DC Power Transmission Systems
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Lecture – 45
Capacitor commutated converter: Part 2

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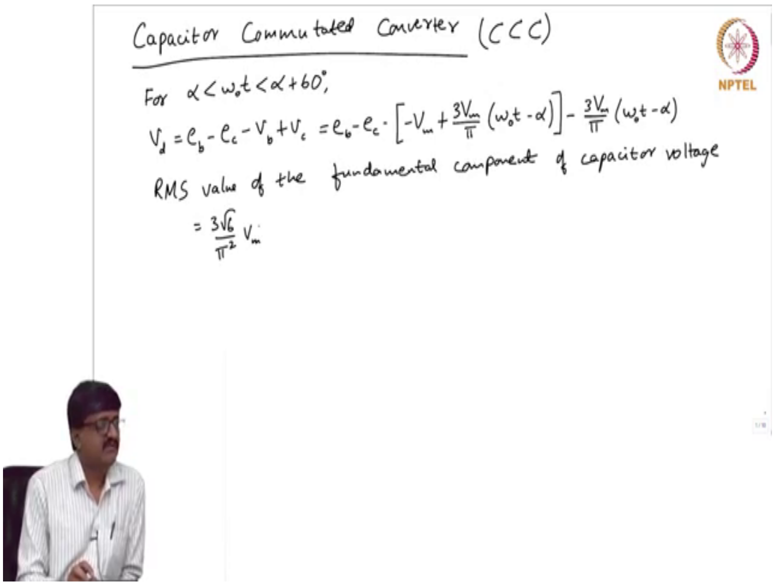

So, this is abbreviated as CCC. So, if I want the average DC side voltage, what I can do is I can just take the expression for any interval say 60 degree interval. Suppose I take omega o t between alpha and alpha plus 60 degrees. So, what is V d, the instantaneous DC side voltage, e b?

Student: Minus e c.

Minus e c.

Student: Minus Vb.

e b minus e c minus V b.

Student: Plus V c.

Plus V c ok. Now, we know the expression for eb and e c. And do you know the expression for V b? We got the expression for b; in fact, we plotted V b ok. So, I will take this as e b minus e c minus what is V b?

Student: (Refer Time: 01:13).

So, it is minus V m plus 3 V m by pi into omega o t minus alpha that is minus V b; what about V c?

Student: Minus 3.

Minus 3.

Student: V m by pi.

V m by pi.

Student: (Refer Time: 01:33).

Omega o t minus alpha right; so, substitute for the expression for e b and e c and integrate this from alpha to alpha plus 60 degree and divide it by pi by 3 you get the expression for the average value. So, did you get it? So, it is happens to be same as the expression for the line commutated converter. So, the presence of capacitor will not affect the average value of the DC side voltage ok.

So, that I will leave it to verify. Then, what about the RMS value of the fundamental? So, if I take the RMS value of the fundamental component of capacitor voltage, so, I will leave it you to show that. This is equal to 3 root 6 by pi square into V m. So, this I am asking you to do.