
Assignment Brief 2.1

Unit Name: Analysis at Work	Unit Number: Unit 2
Assignment Title: Energy policy	Assignment Number: 2.1
Date Set:	Due Date:
Assessment Objective(s): AO1a, b and c	
Brief: Organisations need to be concerned about their energy use. Over use can have financial implications. Your task is to research and produce a report on the energy policy of an organisation which is a non-domestic consumer of energy.	
Task: Produce a report that: <ul style="list-style-type: none">• includes a description of the energy policy of your chosen organisation;• the consideration given to energy efficiency;• the environmental effect of energy use in the organisation;• the economics of the implementation of the energy policy. Include reference to resources used. Max marks possible for this task: 19	
Resources: Annual Report of the organisation (Financial Times operate a service for obtaining Annual Reports of companies) Web site of the organisation	

Exemplar Material with Commentary

Unit 2: Analysis at Work (AO1)

GENERAL COMMENTS ON MARKING.

Marking will be based on the number and complexity of the points and issues raised in the portfolio work.

- Basic facts will tend to give marks in Mark Band 1.
- Some discussions of issues and implications of the energy policy will tend to give marks in Mark Band 2.
- Scientific basis for the reasons for the energy policy will tend to give marks in Mark Band 3.

References will be needed for full marks.

GLASS PRODUCTION AT PILKINGTON

Candidate Portfolio Work	Commentary on mark allocation
<p>References: www.pilkington.com Pilkington Annual review 2004</p> <p>Pilkington is a manufacturer of glass. The Head Office is in St. Helens, Lancashire but there are production lines throughout the world.</p> <p>Glass production uses a large amount of energy. The transportation of glass from manufacturing site to consumers uses fuel.</p> <p>Pilkington as it is a business aims to expand its manufacturing. However as production increases so does energy consumption</p> <p>Pilkington aims to reduce energy consumption whilst still expanding its business.</p> <p>In the Annual Review for 2004 it is stated that" significant effort continues to be directed towards improving environmental performance with the efficient use of energy and water being priorities."</p> <p>As Pilkington is world wide, different countries have different energy and environmental policies. Pilkington transfers knowledge of methods of reducing energy use and good practice</p>	<p>This work is at Mark Band 1 for AO1a</p> <p>This work is at Mark Band 1 AO1b</p>

between countries.

Pilkington operates under a voluntary energy restriction (Glass Sector Climate Change Agreement.) In 2003 the targets were met.

The world wide climate change agreement is the Kyoto agreement which aims to reduce greenhouse gases by cutting dependence on fossil fuels. This agreement is still a general guidance as all countries in the world have not signed up to it.

Glass has to be transported so that it does not break. This limits the method of transport and this could conflict with energy reduction as specified by the Kyoto agreement.

Other schemes which encourage energy reduction are

UK Emission Trading Scheme

E.U. Trading Scheme

ISO 14001 (A co-ordinated framework of controls to manage environmental protection in organisations.. Environmental audits are included.)

Pilkington uses these schemes in consideration of its energy policy.

The process in which glass is made is to heat the following raw materials to a temperature of 1500°C.

Sand SiO₂ (72.6%)

Soda ash (Na₂CO₃) (13.0%)

Limestone CaCO₃ (8.4%)

Dolomite (4.0%)

Alumina (1.0%)

Others (1.0%)

The following reaction occurs



The molten glass is cooled slowly so that the atoms in the mixture cannot move so that crystallisation is prevented. Glass is often referred to a super-cooled liquid.

At Pilkington, the float glass method is used. This method was invented by Sir Alastair Pilkington in 1952. Molten glass at approximately 1000°C is poured continuously from the furnace onto a shallow bath of molten tin at 1000°C. The melting point of tin is 232°C. The glass floats on the tin and spreads out and forms a level surface. The thickness of the glass is controlled by the speed at which the solidifying glass is pulled off.

The float glass process operates non-stop for between 11 and 15 years ensuring that energy is needed only to maintain the temperature.

This work is at Mark Band 2 AO1 a

Mark Band 3 AO1a can be given depending on

- number of schemes
- detail of schemes.

Mention of continuous process as reducing energy needs.

Mark Band 1 AO1a

<p>Fossil fuels are used to keep the glass molten. Carbon dioxide is produced.</p> <p>A simple example of a fossil fuel is the gas methane which burns</p> $\text{CH}_4 + 2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{CO}_2$ <p>The heat produced when 1mole of methane is burnt is 890 kJmol^{-1}</p> <p>1 mole of methane which is a gas will occupy 24 litres at room temperature.</p> <p>The fuel to air ratio is monitored in order to get the maximum heat generated. In the case of methane the ratio of the volumes is 1:2 if oxygen is used.</p> <p>However in practice air is used and so oxides of nitrogen are produced. Emission of nitrogen oxides is monitored.</p> <p>Burner design is such that fuel consumption is minimised. The luminosity of the flame is optimised so that there are no side reactions. (A roaring Bunsen flame produces the maximum heat) The burners are set so that the flame is at the correct angle for maximum coverage.</p> <p>Carbon dioxide emission can be reduced by the use of recycled glass.</p> <p>The use of recycled glass in the production process increased by 20% in 2004.However the use of recycled glass does depend on the quality of the glass available.</p> <p>Pilkington produces a glass that manages energy by controlling the flow of energy into an out of a building. Such glass is produced by coating and tinting the glass.</p> <p>.</p>	<p>Deductions give Mark Band 3 parts AO1b and AO1c.</p> <p>Mark Band 1 AO1c</p> <p>General statement Mark Band 2 AO1b</p> <p>Mark Band 1 AO1c</p> <p>Mark Band 1 AO1c</p> <p>Detailed discussion provided, Mark Band 3 AO1c</p>
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