

12 Electrical power is transmitted from Norway to Britain using a cable laid under the North Sea.

The following information is published on a website.

The cable has a diameter of 15 cm and a length of 720 km.

It is made of copper of resistivity $1.7 \times 10^{-8} \Omega \text{ m}$.

The electrical power transmitted from Norway is 1400 MW and the transmission potential difference is 1100 kV.

The efficiency of this process is almost 100%.

Deduce, by calculation, whether the claim for efficiency is correct.

(Total for Question 12 = 6 marks)