



# دبلوم تطبيقات التحكم الأتوماتيكي في نظم القوى الميكانيكية

MEP 599 Diploma Design Project – Summer Term 2014

Converting Automotive mechanical transmission equipment into Using PLC programming System  
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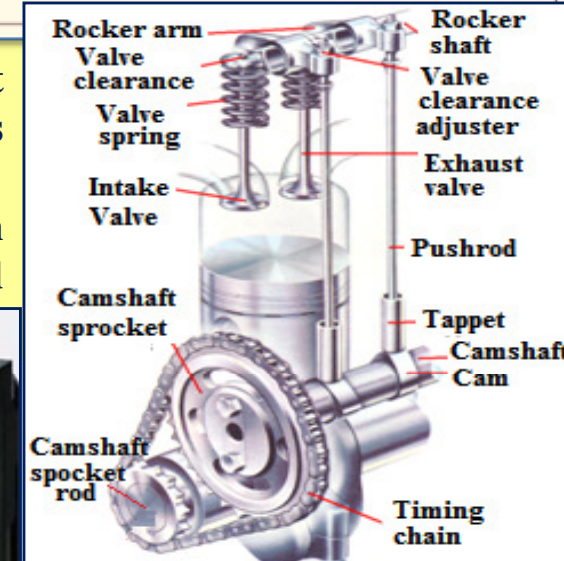
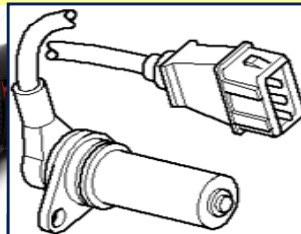
Mechanical Power Engineering Department

## Abstract:

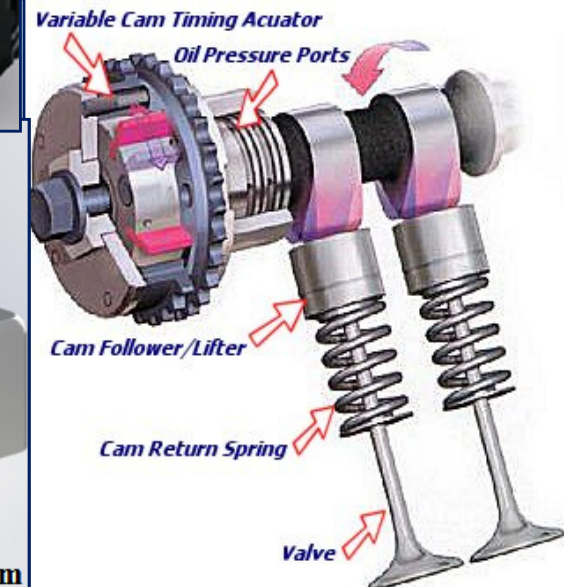
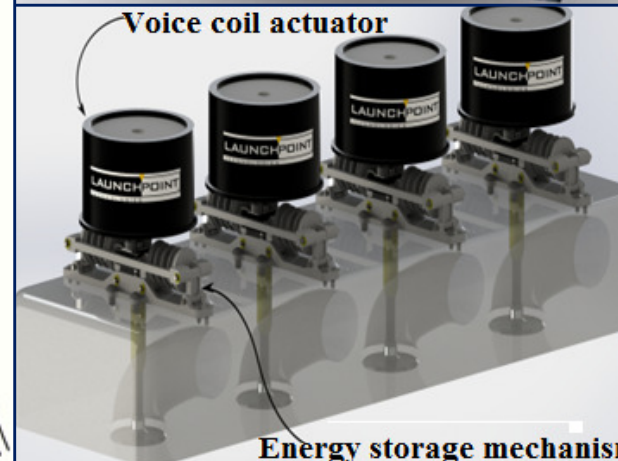
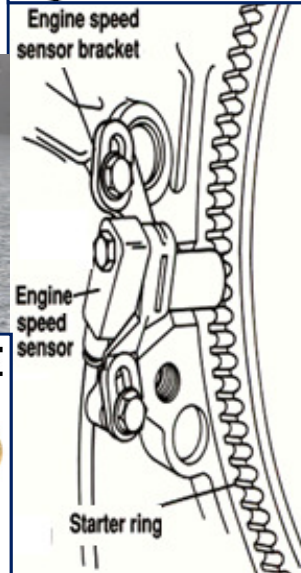
The objective of this project is to examine the mechanical Camshaft group equipment in the Diesel engine which includes also the intake and exhaust valves and the injectors system. Our aim is to use PLC programming system to operate these mechanical parts. This task is done using both a voice coil actuator & an energy storage mechanism. In addition to the PLC, the used electronic equipment include intake and exhaust solenoid actuated valves and electrical diesel injectors type.

## Required PLC inputs:

- Start push button .
- Stop push button .
- Speed sensor .
- Temperature sensor .
- Pressure sensor .



## Engine Speed Sensor



## Temperature sensor



**Required plc outputs:**

- start led
- low speed led
- intermediate speed led
- high speed led
- intake solenoid valve 1
- injector solenoid valve 1
- exhaust solenoid valve 1
- intake solenoid valve 2
- injector solenoid valve 2
- exhaust solenoid valve 2

**Required three Counters :**

- turns made by the engine at low speed.-Low counter → to count number of
- intermediate counter--→ to count the number of turns made by the engine at intermediate speed.
- high counter→ to count number of turns made by the engine at high speed.

**Required three Durations :**

- Duration 1 → to cut off the engine after 2 hours at low speed. A pre set value that can be changed .
- Duration 2→ to cut off the engine after 1 hour at intermediate speed. A pre set value that can be changed.
- Duration 3 → to cut off the engine after half at high speed. A pre set value that can be changed .

