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**EXAMPLE: Blowing stuff up**

Acetylene ( $C_2H_2$ ) at a fuel flow rate of 1 kg/min is burned with dry air with an air fuel ratio of 17:1. Assuming **complete combustion** and a total pressure of 110 kPa, find

- (a) the percent excess air used,
- (b) the **equivalence ratio**,
- (c) the percentage of  $CO_2$  in the products by volume,
- (d) the dew point temperature of the products in  $^{\circ}C$ ,
- (e) the percentage of water vapor condensed if the products are cooled to  $20^{\circ}C$ , and
- (f) the required volume flow rate of dry air if it is supplied at  $22^{\circ}C$  and 110 kPa.
- (g) If the actual air supplied has a humidity ratio of 16 g  $H_2O$  per kg of dry air, find the dew point temperature of the products.

