Will Brzianc

1.

$Mass_{deut} = Mass_{pro} + Mass_{neu} + Mass_{Loss}$

$3.343583 \times 10^{-27} = [1.674927 + 1.672621] \times 10^{-27} + Loss$

$Loss = 3.965 \times 10^{-30}$ kg

$E = mc^2 = 3.965 \times 10^{-30} \cdot (2.9979 \times 10^{8})^2$

$\Rightarrow E = \dfrac{3.5665 \times 10^{-13}}{1.602 \times 10^{-19}}$ eV

$E = 2.226$ MeV

2. ~8 MeV

3. 2 MeV $\quad 1.6 \times 10^{-19}$ J = 1 eV

$2 \times 10^{6} \cdot 1.6 \times 10^{-19} = 4.16E{-13}$ J

$4.16E{-13} = \frac{1}{2} 1.67 \times 10^{-27} v^2$

$v = 22.32 \times 10^{6}$ m/s

4. $200 \cdot 6.022 \times 10^{23} = 1.2044 \times 10^{26}$ MeV/g U-235

$1.2044 \times 10^{26} \cdot 4.4505 \times 10^{-23} = 5360$ MWh

[illegible]

$5360/24 = 223.33$ $\frac{\text{MWh}}{\text{day}}$

b) $\dfrac{132 \times 10^{6} \text{ J/gallon}}{3.6 \times 10^{9}} = .0367$ MW

$223.33/.0367 \approx 6090$ gallons of oil per day