## Power and loss calculations

### At rated condition:

VT = 220V, IA=23.4A, BHP=5.5Hp, n=1500rpm

; which are losses due to rotation

### At no load condition:

VT is chosen 170V.

### At kettle load condition:

There is 259.8N/m loss due to rotation. This loss is seen both in motor and generator. So, total rotation loss will be 519.59W. As a result, electromechanical power output will be 2519.59W to boil water on a kettle. In addition, VT is chosen 170V.

### At start-up:

Wm=0 rad/s and Ea=0

VT is chosen 170V.

This current rating is too much, and it can damage the motor. As a result, the motor cannot be started with the chosen voltage rating.