Fee Uploader Team

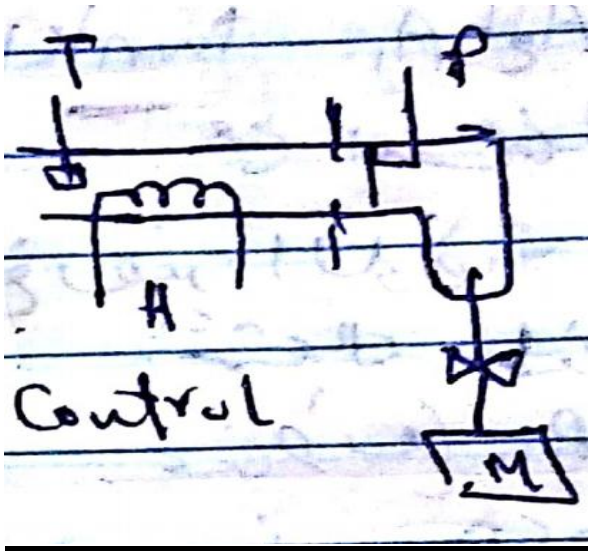
Real Time Control System

LECTURE 4

Computer Activities in Industry :

Sequential Control

مثال:



I. Turn motor on

II. Turn heater on

III. DDC design PI control

Input task : T/P

Output task : Signal to motor and Heater

Control task : PID controller

Communication task : Operator

DDC (Direct Digital Control)

تحويل الـ Control Signal لـ Digital Signal

System :-

1- Distributed Parameter

ex: Heating water

2- Deterministic Parameter

2.1: Non-Linear

2.2 : Linear

2.2.1: Time Variant

2.2.2: Time Invariant

2.2.2.1: Continuous

2.2.2.2: Discrete

Adaptive Controller :

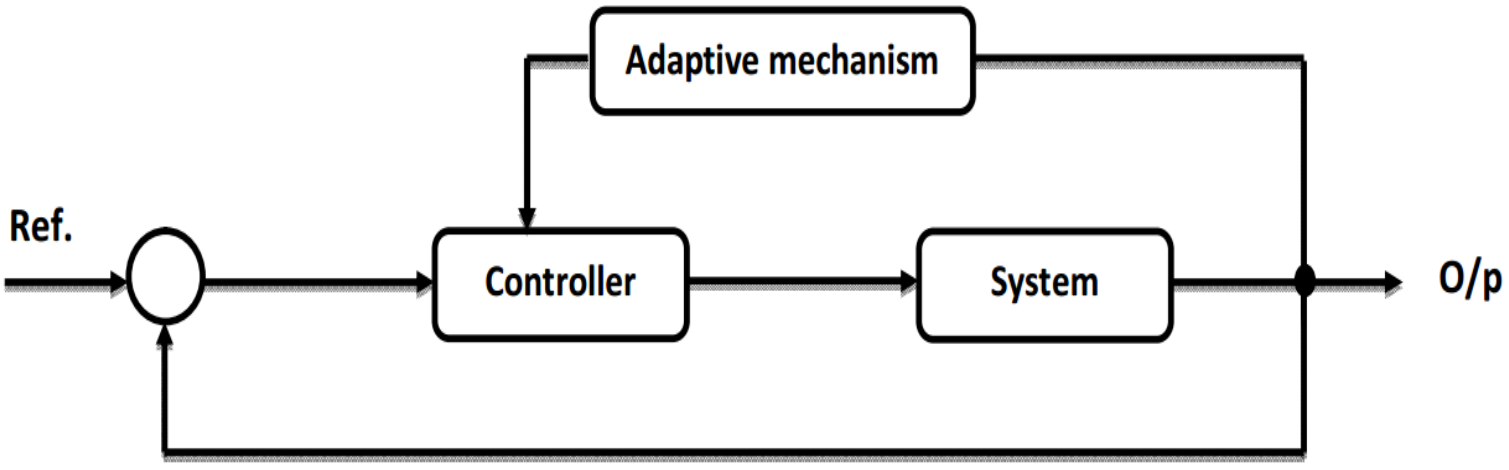
نوع من أنواع الـControllers يعمل على التكيف على النظام .

1- Programmable adaptive control

2- Self tuning adaptive control

3- Model reference adaptive control

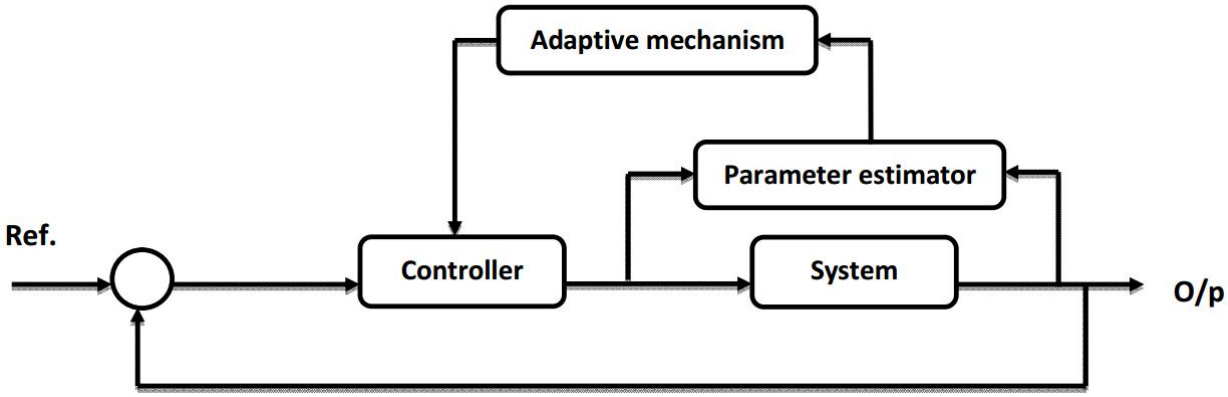
a) **Programmable.**



➲ **O/p is measured, when any change in parameter done, adaptive mechanism adjust parameter.**

تتم هذه العمليه لتقليل الـ e

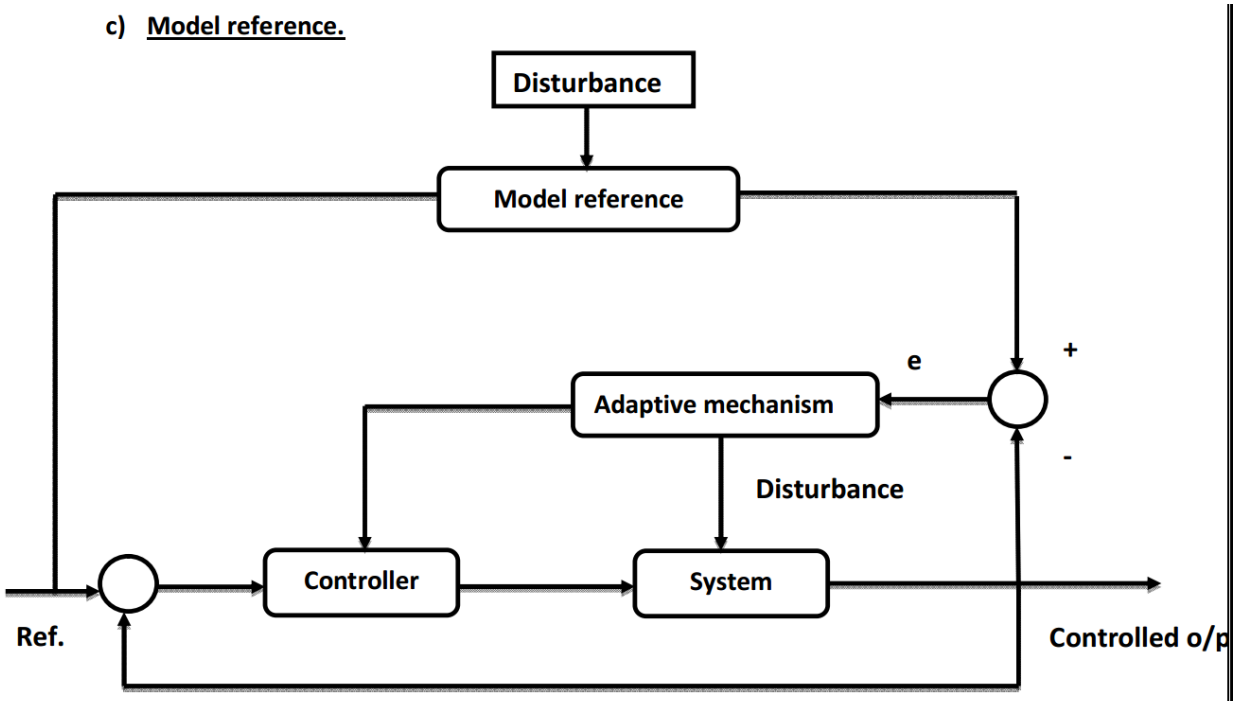
b) **Self-tuning.**



- From i/p and o/p of system, we can make model for system (parameter estimator).
- Model is changed each sample.
- P-estimator is considered to be instead of math-model in classical control.

يعمل على تعديل نفسه بنفسه بناءا على الـ Parameters

c) **Model reference.**



- Use model reference to compare measurements taken from o/p.
- When measurement is not designed, make new controller.

Types of DDC :

1- Classical Control (PID)

2- Adaptive Control

3- Intelligent Control System

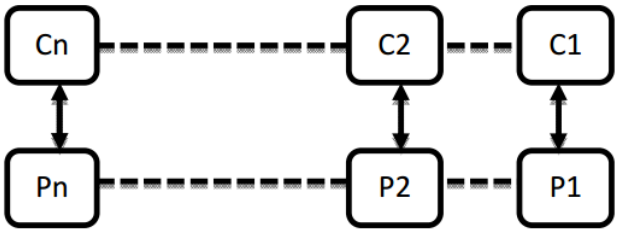
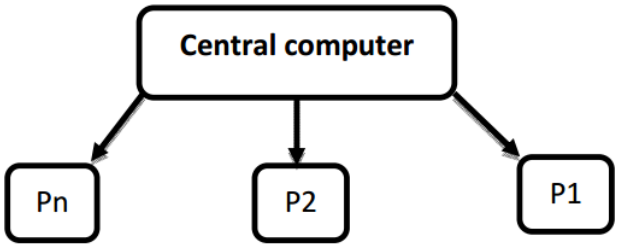
Supervisory Control :

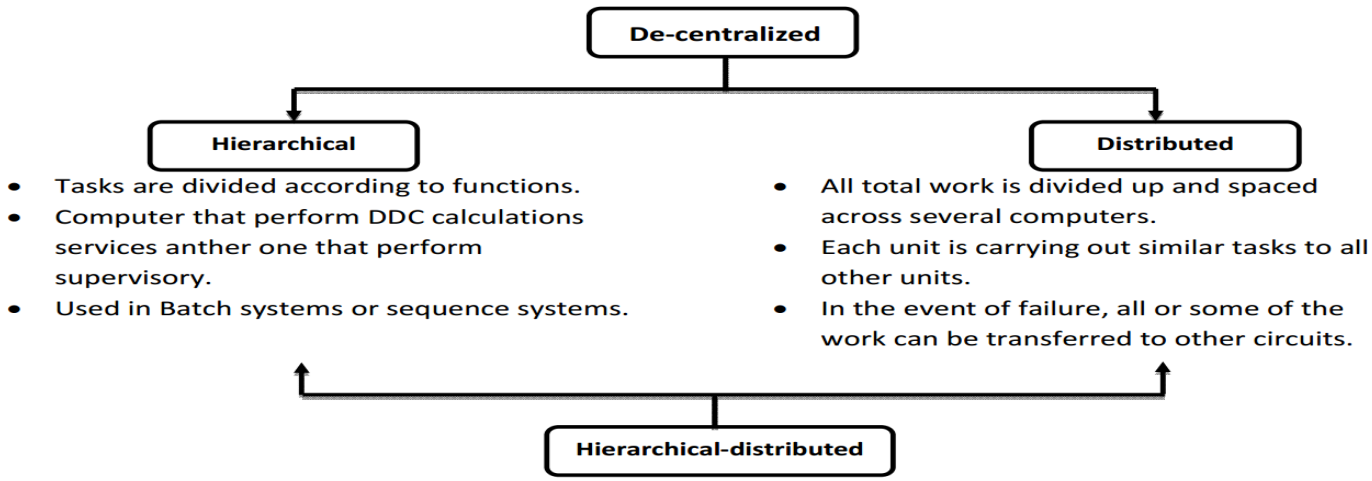
It provides management and co-ordination between sub-systems to provide comprehensive picture of the states of the plant operations.

Supervisor Control :

1- Centralized

2- De-Centralized

De-centralized	Centralized
	
• Every process has individual computer. • Any failure at any part doesn't lead to complete failuer. • Available maintenance for any part individually. • Each compter has data about it's process only.	• Any failure lead to complete shutdown. • Only one computer is used to control all process tasks. • You must stop the whole system to maintenance any part. • All data about process tasks is in central computer. • Hardware is complex.



- Tasks are divided according to functions.
- Computer that perform DDC calculations services anther one that perform supervisory.
- Used in Batch systems or sequence systems.

- All total work is divided up and spaced across several computers.
- Each unit is carrying out similar tasks to all other units.
- In the event of failure, all or some of the work can be transferred to other circuits.

إنتهت المحاضرة بفضل الله ،،، دعواتكم بظهر الغيب ☺

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