SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EET302/ Power System 1

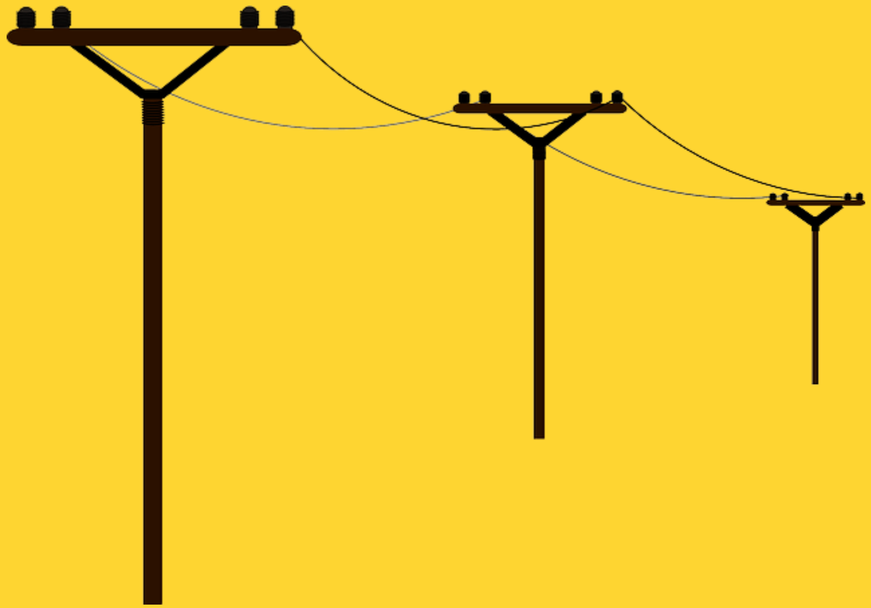
III YEAR / V SEMESTER

Unit 2 – POWER SYSTEM MODELLING

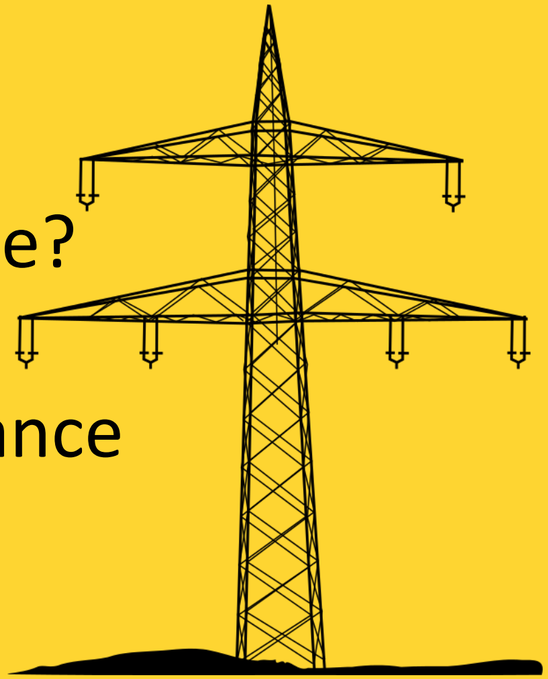
Topic 3: Modelling of short transmission line

What We'll Discuss

TOPIC OUTLINE

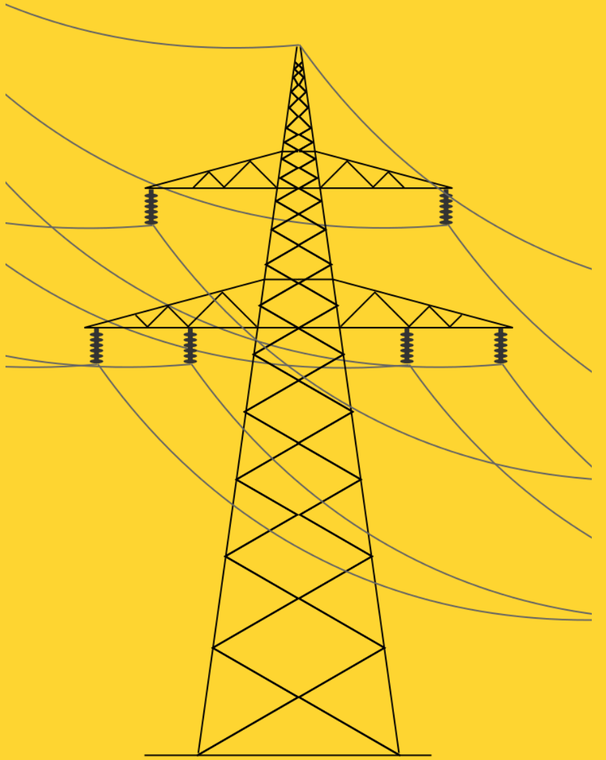


- What is short transmission line?
- Shortline model
- Phasor diagram and performance

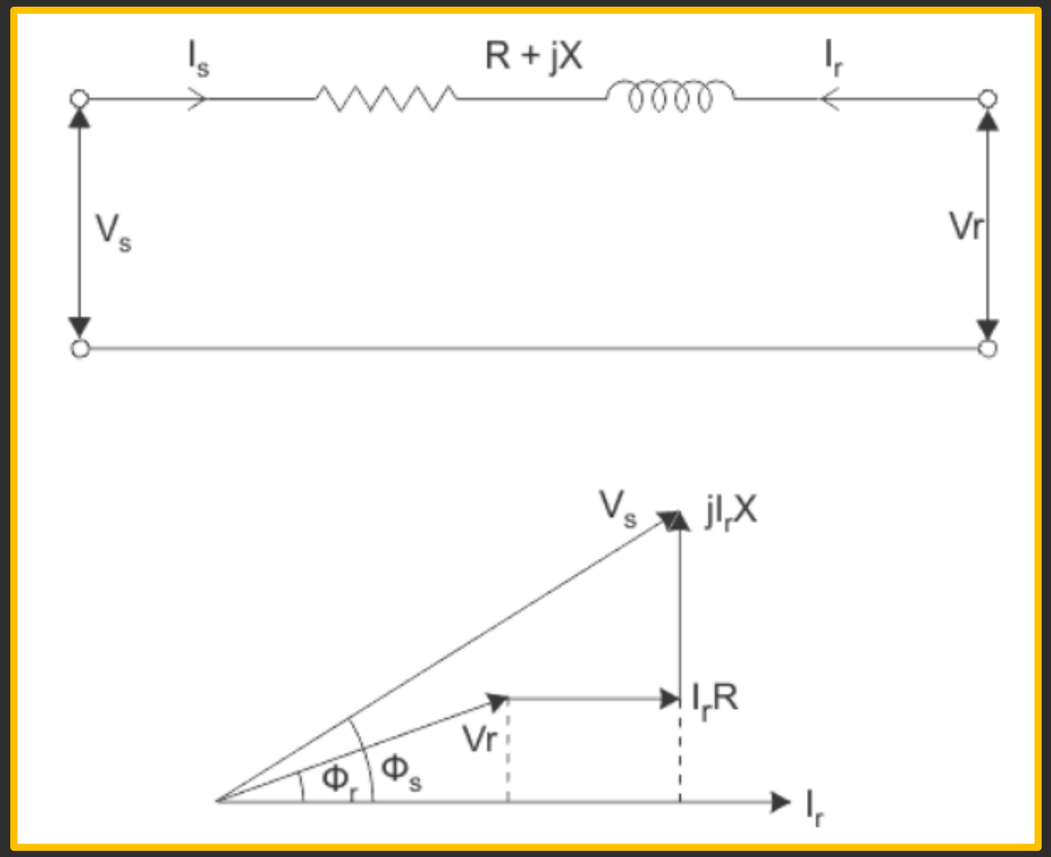


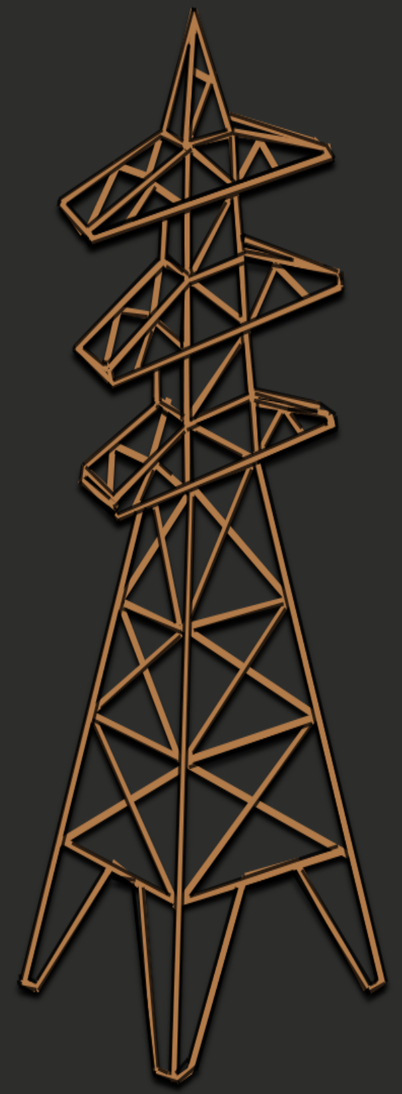
What is short transmission Line

A **short transmission line** is defined as a transmission line with an effective length less than 80 km (50 miles), or with a voltage less than 69 kV. Unlike medium transmission lines and long transmission lines, the line charging current is negligible, and hence the shunt capacitance can be ignored.



Short line model & Phasor Diagram





Performance of Short line model

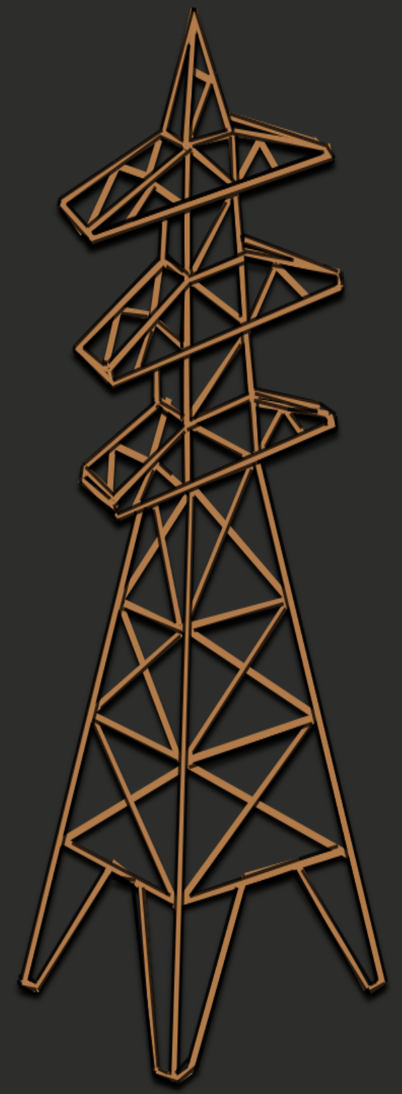
As per dentition of voltage regulation of power transmission line,

$$\% \text{ regulation} = \frac{V_s - V_r}{V_r} X\ 100\ \%$$

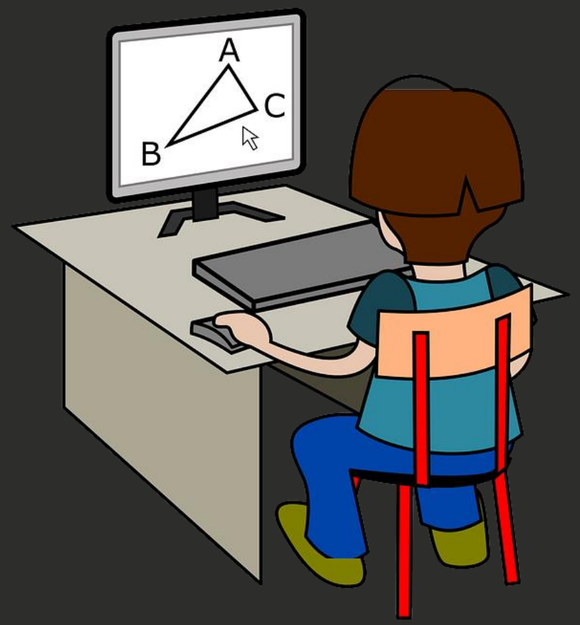
$$= \frac{I_r.R.\cos\varphi_r + I_r.X.\sin\varphi_r}{V_r} X\ 100\ \%$$

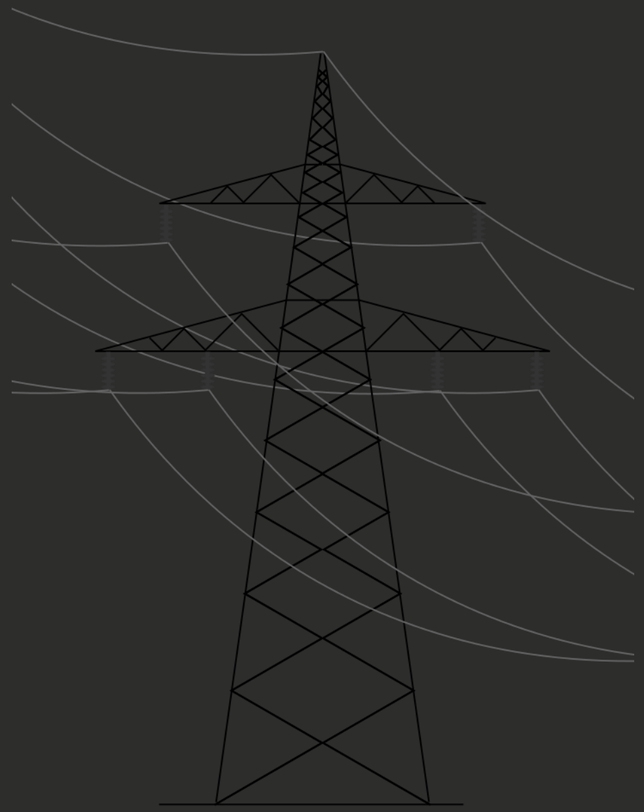
$$\text{per unit regulation} = \frac{I_r.R}{V_r}\cos\varphi_r + \frac{I_r.X}{V_r}\sin\varphi_r = v_r\cos\varphi_r + v_x\sin\varphi_r$$

Here, V_r and V_x are the per unit resistance and reactance of the short transmission line respectively.



FROM THEORY TO PRACTICE

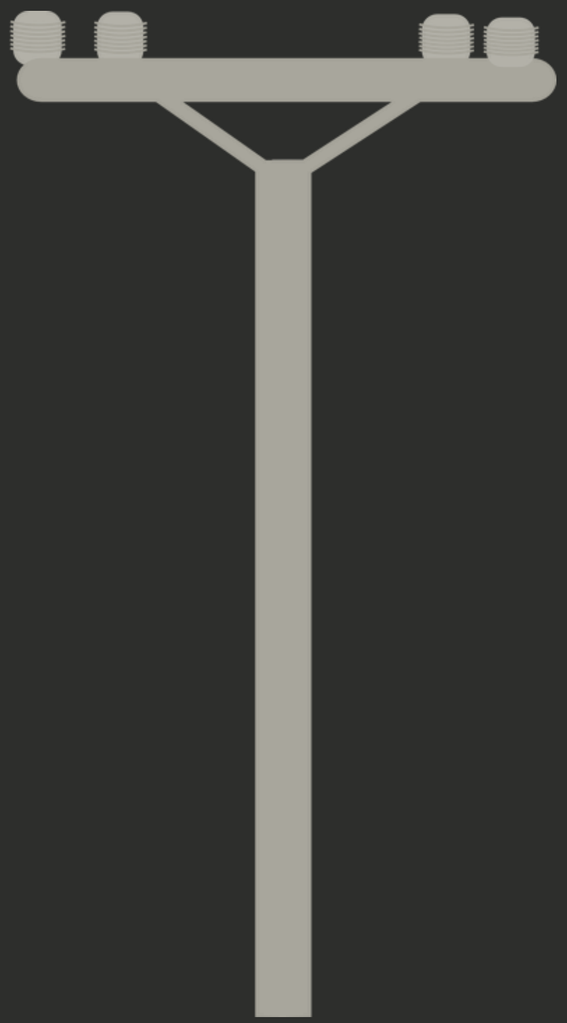




Practical Applications

RECALL TIME

ASSESSMENT TIME



THANK YOU