An aluminium sheet (C = 60 MPa m = 0.2) with an initial height of 15 mm and a width of 100 mm is rolled at 450°C with the maximum possible draft. The roller cage has two rollers with a diameter of 200 mm, rotating with a tangential speed Vr of 1 m/min. The roller–sheet friction coefficient equals 0.3, and the motors have and efficiency of 85 %. Determine (i) the rolling force, (ii) the real power required to drive the rolling cage.

SOLUTIONS: F=259 KN, P_{reale}=1.52 KW