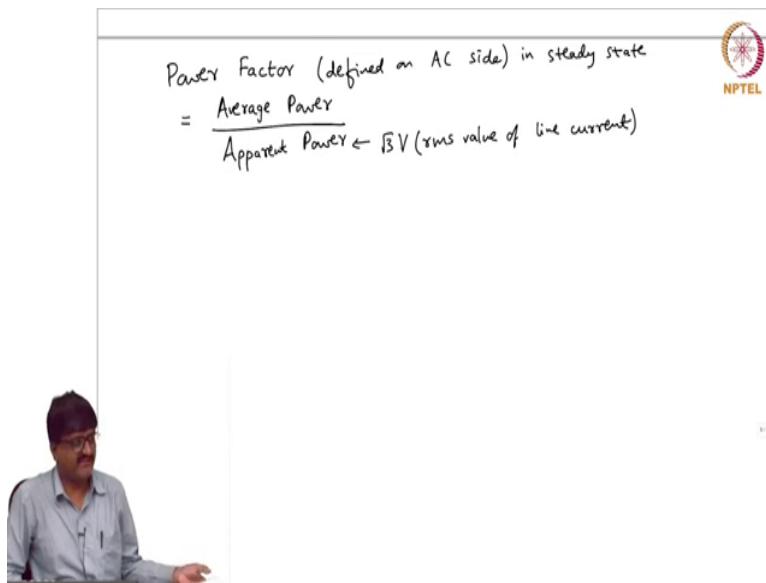



**DC Power Transmission Systems**  
**Prof. Krishna S**  
**Department of Electrical Engineering**  
**Indian Institute of Technology, Madras**

**Lecture – 43**  
**Power factor**

(Refer Slide Time: 00:16)



Power Factor (defined on AC side) in steady state  
=  $\frac{\text{Average Power}}{\text{Apparent Power} \leftarrow \sqrt{3}V \text{ (rms value of line current)}}$

  
NPTEL

Now, this is defined on the AC side. There is no definition for the DC side. So, defined on AC side. If you take a converter there is AC side and DC side. Now, we are all familiar with power factor when voltage and current are sinusoidal. Now, we know that in converters, power factor concept it is not so. So, what is the definition?

Student: (Refer Time: 00:40).

Student: P N P (Refer Time: 00:42).

Something I something by apparent power I am hearing; apparent power is correct ok. What is the numerator?

Student: Active power.

Active power; so, if you all mean average power then it is say. If you take the average power, the instantaneous power is a variable; if you take the average power. So, power factor is of course defined on the AC side and I mean of we will restrict ourselves to steady state in steady state ok. Apparent power is root 3 times the rms value of line to line voltage;  $V$  into the rms value of current, line current.

So,  $V$  is a notation which we have used for rms value of line current line voltage. So, root 3 into the rms value of line voltage into rms value of line current ok. So, this is the definition that we use in steady state on the AC side.