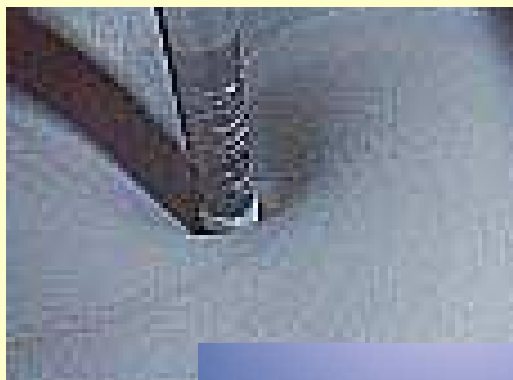


产品应用范围1



冶金、采矿、造纸、纺织、
塑料橡胶、发电和输配电
工业化工、石油天然气
采暖、通风和空调



供水、水处理
金属加工材料处理,
木材加工、食品、
饮料加工及包装工业
医药、环保、科研、
教育、文化事业

产品应用范围2



金属加工机械(轧机、卷取、剪切等)

纸浆和造纸机

石油采掘、矿井提升

起重机、提升机、电梯

螺旋输送机、皮带运输机

水泵、油泵、液料泵等

送风机、引风机，给粉给料

压缩机、挤压机、搅拌机

卷绕机、放卷机

拉丝机、镀膜机、清洗机

变频器负载分类：

- 恒转矩：
机械；
提升机；
传送带...
- 变转矩：
风机；
水泵；
压缩机...
- 恒功率：
卷绕机....

恒转矩：

- $P=kTN$

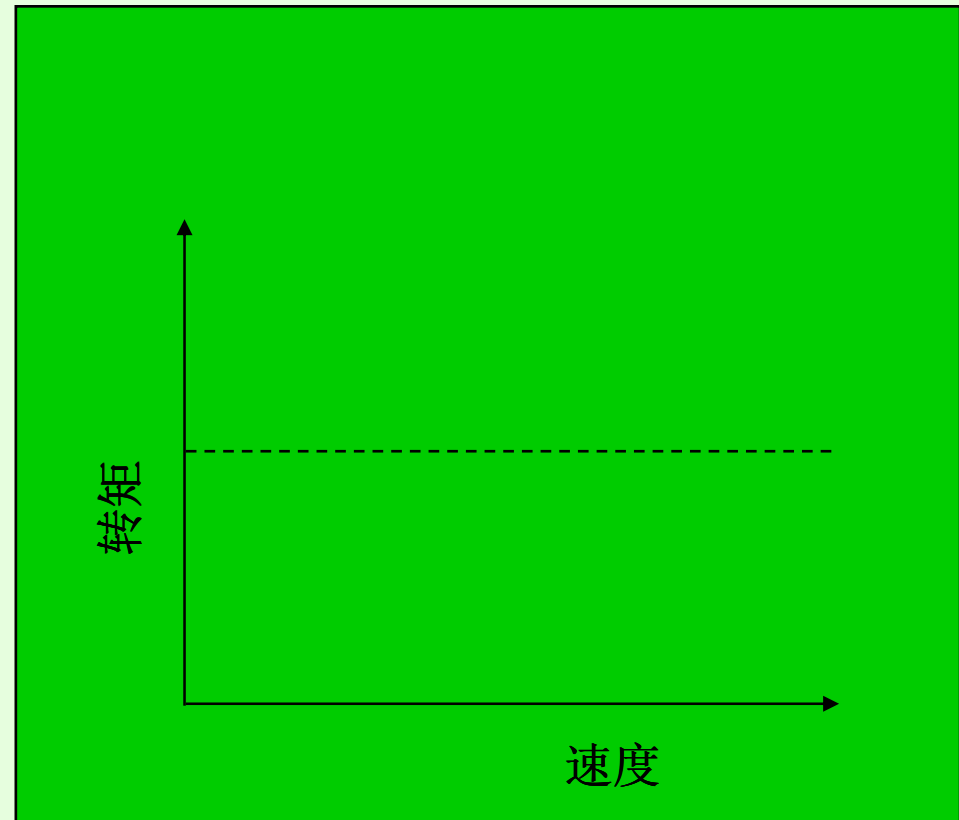
P =功率；

k =系数；

T =负载转矩；

N =转速

$$P \propto N$$

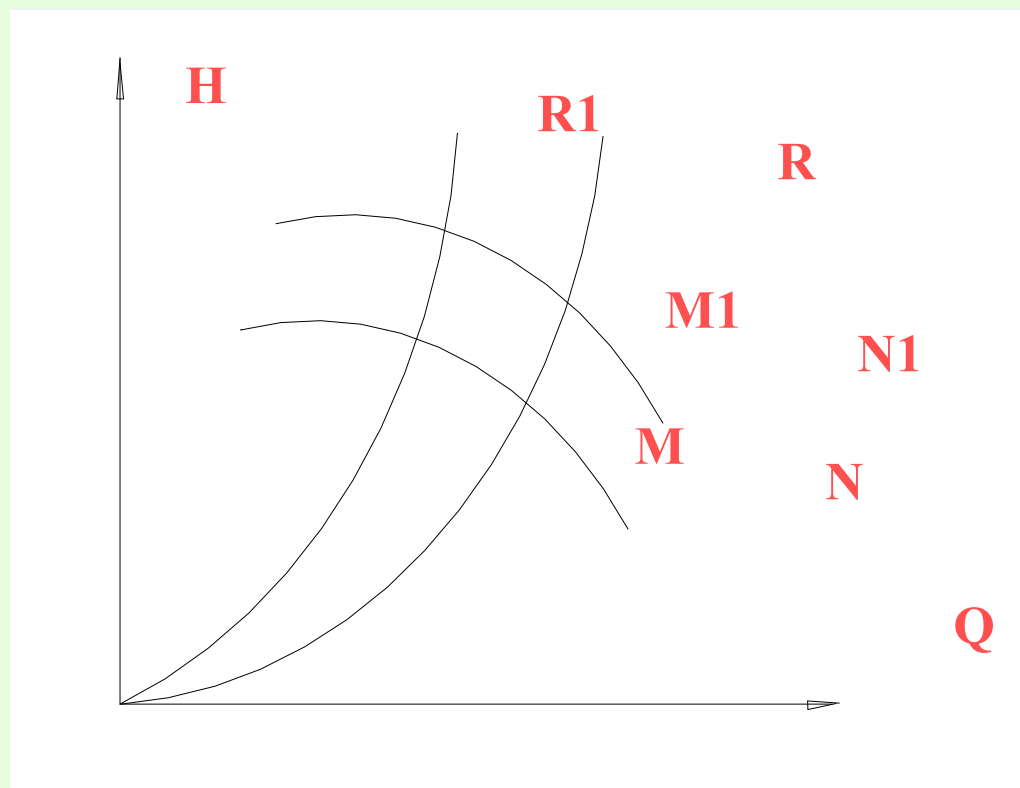


改变转速，就能达到相应比例的节能效果。

变转矩:

- $Q=K_1*N$
- $H=K_2*N^2$
- $P=K_3*N^3$

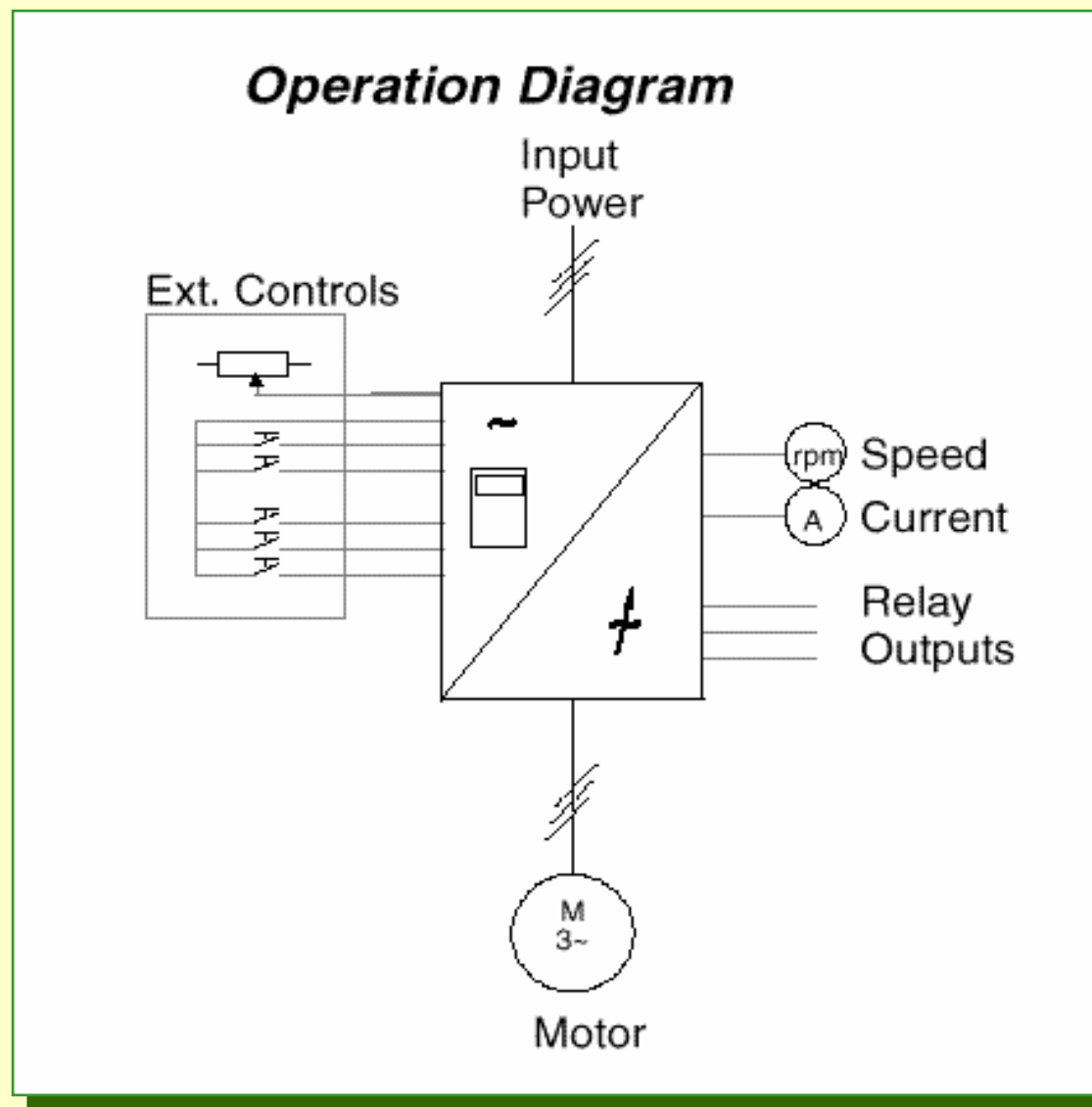
- Q: 流量
- H: 扬程
- P: 轴功率
- K_N : 常数
- R: 阀门开度
- M: 工作点



满足工艺要求的同时更加节能!

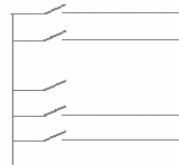
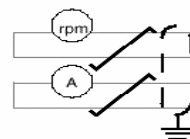
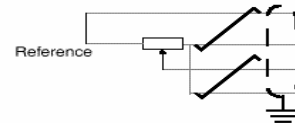
Factory macro

工厂宏



Factory macro

工厂宏



* Operation: 0 = Open, 1 = Closed

DI 5	DI 6	Output
0	0	set speed through AI1
1	0	Constant Speed 1
0	1	Constant Speed 2
1	1	Constant Speed 3

Terminal Block X21		Function
1	VREF	Reference voltage 10 VDC max. 10 mA
2	GND	
3	AI1+	External reference 1 0 ... 10 V
4	AI1-	
5	AI2+	Not specified in this application
6	AI2-	0 ... 20 mA
7	AI3+	Not specified in this application
8	AI3-	0 ... 20 mA
9	AO1+	Speed 0 ... 20 mA <-> 0 ... Motor nom. speed
10	AO1-	
11	AO2+	Current 0 ... 20 mA <-> 0 ... Motor nom. current
12	AO2-	
Terminal Block X22		
1	DI1	STOP/START
2	DI2	FORWARD/REVERSE (if 10.3 is REQUEST)
3	DI3	NOT IN USE
4	DI4	ACCEL/DECEL 1/2
5	DI5	CONSTANT SPEED SELECT*
6	DI6	CONSTANT SPEED SELECT*
7	+24DVDC	+24 VDC max. 100 mA
8	+24DVDC	
9	DGND	Digital ground
Terminal Block X23		
1	+24 VDC	Auxiliary voltage output 24 VDC max. 250 mA
2	GND	
Terminal Block X25		
1	RO11	Relay output 1 READY
2	RO12	
3	RO13	
Terminal Block X26		
1	RO21	Relay output 2 RUNNING
2	RO22	
3	RO23	
Terminal Block X27		
1	RO31	Relay output 3 FAULT (-1)
2	RO32	
3	RO33	

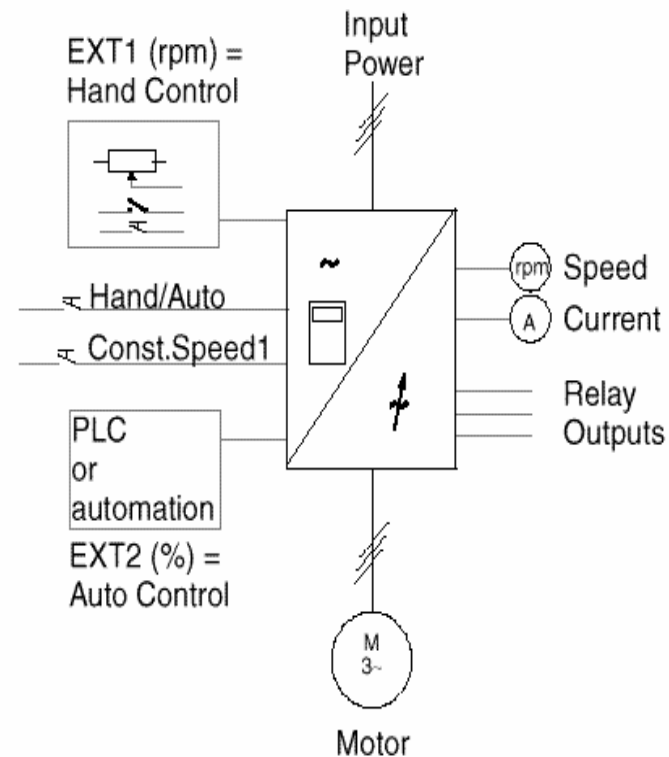
Hand/Auto macro

手动/自动宏

手动/自动

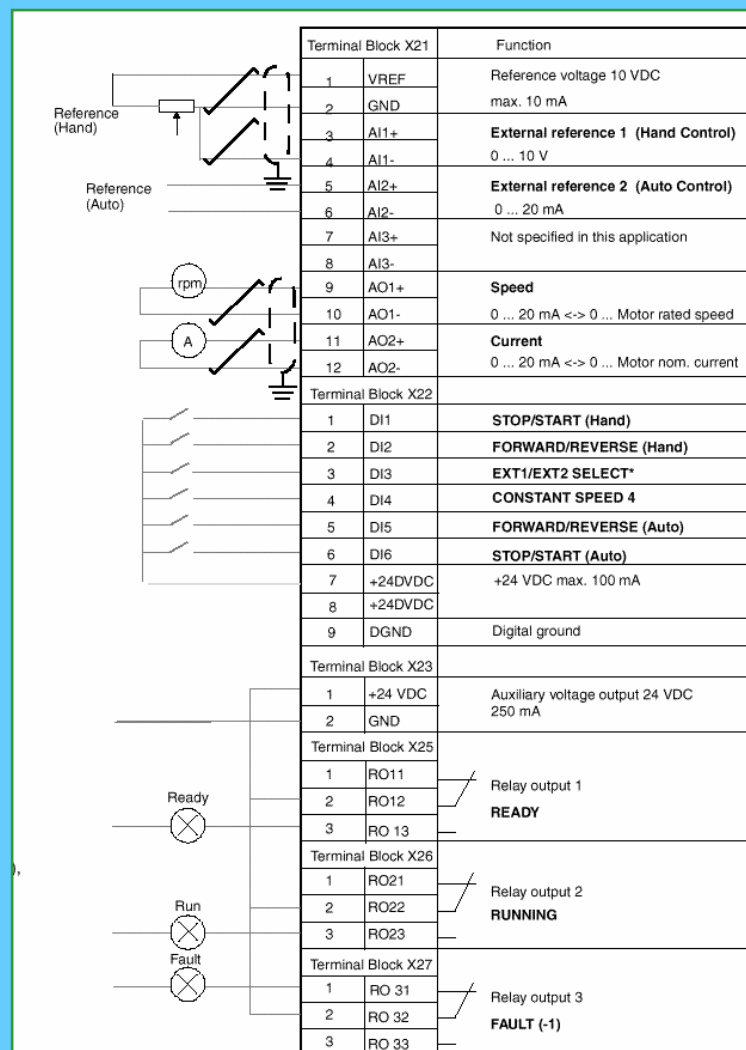
启动/停止，
方向给定的
设定可以通过
两个不同的
控制地点
给出

Operation Diagram



Hand/Auto macro

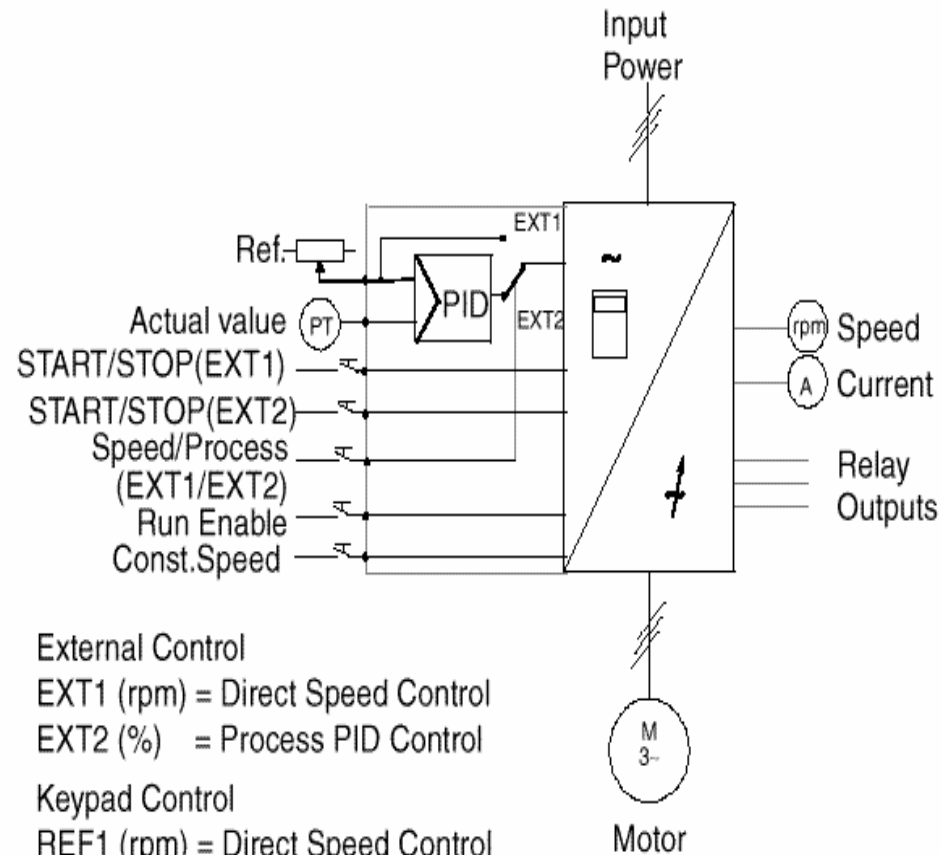
手动/自动宏



PID macro

PID宏

Operation Diagram



External Control

EXT1 (rpm) = Direct Speed Control

EXT2 (%) = Process PID Control

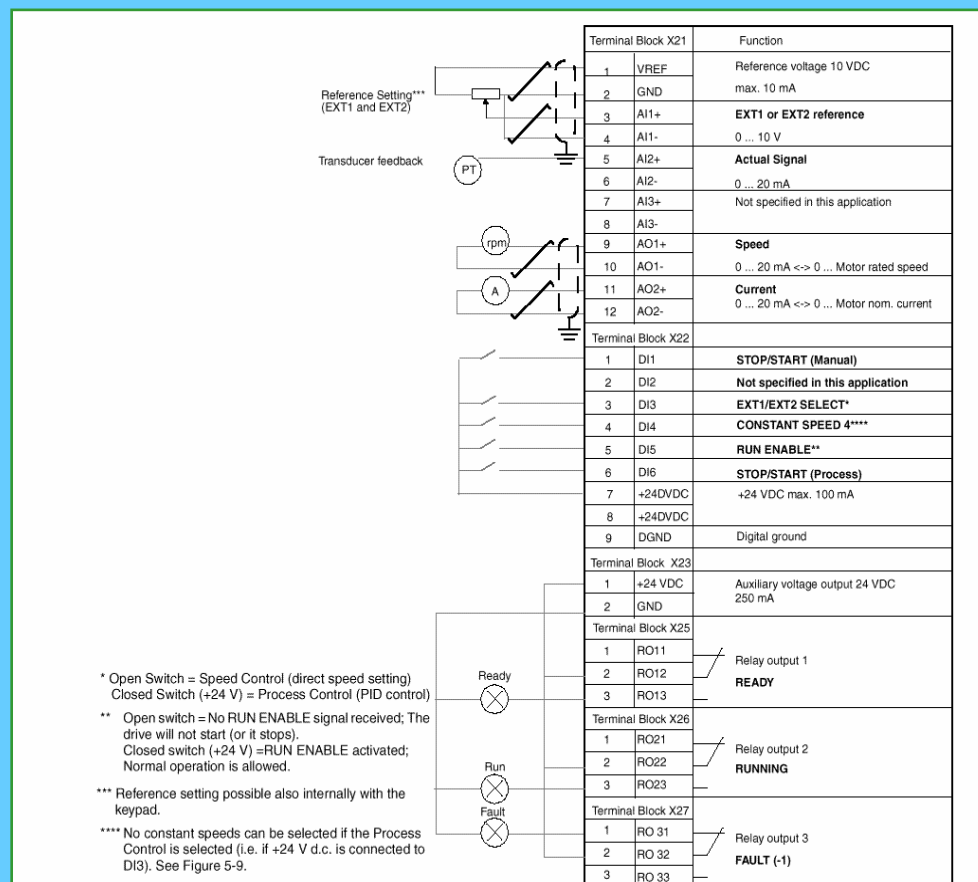
Keypad Control

REF1 (rpm) = Direct Speed Control

REF2 (%) = Process PID Control

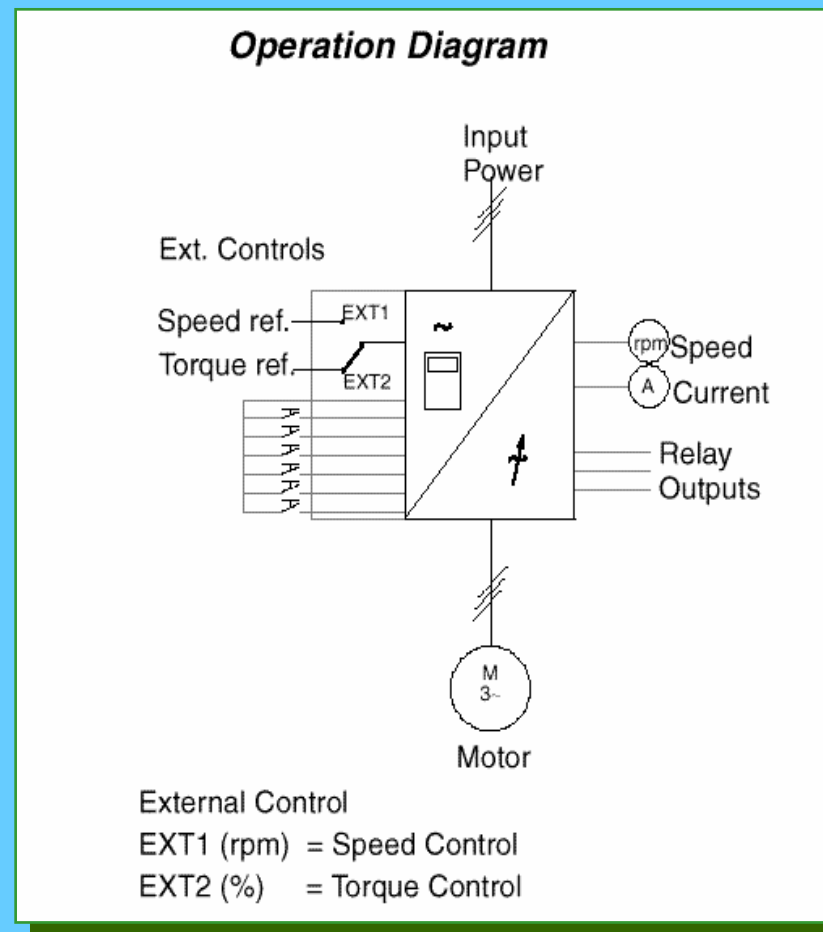
PID macro

PID宏



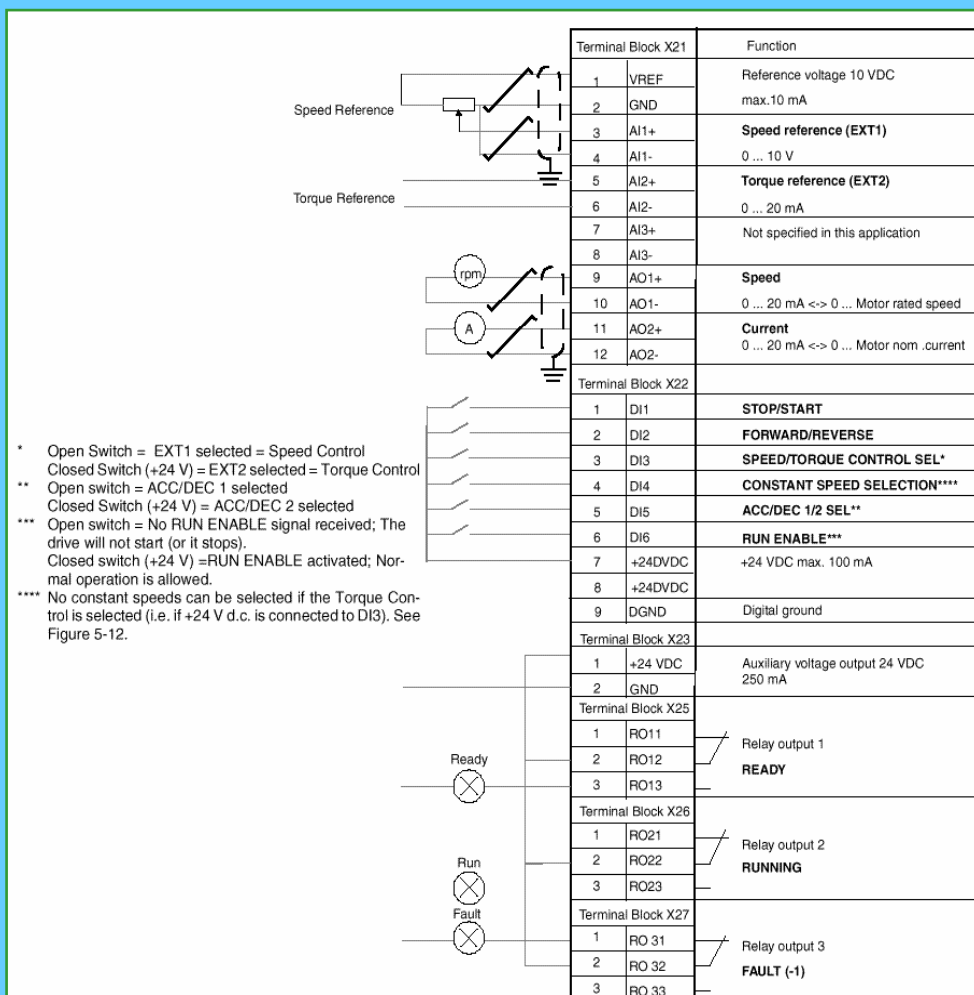
Torque macro

力矩宏



Torque macro

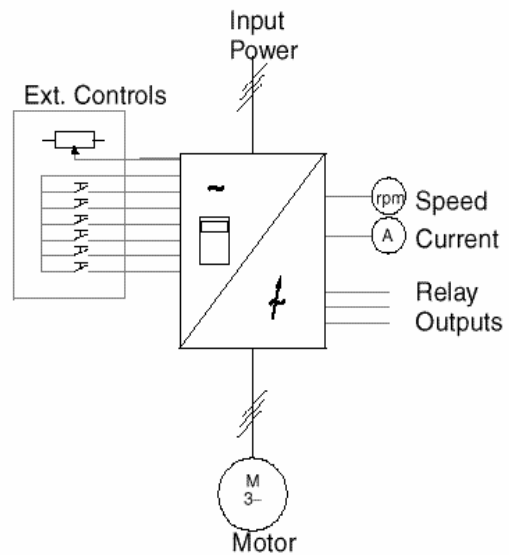
力矩宏



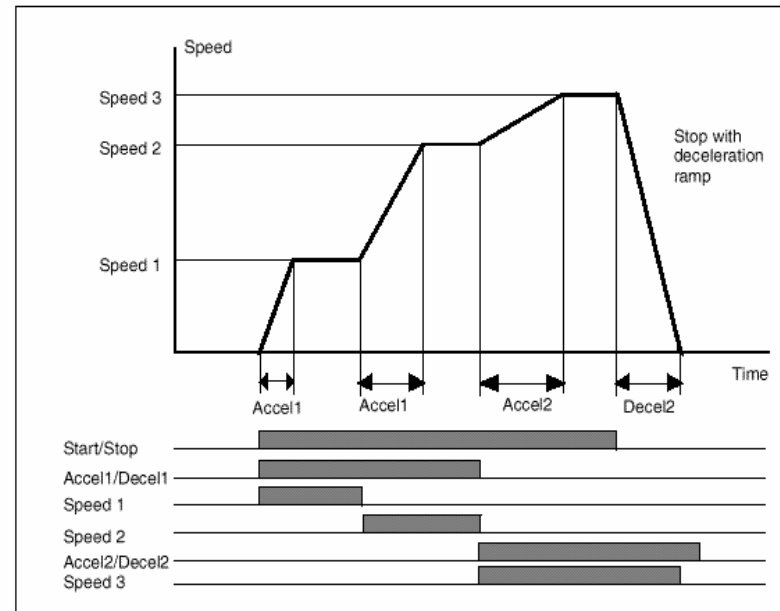
Sequential control macro

顺序控制宏

Operation Diagram



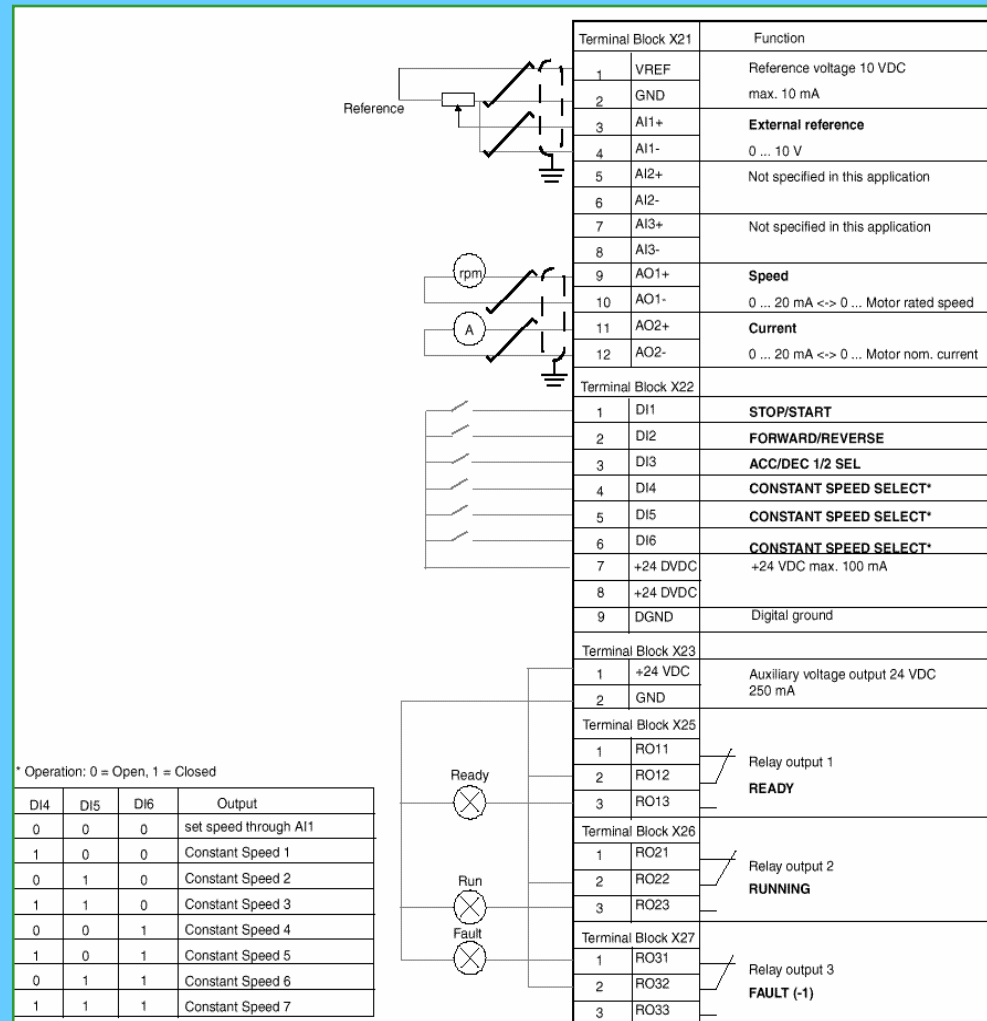
External Control
 EXT1 (rpm) = Speed Control
 EXT2 (%) = Speed Control
 Keypad Control
 REF1 (rpm) = Speed Control
 REF2 (%) = Speed Control



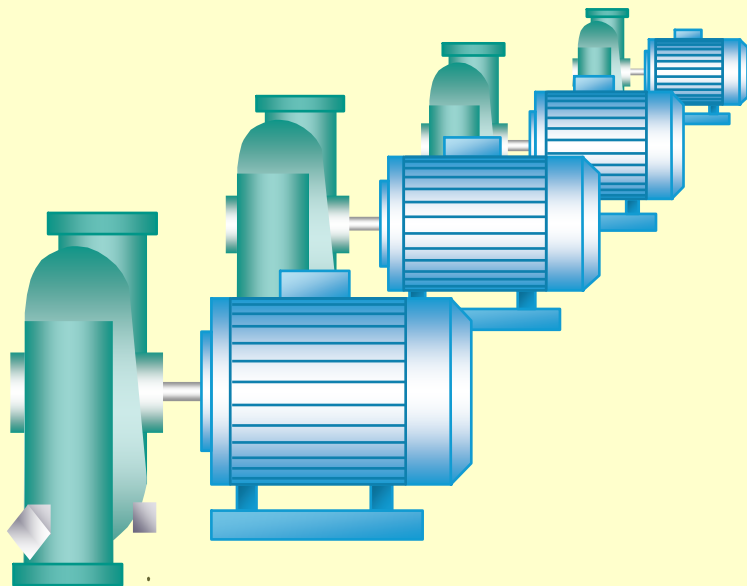
Example of sequential control using constant speeds and different acceleration and deceleration times.

Sequential control macro

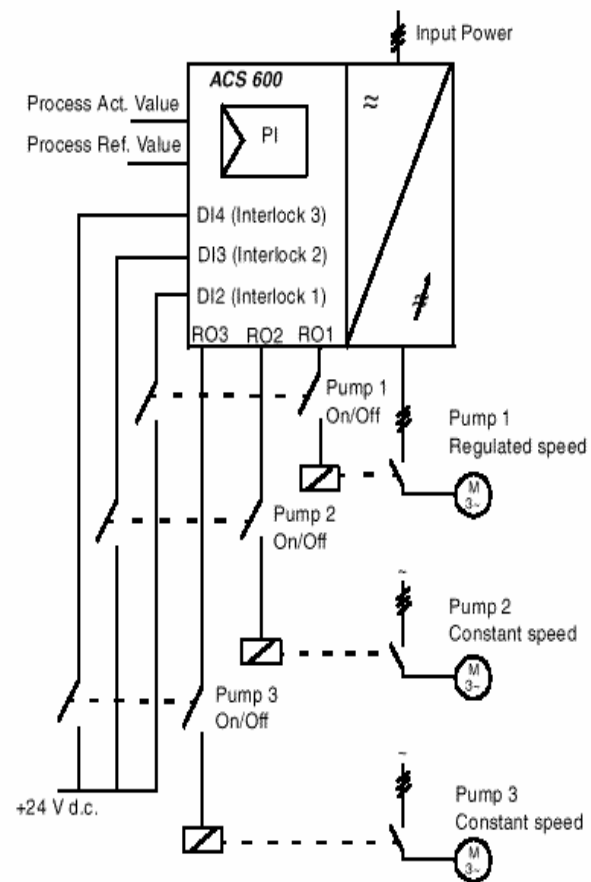
顺序控制宏



PFC option



PFC 宏



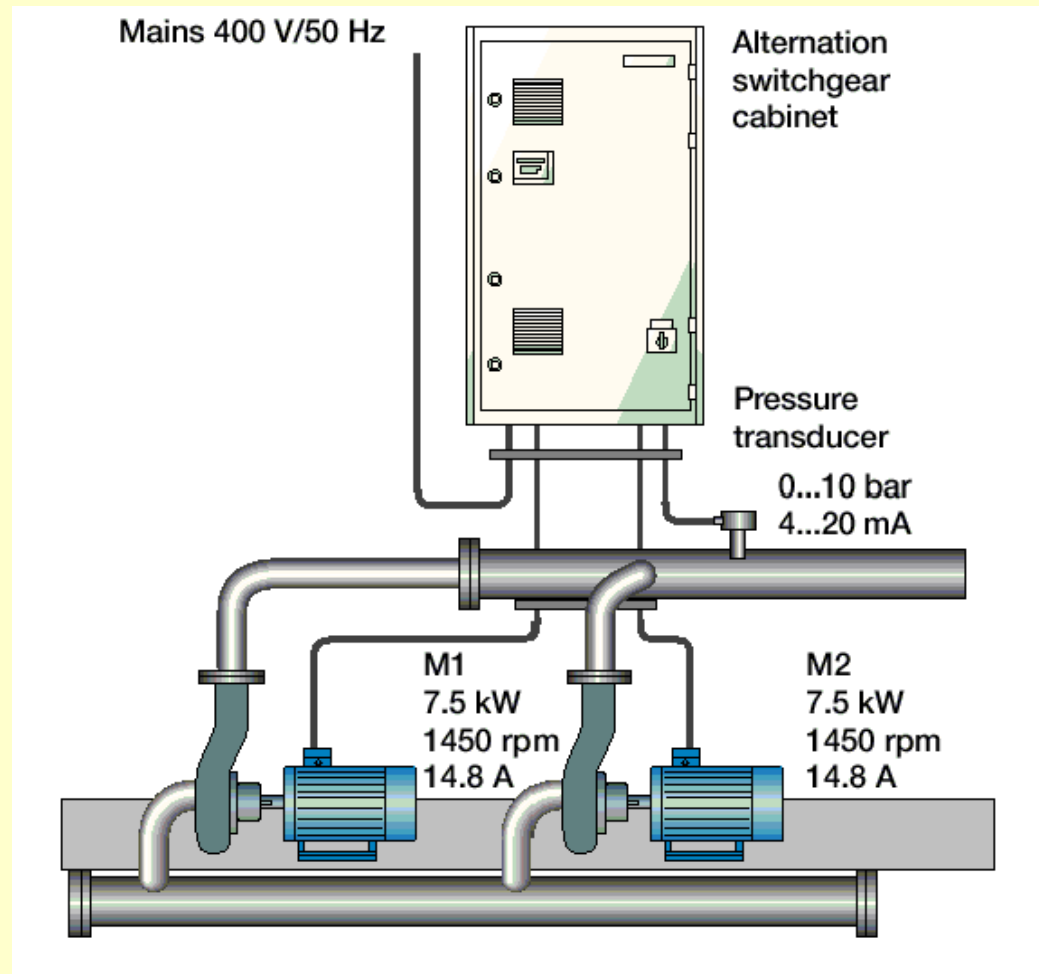
PFC option

一个泵站的例子：
一台变频器安装在
电气开关柜中，可
轮流切换控制两台
泵

最多1+4 电机

—带有泵与风机控制宏的软件

PFC宏



WINDER OPTION

卷曲宏

Winder Basics Configurations

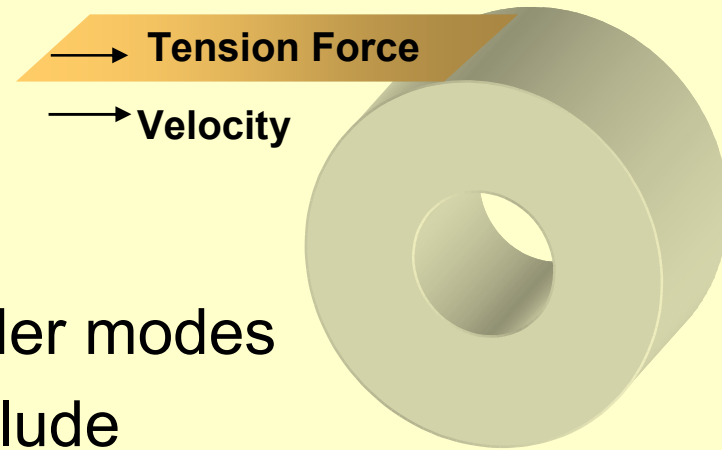
☐ Basic Winder Macro Includes

- 跳动辊控制
- 间接力矩控制
- 直接力矩控制

Selectable Winder and Unwinder modes

☐ Common Control Functions Include

- ☐ **Diameter** calculation 卷径计算
- ☐ **Tension** torque reference 转矩
- ☐ Calculation of moment of inertia 转动惯量
- ☐ Acceleration/deceleration **torque compensation** 力矩补偿
- ☐ **Loss Compensation**



Master/Follower OPTION

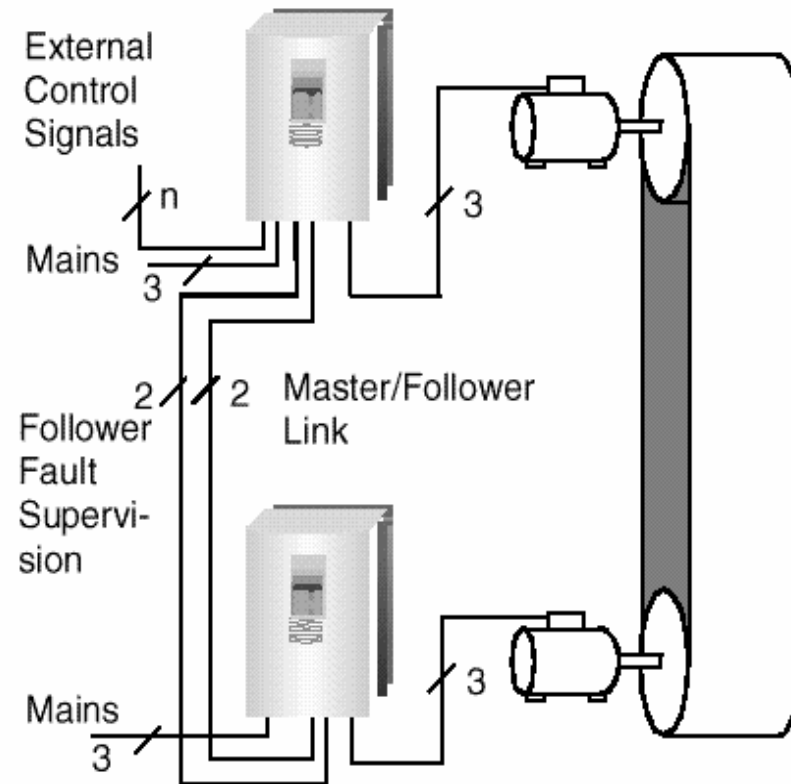
主从宏

- **Speed / Speed**
速度/速度
- **Speed / Torque**
速度/力矩

motor shafts coupled via
belt, gearing, chain, belt,...
电机通过皮带，链条等连接

- **Size of the Link max 10
slaves**

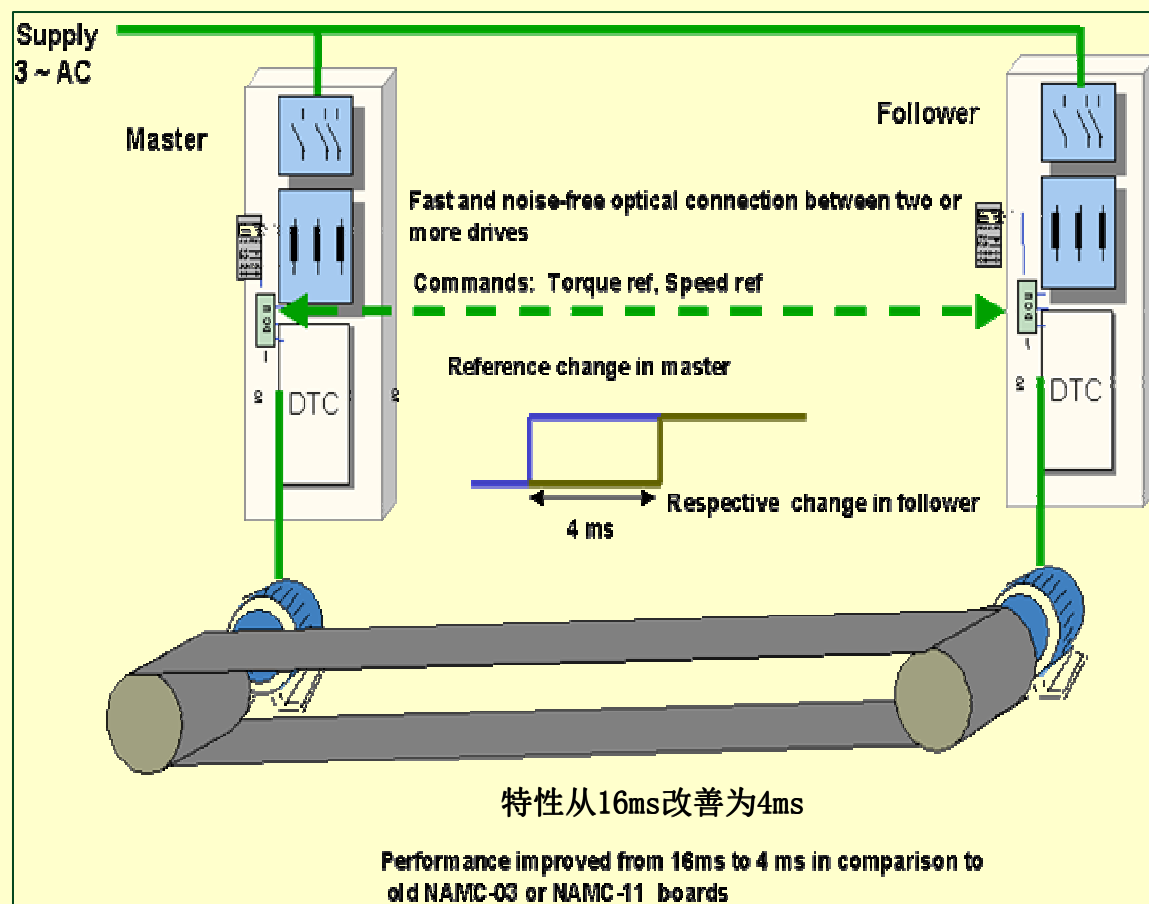
可连接十个从机
transmission interval **4 ms**
(Flux Sw 5.0)



Master/Follower OPTION

主从宏

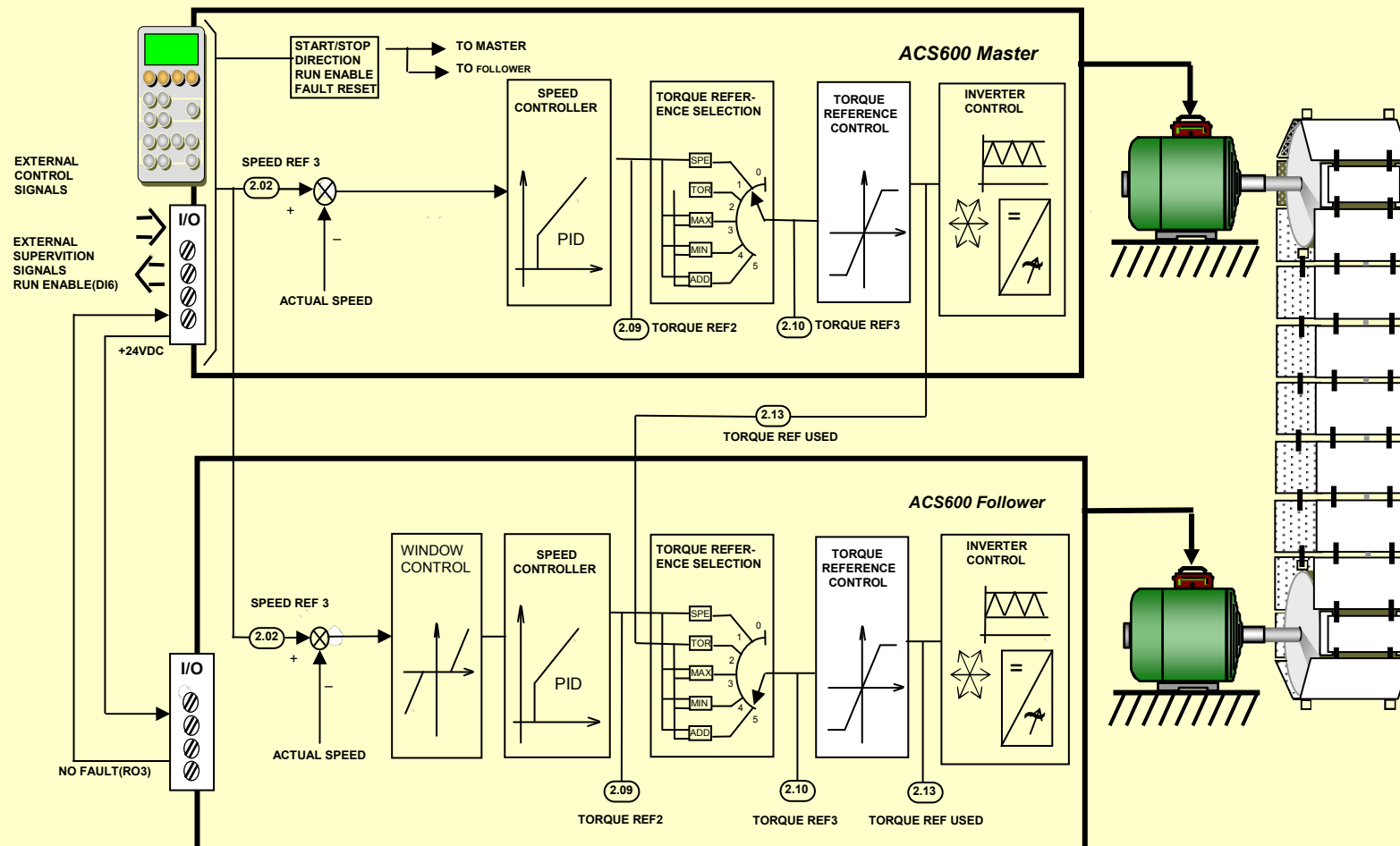
Master / Follower
主从控制：
主从应用程序用于设备
由几台 ACS600/800 传
动驱动。电机轴用齿轮
，链条和皮带联系。



Master/Follower OPTION

主从宏

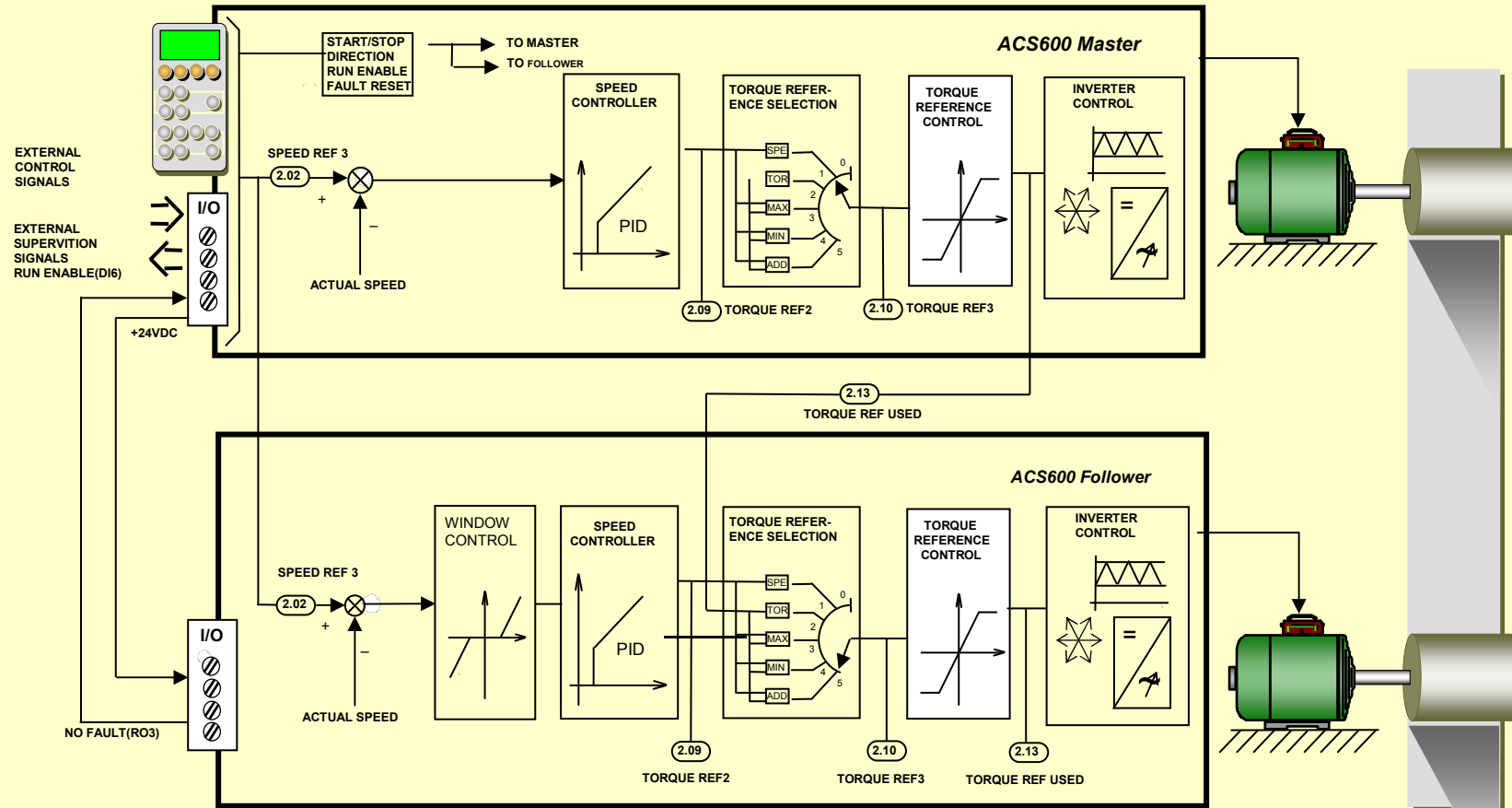
Example 1: Master and Follower Drives Coupled Fixedly to Each Other



Master/Follower OPTION

主从宏

Example 1: Marster and Follower Drives Coupled Fixedly to Each Other

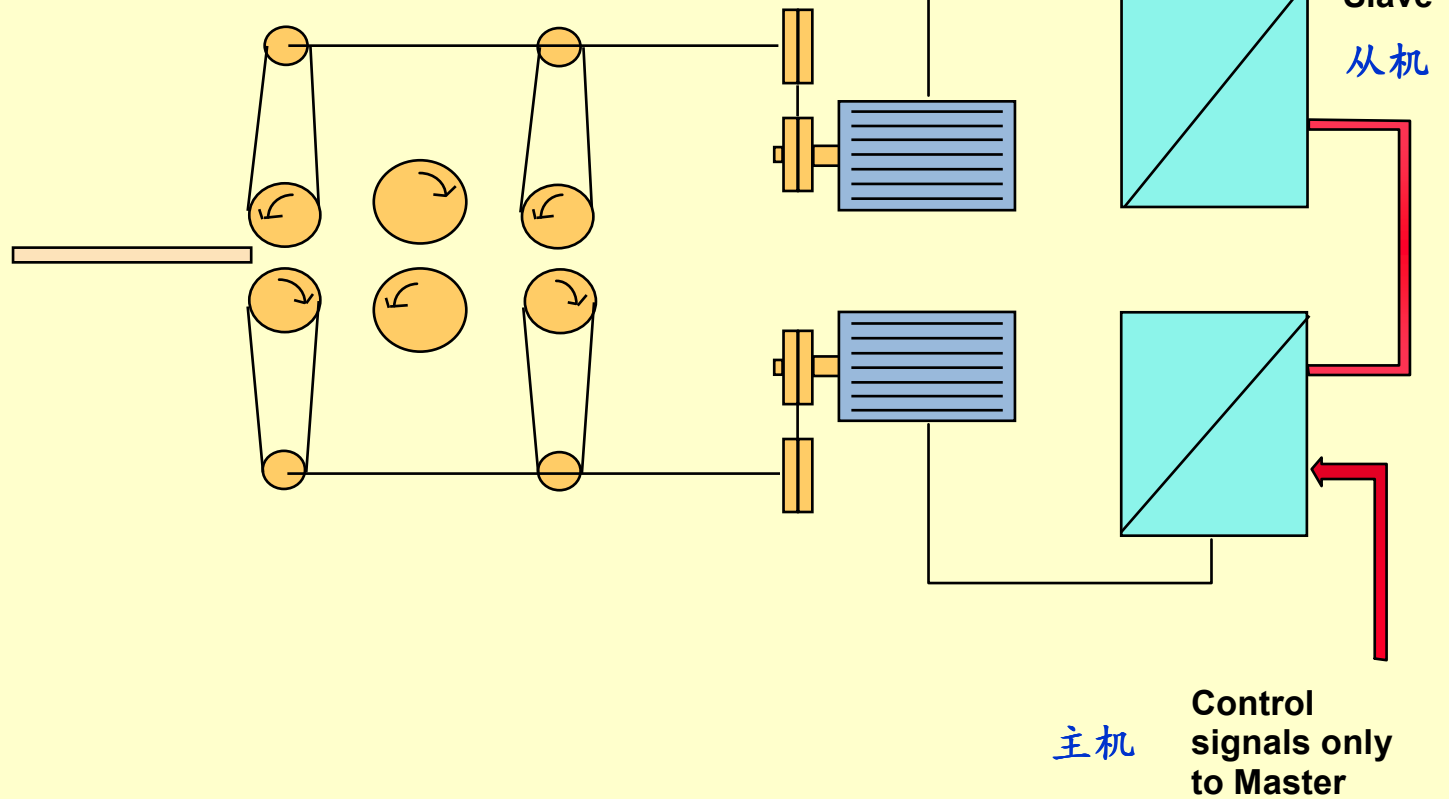


Master/Follower OPTION

主从宏

Plywood grinding

单板磨光机



CRANEOPTION

提升宏

Crane & Harbour Systems

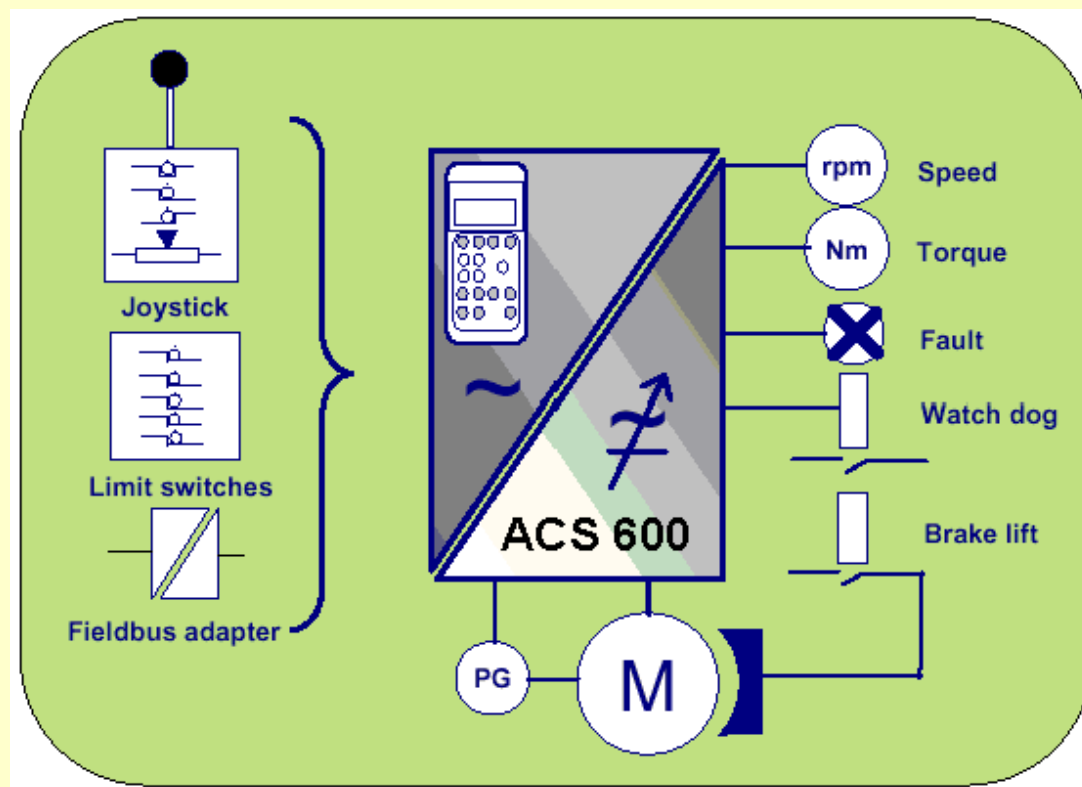


- **Control Interface**
控制接口
- **Logic Handling**
逻辑处理
- **Reference Handling**
给定处理
- **Speed and Torque Control**
速度和力矩控制
- **Torque Memory**
力矩记忆
- **Power Optimisation**
功率优化
- **Limit Switch Supervision**
限位开关监视
- **Master Follower**
主从控制
- **Speed Correction**
速度校正
- **Position Measuring**
位置测量

CRANEOPTION

提升宏

对于提升机应用，标准的提升机安全特性和功能特性已经内置于传动中。软件中含有标准的接口模块用于操纵杆控制，脚踏板控制，无线电控制和现场总线控制

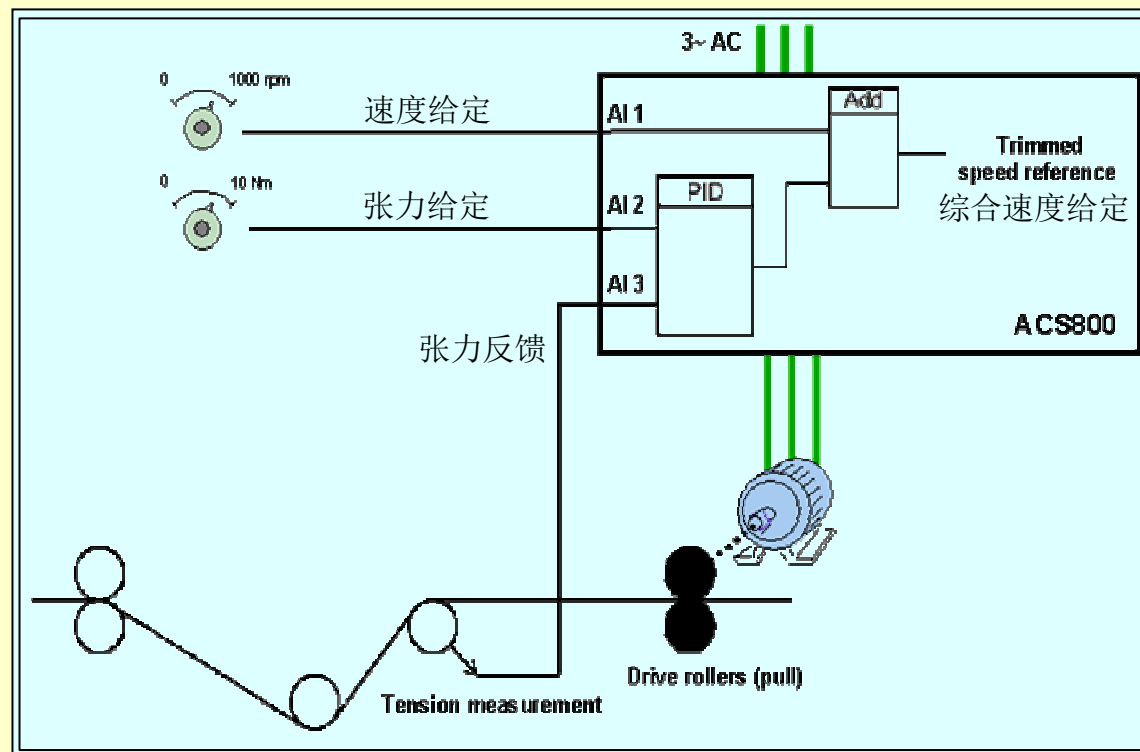


Trim Control 微调控制

应用说明

Trim Control 微调控制

速度控制为主
张力偏差校正
为辅

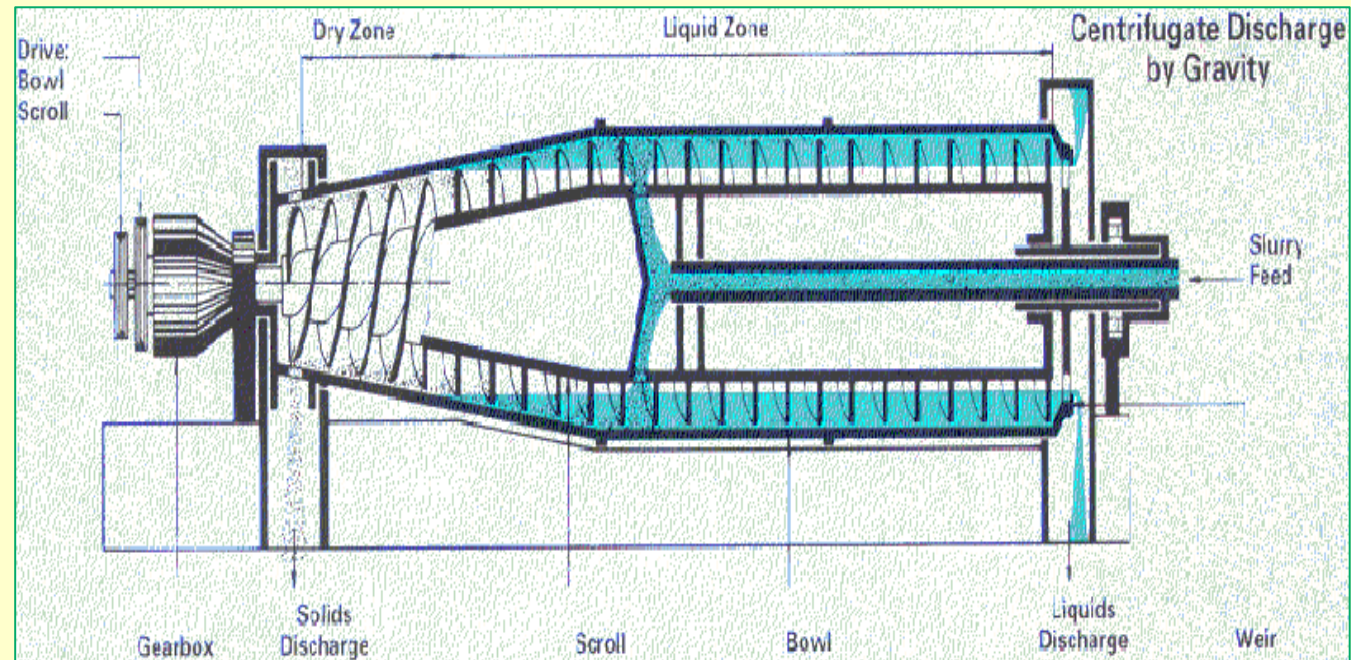


The drive is speed controlled. In addition, the line tension is monitored. If the measured tension increases too much (above the tension setpoint) the speed is slightly decreased, and vice versa. To accomplish the desired speed correction, the user:

- activates the trimming function and connects the tension setpoint and the measured tension to the trimming function
- tunes the trimming to a suitable level

Decanter centrifuge 离心分离机

离心分离机应用程序适用于饮用水和废水的处理，饮料加工，食品工业，化工，药品工业等

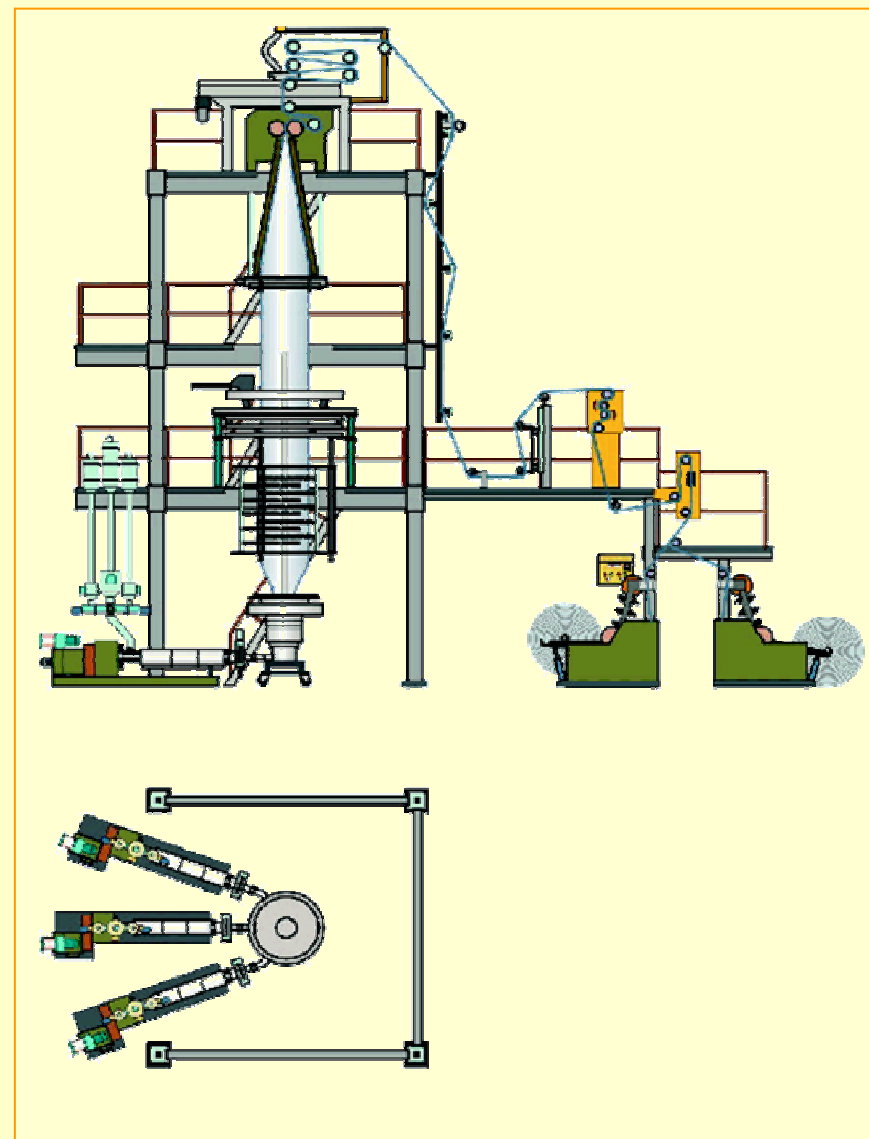


In decanter application the centrifugal forces separate solid particles from liquid. Different gravities settle the liquid and the particles into different level. The scroll screw which has a slightly difference compared to bowl speed moves the solid particles to the conical end of the bowl. Liquid is moved by centrifugal forces to the opposite end of the bowl.

在离心分离机中，利用离心力的作用，将液体中混入的颗粒物强行分离出来。按比重的不同，液体和颗粒物分布在不同的层面上。与滚筒有微小速差的螺杆轴将颗粒物推向碗状滚筒的底部排出。液体则由滚筒的另一侧排出。

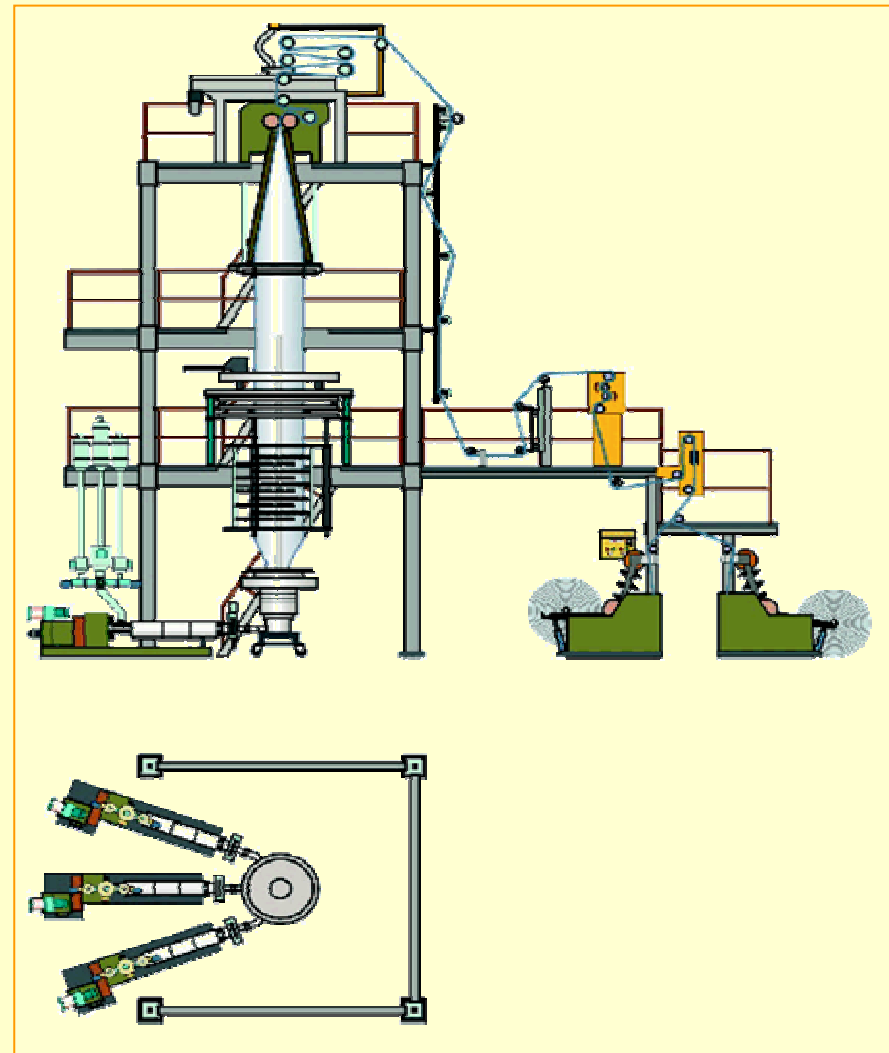
Extruder 挤出机控制

在挤出机应用中，
一般是颗粒状或
粉末状的材料被
螺杆钻动，形成
可塑的材料以便
以后加工成形



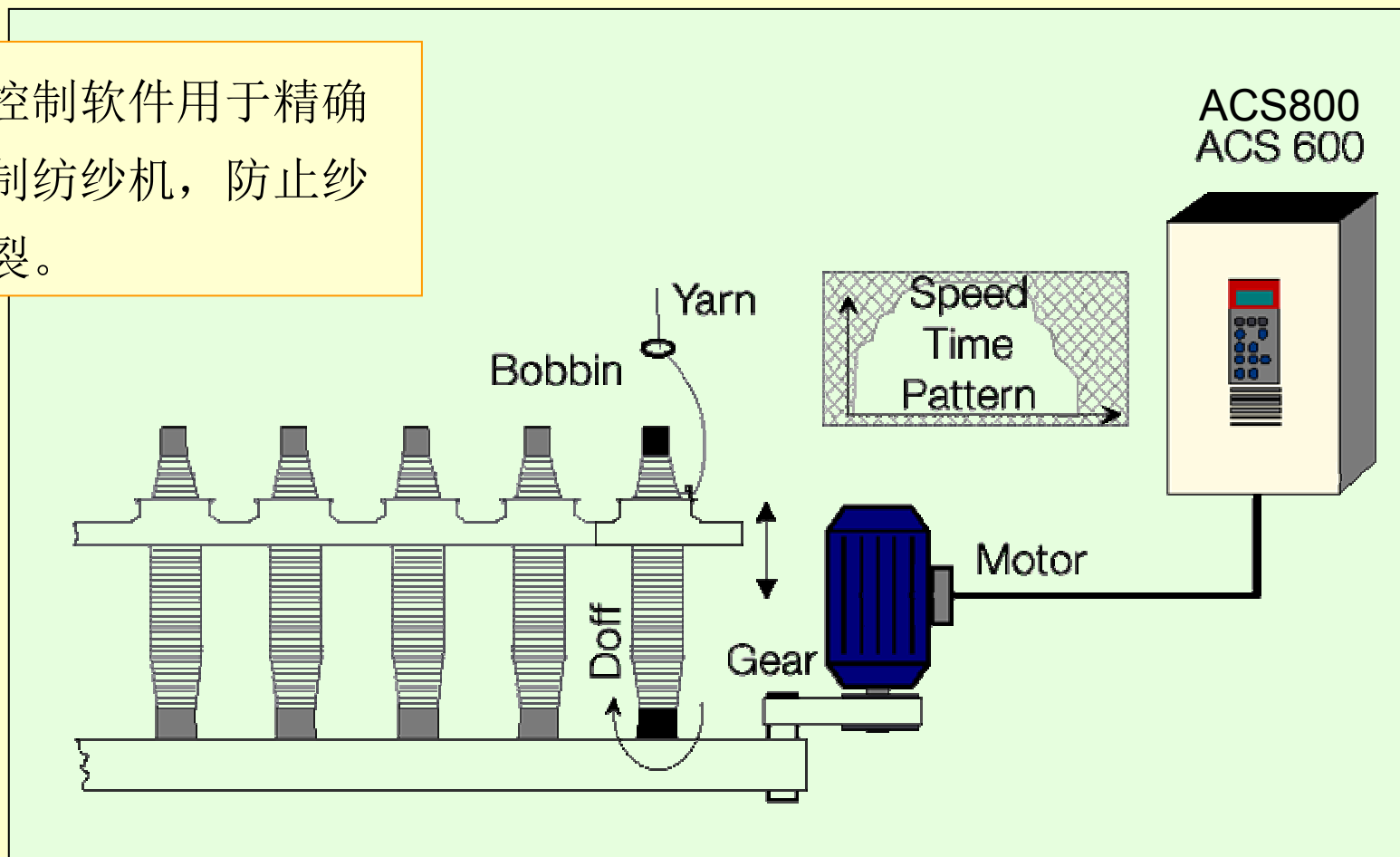
Extruder 挤出机控制

- 高启动转矩，高精度速度控制，无编码器。
- 良好的力矩限制特性。
- 两个堵转保护功能参数监视材料堵塞。
- 电机温度保护。
- 可通过fieldbus 或者 I/O 进行控制。
- 数字输入-急停功能。
- 带有两套加减速斜坡时间的数字电位计。
- **4**个控制地点



Spinning 纺纱宏

纺纱控制软件用于精确地控制纺纱机，防止纱线断裂。



变频器在铝厂的应用

- 回转窑主传动
- 提升机
- 桥式天车
- 破碎机
- 工艺风机
- 工艺泵