

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

BUSINESS STUDIES

Business Strategy

CASE STUDY

JUNE 2005

2880/CS

May be opened and given to candidates upon receipt.

INSTRUCTIONS TO CANDIDATES

This copy may **not** be taken into the examination room.

The business described in this case study is entirely fictitious.

This case study consists of 8 printed pages.

Earnshaw Engineering Ltd

Earnshaw Engineering Ltd (EEL) designs and manufactures diesel engines. Established in 1933 by Geoff Earnshaw, it has grown in size and now employs 3,000 people, see Table 1. Of these, about 2,000 work within Manufacturing, 150 in Design and Development, whilst the remainder are employed as support staff. Its size is such that it is a significant employer in its community. Ownership of EEL is fragmented, although the founding family retain a significant shareholding. In the financial year just ended, 2004, it recorded a gross profit of slightly over £49 m on a turnover of £516 m. Reflecting its roots in the West Lothian community, EEL tries to be a good corporate neighbour. For example, it sponsors the town's soccer team to the tune of five figures each year. 5

The internal organisation of EEL is arranged by product type. There are four divisions: Automotive Applications, Off Highway, Construction and Power Generation. Whilst each division has its own customer base they all share the common root of diesel power. Hence the same model of engine might be used, with minor modification to the cylinder block in, for example, a tractor for the Off Highway division and also as the core of a "Gen-set" for the Power Generation division. EEL prides itself on its core value propositions of competitive price, quality, warranty, parts back-up and adaptability. These values mean that EEL explicitly seeks to provide excellent customer service long after the initial purchase. The business is widely recognised in the industry as having a reputation for integrity. 15

The diesel engine industry has experienced considerable change in the recent past. Over the last twenty or so years, firms similar to EEL have been acquired by larger businesses in their bid to gain scale economies. Despite several offers, the Earnshaw family have refused to entertain any suggestion of takeover, fearing that a loss of independence would mean the end of their culture of being a socially responsible and employee-focused organisation. For example, EEL was the first in its locality to offer an employee pension scheme. The senior managers of EEL believe their commitment to their employees is a key reason why the firm is able to offer outstanding customer service. An often repeated phrase amongst EEL managers is "... treat people the way you want to be treated; only by trusting and respecting employees can we expect our employees to trust and respect our customers." 25

The diesel engine market is now truly global, dominated by several multinational firms such as Daimler-Chrysler, Cummins, Caterpillar and Nissan. A further change is the erosion of the traditional links between engine manufacturers and their customers; customers are now more inclined to explore new sources of supply rather than simply place more business with their usual engine supplier. This gradual evolution in relationships has resulted in a landscape that is far more competitive. For some years gross margins have been under severe pressure, but through the commitment and dedication of its employees EEL has, for the first time in several years, managed to reverse this trend (9.6% 2004, 7.9% 2003). One consequence of the desire to preserve independence is that EEL has found itself retreating into niche markets in order to survive. In the last three years the business has recorded operating losses. Balance Sheets for 2003 and 2004 are shown in Appendix 2. 35

Whatever the application, the environmental legislation surrounding the use of diesel engines is becoming increasingly stringent, both with regard to noise and particulate emissions. To maintain a competitive position EEL invests heavily in research and development to meet these demands, see Table 2. However, the relatively small volume of EEL's output has a clear implication for unit cost and short 40

run profit. It is for this reason that EEL is considering separating its Design and Development section from Manufacturing. The rationale is that, through creating an independent company specialising in Design and Development, more income could be created through additional consultancy work. At present, the Head of Design and Development, Otto Hense, argues that potential clients are sometimes reluctant to contract with EEL because they fear a lack of commercial and technical confidentiality. Whilst EEL has “Chinese walls”, Otto thinks few clients actually believe in the robustness of these walls given the reality of their own organisations. When last discussed at Board level, Moira Earnshaw, a non-executive director, questioned the ethics of such a strategy. She questioned the appropriateness of EEL owning an R&D company that aims to enable other manufacturers to gain competitive advantage over EEL in its core markets.

Another item being discussed at board level is a proposed diversification into the motorcycle market. Manufacturing Director, John Proctor, wants EEL to add a new, small engine to its range and so produce diesel powered motorcycles. This would create an entirely new niche within the motorcycle market. John can immediately see two groups of customers. First, the military. About eighteen months ago a retired serviceman approached John with a proposal. In essence, this was that EEL produce a diesel powered motorcycle under a licence he would grant. With some further research John has discovered that the military have, for some time, been seeking a reliable and rugged off highway diesel powered motorcycle. At present, motorcycles are the only battlefield vehicles requiring petrol (all others run on diesel). Having diesel motorcycles would rationalise logistics (eliminating the need to transport petrol, a highly volatile fuel, within a hazardous environment). Additional benefits include range and durability. A number of motorcycle manufacturers already offer off highway machines within their product portfolios.

Second, the commuter market. The exemption of motorcycles from some congestion charging schemes has given rise to a significant interest in an inexpensive, rugged and economic motorcycle. John believes that a feet-forward, enclosed design, coupled with the virtues of diesel power would match these desires extremely well.

The initial reaction of Marketing Director, Graham Freeman, was negative. Despite John’s best efforts to persuade him otherwise, Graham was firmly of the view that EEL should not entertain the idea as there would be no UK market for such a machine. Finance Director, Sinead But, was worried that even if EEL did manage to establish a market it then would not be able to compete should a larger firm decide to target the same market. After much inconclusive discussion the Chair decided that further research was required. Three scenarios are envisaged. First, EEL undertakes the entire project on its own. This would require the in-house manufacturing of engines, buying in of motorcycle components and subsequent assembly. Second, a joint venture with another company, ideally an existing motorcycle manufacturer; EEL would supply the engines with the partner undertaking all other work. Third, design and develop the engine, selling each unit on a royalty basis. Each functional director was asked to produce an outline feasibility paper, see Appendix 1. For planning purposes a figure of 125,000 units per annum was agreed.

Throughout its history EEL has enjoyed good labour relations. Indeed, a significant number of employees are related either to existing workers or former employees. This, and an open culture of employee involvement and mutual respect, has allowed EEL to adapt more readily to change than many other firms. Union density amongst shop floor, hourly paid employees is 76%. Whenever possible, and allowing for commercial confidentiality, senior managers are eager to discuss the possible

strategic direction of EEL with employee representatives. For this purpose, in 2001 a monthly employee briefing was established in addition to the already existing quarterly EEL newspaper. At the most recent briefing, employees raised concern about a rumour of gathering credibility. The essence of the rumour is that EEL is going to use sub-contractors to deal with peaks in demand for engines. Currently, EEL manufactures with a five-day week, two-shift system. Periods of excess demand are met through overtime working, either weekend or evenings. When John Proctor was asked a direct question about sub-contract capacity he felt, because of the issue of the possible motorcycle project, unable to offer an unequivocal answer. The meeting closed in an atmosphere of hostility, summed up by one employee who angrily stated “..you believe in an open culture when it suits you! For the last three years we have accepted reductions in manning levels and pay increases below inflation yet have maintained output. Until you’re ready with some proper answers don’t come to us with any new ideas about improvements to productivity. We’re not going to work harder so that you can get rid of some of us. And you can forget any overtime until you’re prepared to give us an answer.”

Last year EEL manufactured just over 250,000 units. The bulk of output is made for a specific customer order, the remainder being speculative manufacture for stock. Manufacturing times depend on engine type, but 2.9 days is an average. Similarly, on average EEL holds five days of finished goods in stock. Graham fondly remembers the days of a full order book and customers willing to wait for delivery. Nowadays, in a climate of JIT, customers are far more demanding and often insert stringent penalty clauses in contracts if agreed delivery times are not met. To date, EEL has always delivered on time and to the required quality standard.

Current orders will keep the factory busy for the next four months, after which orders tail off considerably. However, through experience, Graham knows that assuming the economic outlook does not alter too radically, EEL can expect to gain sufficient orders to keep the factory operating at about 90% of efficient scale, or 85% capacity for the remainder of the financial year. EEL’s target for the current financial year is to break-even. Long-term supply contracts guarantee about 70% of output, but customers might well vary the specific level of their order depending on prevailing market conditions. For example, when the combined pressures of BSE and Foot and Mouth disease gripped the UK farming industry, several customers of the Off Highway division reduced the size of their order. Fortunately EEL was able to switch capacity to other customers, see Table 3. Given the competitive nature of the industry EEL was reluctant to invoke penalty clauses in the supply contracts. With so much external uncertainty, and his impending retirement, Graham is not inclined to look beyond the time horizon of the coming financial year.

Table 1**Employee data**

	2004	2003	2002
Employee numbers			
Hourly paid	1,776	1,749	1,807
Salaried	1,224	1,255	1,328
	<u>3,000</u>	<u>3,004</u>	<u>3,135</u>
Employment costs	£000s	£000s	£000s
Wages & salaries	83,106	84,256	75,193
Social security	5,918	7,156	6,481
Pension	1,943	6,968	6,782
	<u>90,967</u>	<u>98,380</u>	<u>88,456</u>

Table 2**Expense budgets**

	2005	2004	2003	2002
	£000s	£000s	£000s	£000s
Research & development				
Budget	22,000	22,000	20,000	20,000
Actual	n/a	22,938	21,746	21,139
Training				
Budget	250	250	250	250
Actual	n/a	218	244	213
Marketing				
Budget	1,750	1,725	1,650	1,600
Actual	n/a	1,688	1,639	1,624

Table 3

	2004	2003	2002
	£000s	£000s	£000s
EEL sales data			
UK	210,426	211,853	222,112
Rest of Europe	181,486	202,985	165,502
USA	70,414	65,782	62,778
Rest of the world	53,751	62,097	59,283
	<u>516,077</u>	<u>542,717</u>	<u>509,675</u>

Appendix 1

Motorcycle market

Marketing

Military Hard data subject to Official Secrets Act. It is estimated the Army operates a fleet of 500 motorcycles, giving a market of about 100 units per year

Commuter Primary research was conducted through 80 face-to-face interviews at the British Motorcycle Federation, BMF, rally 2004.

- 15% expressed interest in diesel power
- 65% view motorcycling as a recreational activity
- 35% ride all year round
- 70% ride to work in the summer
- 90% have access to and use of a car

Secondary Research: UK registrations, 000s

	Cars All (1)	Cars Diesel	Motorcycles (2)
1961	743	n/a	212
1971	1,462	78	128
1981	1,643	77	272
1991	1,709	257	77
2001	2,710	738	177

Source: DETR and SMMT

(1) includes "light delivery vehicles"

(2) all types

New retail prices of typical 500 cc, 50 bhp, commuter motorcycles £3,500 - £5,600

Various manufactures have offered diesel-powered motorcycles for sale, for example Sooraj Tractors of India. Production ceased due to an inability to meet emission requirements and lack of market interest.

Personnel

Engines

New line – 500 new staff

Similar task, adapt existing recruitment & training

Entire machine

About 800 new staff

Entirely new recruitment & training

Finance

New engine Research and Development cost	£7 m
Adaptation of existing design	£4 m
Development costs for whole machine (excluding engine)	£5 m
Manufacturing investment in state of the art assembly line	£2 m

Target unit cost for engine based on 125,000 units pa

Direct Labour	£80
Materials	£240
Overhead	£60
Margin	£20

Target unit cost for whole machine based on 125,000 units pa

Labour	£800
Materials	£1600
Overhead	£600
Margin	£200

Royalty. Sell rights for £3 m with a royalty of £40 per unit

Manufacturing

Benefits of new 500 cc engine

- Purpose built; 25 bhp and 35 ft lb
- Lightweight, so could use an existing motorcycle chassis
- Wide torque curve
- Fewer difficulties in meeting emissions compliance
- Developed in conjunction with Electronic Management System
- R&D 24 – 30 months
- A new engine could provide the foundation for a 1,000cc V twin engine for a wider range of motorcycle applications, e.g. touring.

Military use has export potential; NATO market thought to be tens of thousands.

Adaptation of existing engine; 15 bhp and 25 ft lb

- Heavy, requiring purpose built chassis
- Narrow torque curve
- Not designed to operate across a variety of engine speeds
- New electronic injector controls to cope with engine speeds and emissions
- R&D 20 – 26 months

Appendix 2

Balance Sheets as at end of financial year

	2004 £000s	2003 £000s
Fixed assets		
Tangible assets	214,926	234,173
Intangible assets	<u>17,194</u>	<u>19,905</u>
	232,120	254,078
Current Assets		
Stock	32,231	33,523
Debtors	85,038	76,484
Cash	<u>1,591</u>	<u>5,730</u>
	118,860	115,737
Current liabilities		
Creditors	116,878	110,149
Net Current assets	1,982	5,588
Total assets less current liabilities	<u>234,102</u>	<u>259,666</u>
Creditors due after one year	111,200	111,619
Net Assets	<u>122,902</u>	<u>148,047</u>
Share Capital	3,500	3,500
Profit and loss account	119,402	144,547
Equity shareholders' funds	<u>122,902</u>	<u>148,047</u>

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.