



# *Internal Combustion Engines*

## **Lecture-12**

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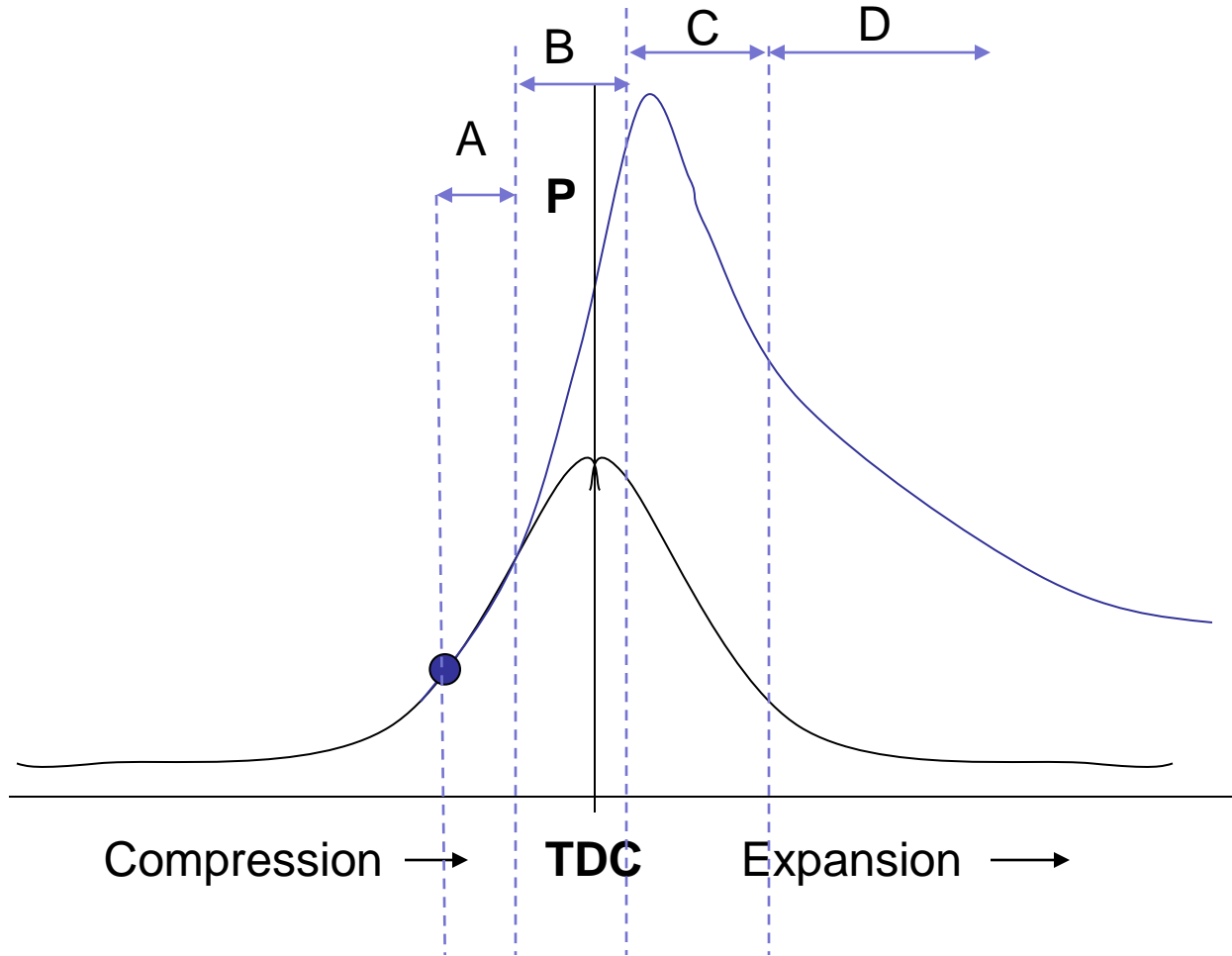
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# CI Engine Combustion



A : Delay Period

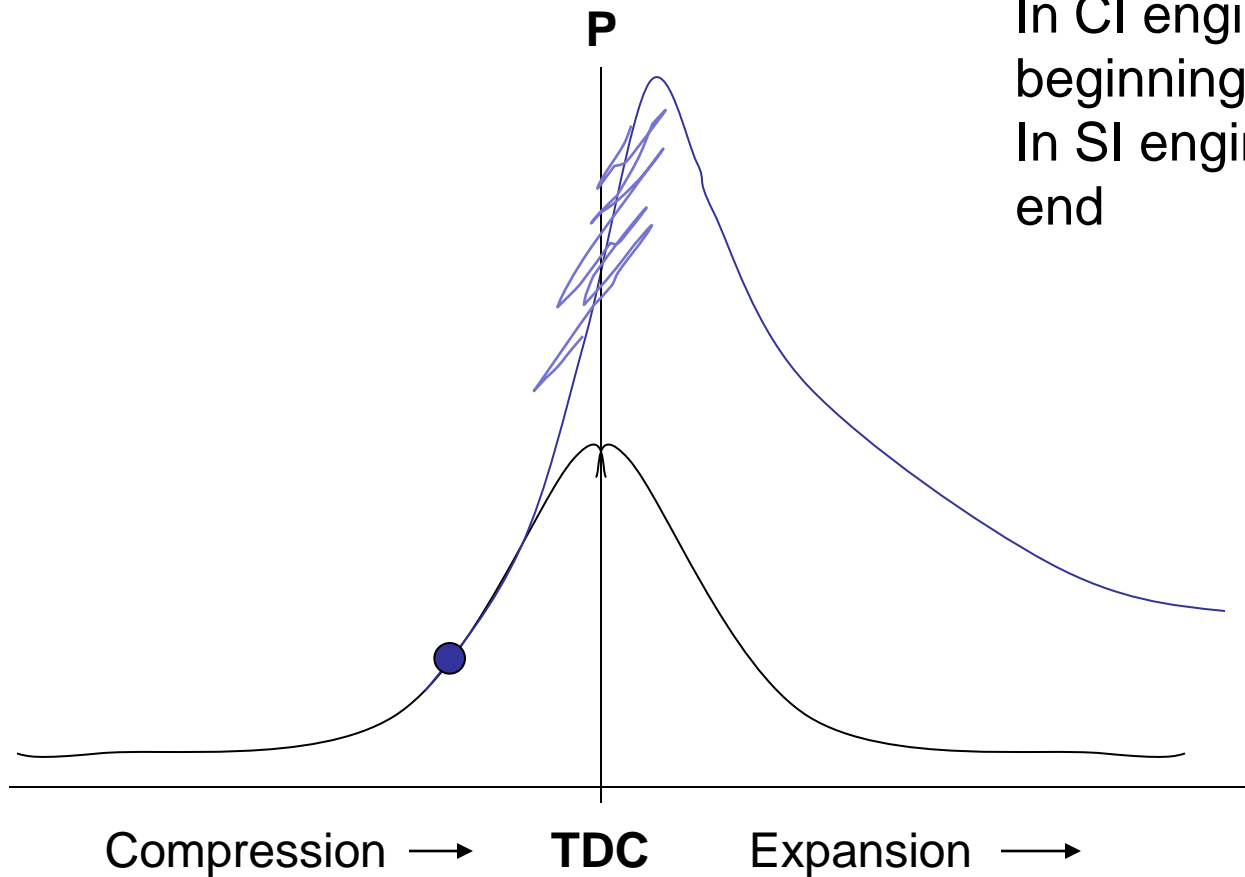
B : Rapid Combustion

C : Controlled Combustion

D : Afterburning



# CI Engine Knock



In CI engine, knock occurs at the beginning of combustion.  
In SI engine, it occurs towards the end

Knock mitigation:

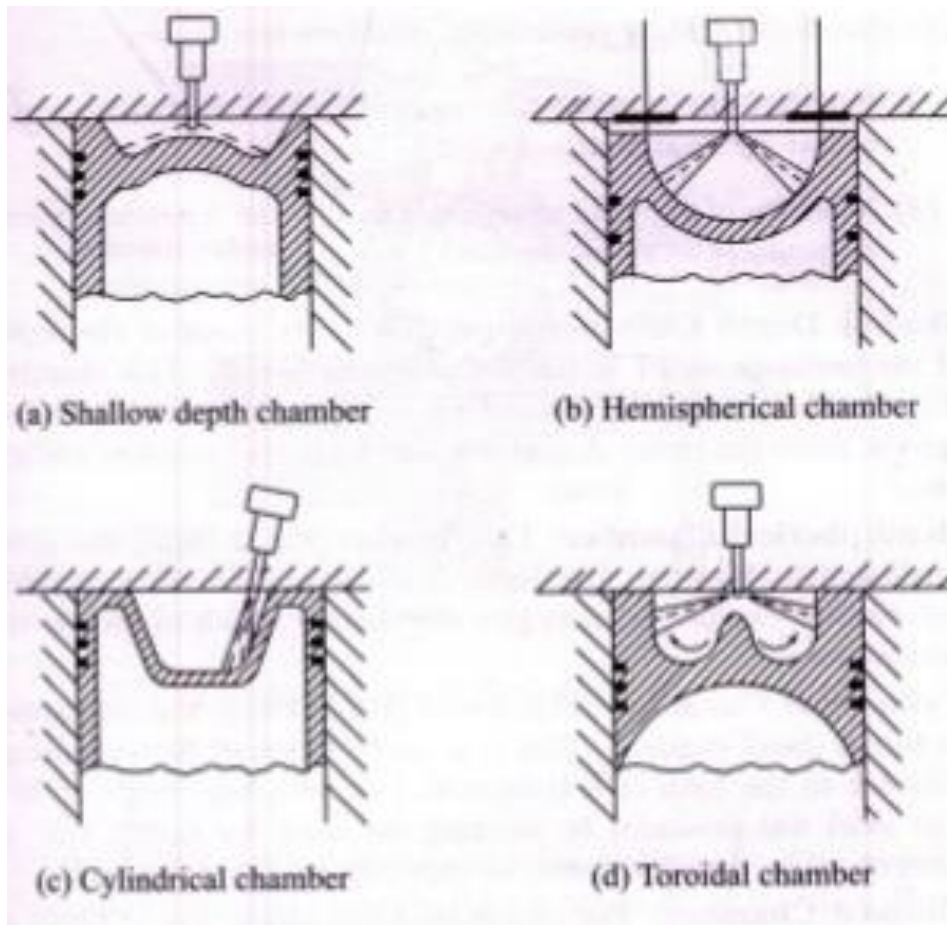
To reduce ignition delay

By physical means  
Or Chemical means

# CI Engine Combustion Chambers



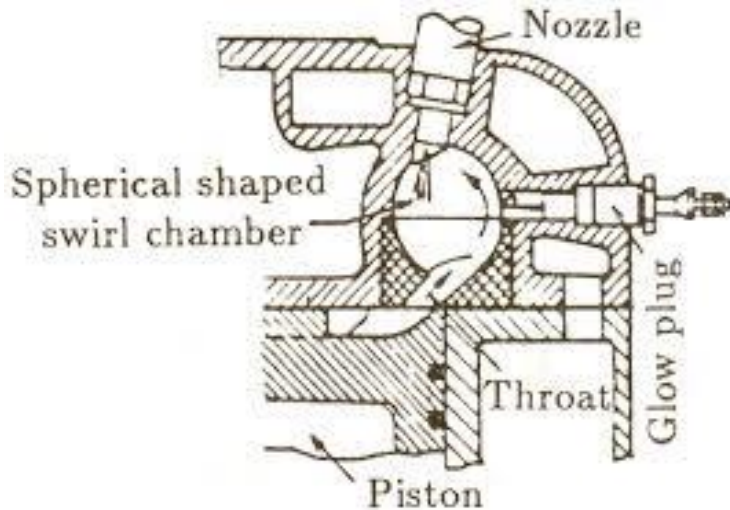
## Direct Injection Chambers



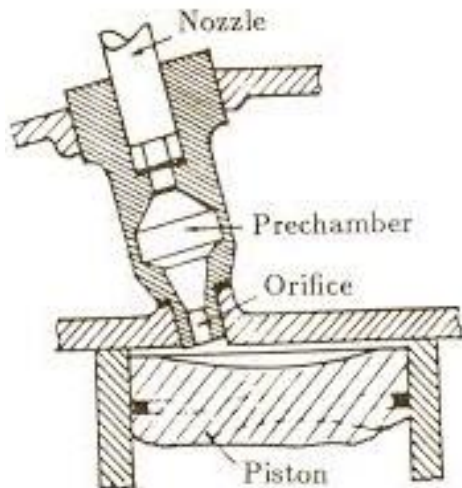
**Require quick mixing  
and quick heat  
transfer to reduce  
ignition delay  
And hence knock**

# CI Engine Combustion Chambers

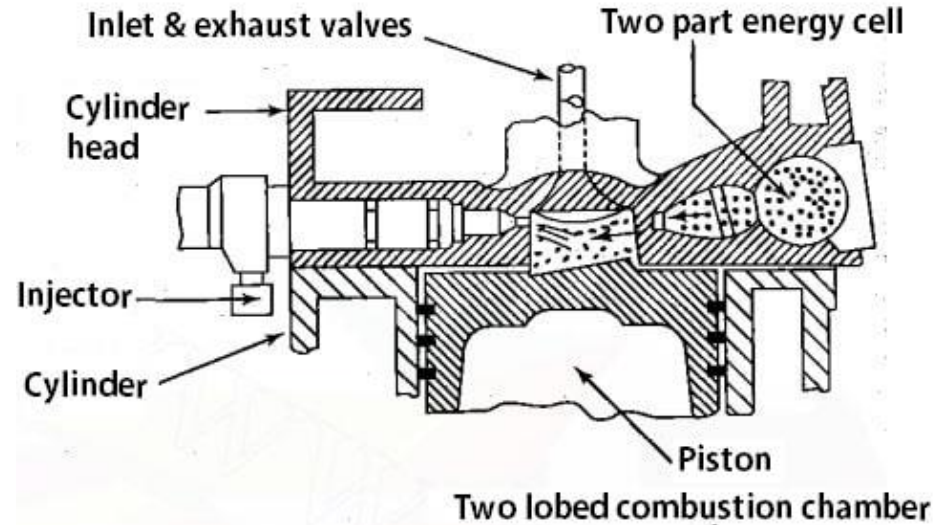
## Indirect Injection Chambers



**Swirl Chamber**



**Precombustion Chamber**



**Air-Cell Combustion Chamber**



**Thank You**