DC Power Transmission Systems
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Lecture – 30
Types of DC link: Monopolar

Now, let us look at some of the possible ways in which we connect the DC convertors ok. Yeah and note that say we will use the line explicitly whenever there is a line and many a times we use the link when is there is no line and sometimes we use the word link to mean both ways whether there is a line or no line ok.

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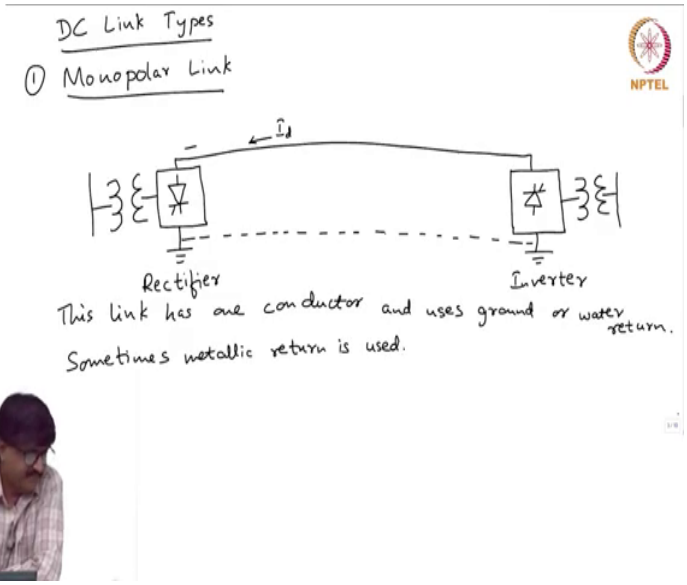

So, link DC Link is something which is used as a common word for both cases whether there is a transmission line or transmission line is not there. But whenever there is a line we explicitly state that there is a DC line ok. So, link is a very common word DC Link means line

may be there or may not be there. So, there are different types of DC Link, so let us look at a few of the types of DC Link the first type is Monopolar Link.

So, what I will try to do is I will show only the schematic diagram I will not be showing the circuit diagram it is unnecessary and complicated to show circuit diagram, I will just show a schematic diagram. So, the schematic diagram is like this so this is a schematic diagram. I will shown one rectifier here there is a transformer and in a box I have shown a thyristor. Now, this transformer say all of you are familiar with this symbol of transformer right this is one of the symbols used even in single line diagram that you are more familiar with.

So, there is a transformer with a box with a thyristor, now this is a representation of what is known as a 12 pulse converter ok. So, if you look at a 12 pulse converter there is a y and y delta transformer there are two transformers and two 6 pulse converters. So, that entire arrangement is shown as one transformer and one box with a thyristor, so this is the schematic representation of a 12 pulse converter.

So, I have two identical 12 pulse converter one on the rectifier side one on the inverter side and I have shown a wire in which a current id is flowing. And I am marked a minus sign here ok. So, what I am trying to say is by minus sign this is the negative terminal of the DC side voltage. Now the other end or the other terminal is the positive terminal, suppose in the rectifier and inverter or actually I mean they are actually away from each other there is a distance of the order of say few 100 kilometers between the rectifier and inverter.

So, there is only one conductor which is the negative terminal ok, there is only one conductor which is at the negative potential, the other terminal is actually grounded. Now where should the current flow say if the current has to circuit may complete the path? So, id is flowing in one of the conductors so the the other terminologies positive terminal is actually the ground. So, the current is getting completed only by flowing through the ground or water in fact ok.

So, this link has only one conductor, so just one conductor alone will not serve the purpose of current flow. So, I need to close the path, so it uses ground or water return ground return or water return. So, if it is for the purpose of underwater transmission, the water itself is used as

a path for the return current and very rarely metallic return is also used which is buried sometimes metallic return is used.

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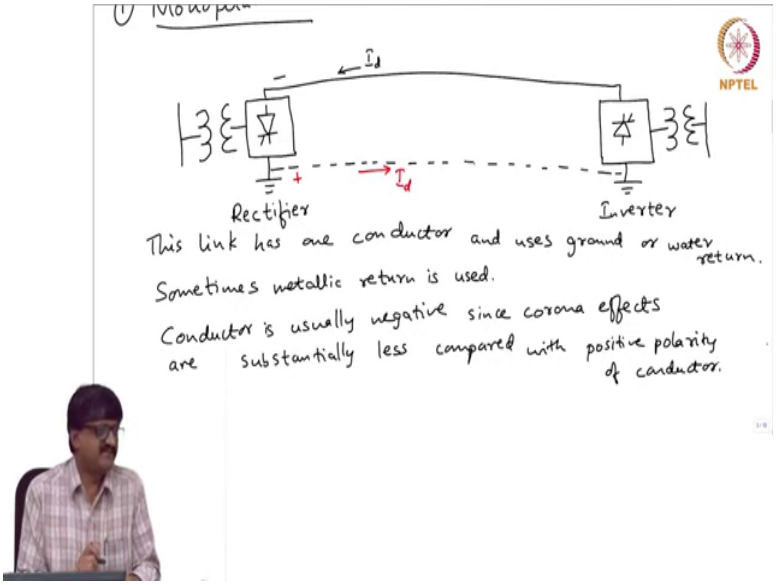

The question is why not may conductor positive and ground negative conductor is usually negative. Since, corona effects are substantially less compared with positive polarity of conductor ok.

So, this is one type of link monopolar link we look at their where there are many types of links, but in this course we look at only two other types one is bipolar and is another one is homopolar. So, we look at those details in the next class.

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