Qu. 3 (cont.)

303·7 kW is equivalent an oil consumption given by:

$$\dot{m}_{fuel} \times LCV = 303{\cdot}7 \text{ kW}$$

$$\therefore \dot{m}_{fuel} = \frac{303{\cdot}7}{42 \times 10^3} = 0{\cdot}007231 \text{ kg/s}$$

$$\dot{V}_{fuel} = \frac{\dot{m}_{fuel}}{RD} \times = \frac{0{\cdot}007231}{0{\cdot}82}$$

$$= 0{\cdot}008818 \text{ litres/s}$$

$$= \underline{31{\cdot}75 \text{ litres/h}}$$

$$\therefore \text{modified cost p.a.} = (150 - 31{\cdot}75) \times 2 \times 8 \times 18 \times 7 \times \frac{0{\cdot}82}{1000} \times 140$$

$$= £72,986$$

$$\text{Saving p.a} = 92,575 - 72,886$$

$$= £19,689$$

$$\text{Break even time} = \frac{20,000}{19\,689} = 1{\cdot}02 \text{ years}$$

i.e. approx $\underline{1 \text{ year}}$.

the investment would appear to be very worthwhile