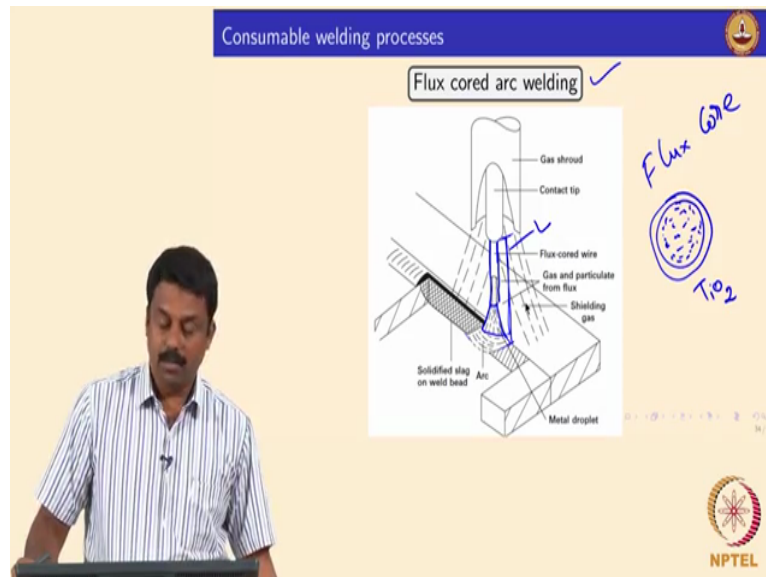


Welding Processes
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Flux cored arc welding – Introduction

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I will just give an introduction and then we will see in next class. So the main disadvantage of using stick electrode (0:22) electrode is continuous feeding of electrode, so we will have to use a stick and once the stick is consumed then you need to replace the stick. So by replacing stick into another form of electrode we can make it continuous process can be automated.

So that is mainly achieved by flux cored arc welding, the electrode has a core and that core is flux and then we have outside shield made of metal. In this case we have a metal core and the flux is outside the metal wire, we can also make the wire electrode in such a way that you have a tube, you fill the tube with fluxes and tube surface is metal. So this kind of (1:15) electrodes are known as flux cored electrodes.

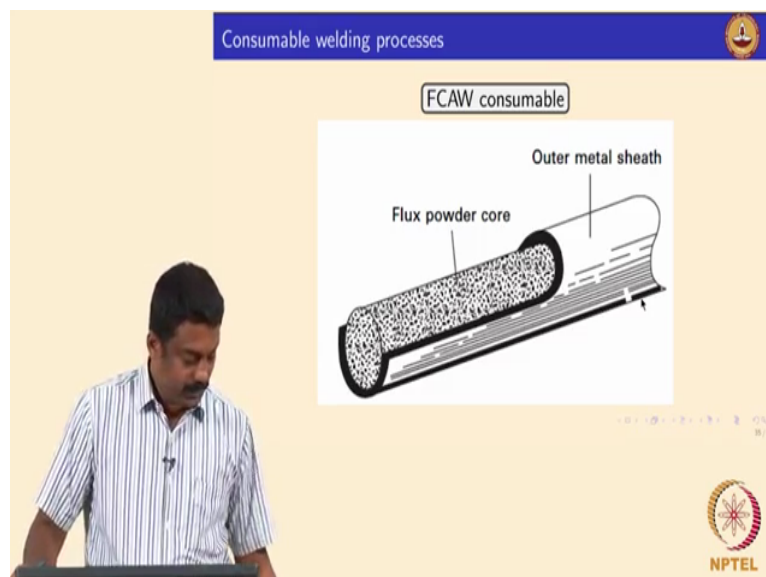
And by doing so so tubes can be made into as long as possible and they can also make it into a spiral wound and these electrodes can be continuously feed and we can automate the process, same as GMAW wire. So we can achieve the automation, characteristic of GMAW plus the advantage of having a flux controlled shielding gas generation as well as metal transfer which is achieved in MMAW.

So the both advantages of GMAW and then MMAW can be achieved by using flux cored arc welding electrodes. So only difference here is the electrode geometry, so we have a tube and tube is made of material of our interest and then you can fill the tube with the flux and the fluxes composition is same as you have it in MMAW, in most of the cases are (TiO₂) based Titanium dioxide based fluxes.

So again the process is same, it can be shielded or it can be self-shielded, in self-shielded case so you generate the carbon di oxide by burning the fluxes or you can also replace calcium carbonate completely with say other fluxes and you can give the shielding gas as well, argon shielding is also possible in this case, okay. So the schematic is same as the in MMAW, only thing is the electrode geometry is different, so this is the flux cored wire in contact tip and the gas stroke, so this is your contact tip to the work piece distance and this is L and you have one electrode which is flux cored electrode, where your flux is inside and then the metal shield is outside.

So you strike an arc if it is self-shielded the electrode the flux burns generate carbon di oxide and then you strike an arc and during this process the flux melts and the liquid droplet transfers and composition also change based on the flux decomposition and then oxides would melt and then form a slag on top, good.

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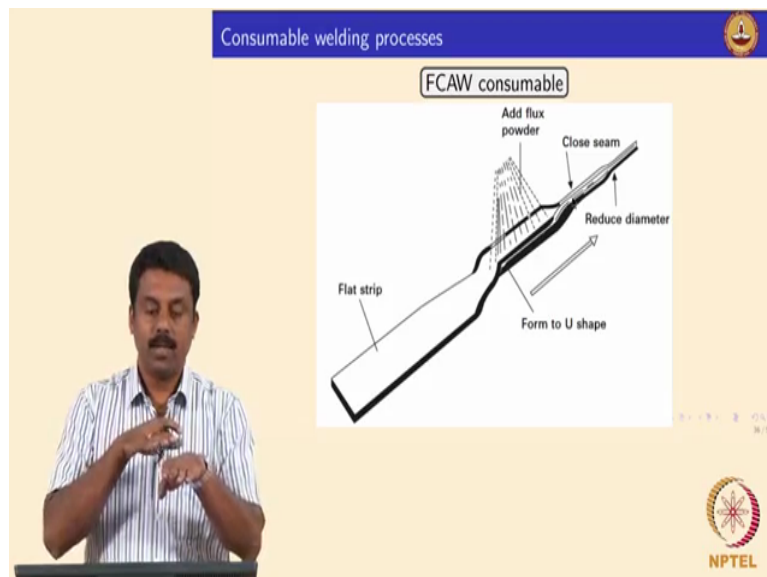


So this is the typical cross section overview of the flux cored arc welding consumable, I will bring the flux, the electrode in next class and then you can see it yourself. In most of the cases the flux inside is loosely packed, it is not compact and burnt like this and then you have

a metal shielding outside and you pack the flux inside and the process of making is very simple.

So you have a sheet and then you fill the flux and then fold it, in most of the cases the (()) (4:29) is not (connected) welded and you have mechanical deformation and then if you tap it you get the flux out. So in most of the cases it is not really full compact like you see it over here and so you also minimize the accumulation because the oxide is in metal sheet, so that is also another advantage and you can also make it as long as possible and you can bound it because it is tube and the flux is not fully compacted, it is not hard like you see over here, so it can be made it flexible and you can make a roll and roll can be used as in GMAW filler, is it clear?

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So how (())(5:18) the metal sheet is actually the composition of your interest and you can also change the composition by changing the flux composition and you add a flux coder and then the flat strip and you the (())(5:33) in a rolling two rolls and the rolls folds then you form a complete tube.