7 It is not permit to replace turning with inching.

严禁以点动代替盘车。

### 5.1.3 Pump turning procedures

机泵盘车步骤

5.1.3.1 For all pumps that need to be turned, make sure the motor operating column switch on site is in the "Lock-out" or "Stop" position during turning.

所有需盘车的机泵，盘车时应确保现场电机操作柱开关处于“锁停”或“停”位置。

5.1.3.2 Turning method: turn in the coupling position of the equipment through the turning wrench for over 540° generally by maintaining the white mark upwards in odd days and red mark upwards in even days.

盘车办法：用盘车扳手，在设备的联轴器位置进行盘车，一般盘车 540°以上，保持单日白线朝上，双日红线朝上。

5.1.3.3 For the pump which stops outside the specified time for turning, the on-duty operator shall correct the position of the pump turning mark to correspond with the date within 1 hour after shutdown of the pump if no maintenance is required.

在规定盘车时间之外停运的泵，若不检修，在该泵停下后1小时内，由当班操作人员应校正该泵盘车标记的位置，使之与日期相对应。

5.1.3.4 The pump turning, upon completion, shall be recorded in the shift hand-over and take-over log.

机泵盘车后要在交接班本上做好盘车情况记录。

### 5.1.4 Precautions for pump turning

机泵盘车注意事项

5.1.4.1 For pumps with strict requirements for rotary direction such as the pump with dry gas seal, the turning direction shall be consistent with the rotary direction.

对于干气密封等对旋转方向有严格要求的机泵，盘车方向应与机泵旋转方向一致。

5.1.4.2 Before startup, the pump must be turned to confirm flexibility. For the pump with self-start function, the switch must be turned from the automatic position to the manual position



and then locked before turning of the pump, after which the switch shall be returned to the automatic position; be turned to the automatic position after turning; If the on-site switch is under the "remote" control mode, it must be switched to the "local" control mode after contact with the central control room, and finally switched to the "remote" control mode after the completion of turning.

机泵启动前必须盘车确认灵活自如。对带自启动的机泵，启动前盘车时必须把开关由自动位置旋到手动位置并锁停后盘车，盘车后再把开关旋钮打到自动位置；现场开关位置处在“远程”控制模式的必须在与中控联系后先切换至“就地”控制模式，盘车完毕后再切至“远程”控制模式。

## 5.2 Periodic switching procedures of standby pump

### 备用机泵定期切换程序

#### 5.2.1 Purpose of periodic switching of standby pump

##### 备用机泵定期切换目的

Rotating equipment, if stops for a long time, may be subjected to phenomenon such as motor dampness, defective insulation, lubricating oil metamorphism, Equipment Management jamming and valve rust. The periodic switching system aims to check whether the standby equipment is in good condition and available, eliminate the performance problems resulted from long-time standby of the equipment and ensure the standby equipment can be reliably put into operation in case of maintenance or emergency.

转动设备若停运时间过长，会发生电机受潮、绝缘不良、润滑油变质、机械卡涩、阀门锈死等现象，实行设备的定期切换制度的目的在于检查处于备用状态的设备是否完好可用，消除备用设备长时间处于停用状态下产生的性能问题，以保证备用设备能够在运行设备检修或事故情况下可靠地投入运行。

#### 5.2.2 Provisions on periodic switching of standby pump

##### 备用机泵定期切换规定

5.2.2.1 Each operation department classifies the switching periods of other standby pumps within its jurisdiction according to the following three switching principles:

各运行部在对所辖范围内的其余备用机泵设备按以下三类切换原则对备用机泵切换周期进行分类：

(1) Routine periodic switching: standby equipment is switched once every three months when the standby equipment available and the process and equipment condition allow switching.

常规定期切换：是指具有备用设备，且工艺和设备条件允许进行切换操作的设备，备用设备每三个月切换一次。

(2) Special periodic switchover: standby equipment is switched once every six months when the standby equipment is available and the process and condition do not allow conventional switching operation and switching can only be done when special and necessary preventive measures haven been taken by the equipment and process personnel.

特殊定期切换：是指具有备用设备，但工艺和设备条件不允许进行常规的切换操作，需要由设备

工艺人员采取特殊的和必要的防范措施才能进行切换的设备，半年切换一次。

(3) Periodic switching is not required by pumps, air cooling fan and pneumatic diaphragm pumps which are running in an intermittent manner for technology reason. Also, periodic switching is not necessary for quite a small number of pumps for which system fluctuation may occur during the switching. In case of device or unit shutdown, switching or trail run shall be arranged for standby pumps during the startup and shutdown and meanwhile the reasons shall be explained in the *List of Standby Pump Turning Frequency and Switching Period*.

因工艺原因间歇运行的机泵、空冷风机、气动隔膜泵不执行定期切换，对极少数切换时容易引起系统波动的机泵，可以不执行定期切换，当装置或者单元停车时，在开停车过程中应安排备用机泵的切换或试运，同时在《备用机泵盘车频次和切换周期一览表》中注明原因。

5.2.2.2 Each operation department shall, in accordance with the classification principle, fill in and submit the *List of Standby Pump Turning Frequency and Switching Period* before January 15 every year, which shall be submitted to the Equipment Management Dept. for review after being confirmed by the supervisor of the operation department. In the event of any change in the number of pumps in daily operation, the operation department shall fill in the *List of Standby Pump Turning Frequency and Switching Period* again and submit it to the Equipment Management Dept. for review within 1 month after the change.

各运行部按照分类原则，每年 1 月 15 日前填报《备用机泵盘车频次和切换周期一览表》，经运行部主管领导确认后提交机械动力部审核。当日常出现机泵数量变更时，在机泵数量变更后的 1 个月内，由运行部重新填写《备用机泵盘车频次和切换周期一览表》，提交机械动力部审核。

5.2.2.3 Upon shutdown or maintenance/repair of the unit, the switching of its auxiliary pump must be completed before startup of the unit. The pump shall be running for at least 72 hours for trial after maintenance/repair.

5.2.2.4 For important standby equipment, the operation department shall notify the Electrical Operation Dept., Instrument Control Dept. and Equipment Maintenance Dept. one day in advance, so as to guarantee synchronous electrical, instrument and equipment inspection.

对于备用的重要设备，由运行部提前一天通知电气运行部、仪表控制部、设备检修部，以便同步对电气、仪表、设备检查。

5.2.2.5 In case of statutory holidays, all switching work shall be completed one week before the holidays.

遇到法定节假日，所有切换工作要求在节假日前一周完成。

5.2.2.6 The startup and shutdown records shall be checked in the equipment management system EM and confirmed within 5 days after the standby pump switching.

备用机泵切换后 5 天内在设备管理系统 EM 中检查开停机记录，并对机泵开停机记录进行确认。

5.2.2.7 The equipment management personnel of each operation department shall, according to the approved List of Turning Frequencies and Switching Periods of Standby Pump, formulate the Standby Pump Switching Schedule for the next month at the end of each month, and urge the operators to switch pumps as planned.

各运行部的设备管理人员按照审核通过的《备用机泵盘车频次和切换周期一览表》，每月的月底



制订下月的《备用机泵切换计划表》，督促操作人员按计划切换机泵。

## 6 Inspection and Supervision

### 检查与监督

The Equipment Management Dept. shall conduct supervision, inspection and assessment in accordance with the provisions of this System.

机械动力部按照本制度的规定要求进行监督、检查、考核。

## 7 Associated Procedures and Records

### 关联程序和记录

#### 7.1 Associated procedures

##### 关联程序

7.1.1 Standby pump turning management procedures (HYBN-T2-07-0020-2024-2)

备用机泵盘车管理程序 HYBN-T2-07-0020-2024-2

7.1.2 Periodic switching management procedures for standby pump (HYBN-T2-07-0021-2024-2)

备用机泵定期切换管理程序 HYBN-T2-07-0021-2024-2

#### 7.2 Associated records

##### 关联记录

7.2.1 List of Standby Pump Turning Frequency and Switching Period (HYBN-T6-07-0068-001-2018)

备用机泵盘车频次和切换周期一览表 HYBN-T6-07-0068-001-2018

7.2.2 Standby pump switching schedule

备用机泵切换计划表

## 8 Supplementary Rules

### 附则

8.1 This System is under the jurisdiction of Equipment Management Dept.

本制度由机械动力部归口管理。

8.2 This System is drafted by Equipment Management Dept.

本制度起草部门：机械动力部。

8.3 Equipment Management Dept. is responsible for the interpretation of this System.

本制度解释权机械动力部拥有。

8.4 Revision, preparation and approval of this System are shown in Table 1:

本制度版本编制和审批情况见表 1:

**Table 1 Revision, preparation and approval of document**

**表 1 文制度编制和审批情况**

2	2024-04-01	Li Tao 李涛	Zhao Tingyun 赵挺云	Xu Ye 徐野	Chen Liancai 陈连财
Revision 版本	Issued date 颁布日期	Prepared by 编制人	Reviewed by 审核人	Authorized by 审定人	Approved by 批准人