

## **Chapter 1**

### **Introduction**

Wear and Tear of materials is the major inevitable disadvantage which is seen in almost all industries. There has been a lot of research and experiments going on to eliminate this defect but only could minimize it. This problem is majorly seen in processing machines like: Oil expellers, Stone crushers and those used in agricultural processes.

There are few cases in which when machine parts are worn out or damaged, they are of no further use and has to be replaced, if not efficiency of the machines decreases drastically and significant amount of product loss occurs. For instance: In an Oil Expeller, if the shaft is run even when it is worn out, the seeds escape through the gaps created due to wear, and effective crushing will not be possible to extract oil. Similarly, in a Concrete Mixer, if the blades are not replaced, a well composed homogenous mixture of concrete is not obtained. In both these cases, the shaft and the blades are disposed after they become inappropriate for the purpose.

Therefore, due to the reasons stated above there is a need to come up with a solution to reuse these parts as many of them are not economical to be replaced by new ones every time. One of the best possible solution is to rebuild the worn out regions of these parts. In this project, we will be discussing about the reusing of the shaft used in an Oil Expeller.

In an Oil Expeller, the shaft is called as screw conveyor. The screw conveyor transfers the seeds fed to the machine from one end to another by the feature of its threads. As the seeds are being transferred, they will be subjected to huge crushing force by the threads and it squeezes out the oil from it. But then, after its continuous usage, the threads wear out and functions improperly leading to low oil extraction. Hence, a semi-automated device is fabricated to deposit metal over the worn out threads and by machining the metal deposited on the screw conveyor is made to work like before.