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Situation report

Manufacturing capacity at Magnet Schultz's primary facility has reached capacity. Due to physical restraints, no further manufacturing halls can be built (see image 1). The site has an obligation to continue the manufacture of legacy products however, as their design and volume limits the amount of automation and investment that can be supplied in support of production improvements, the site has decided that it will halt production of the legacy parts in favour of new high-volume programs.

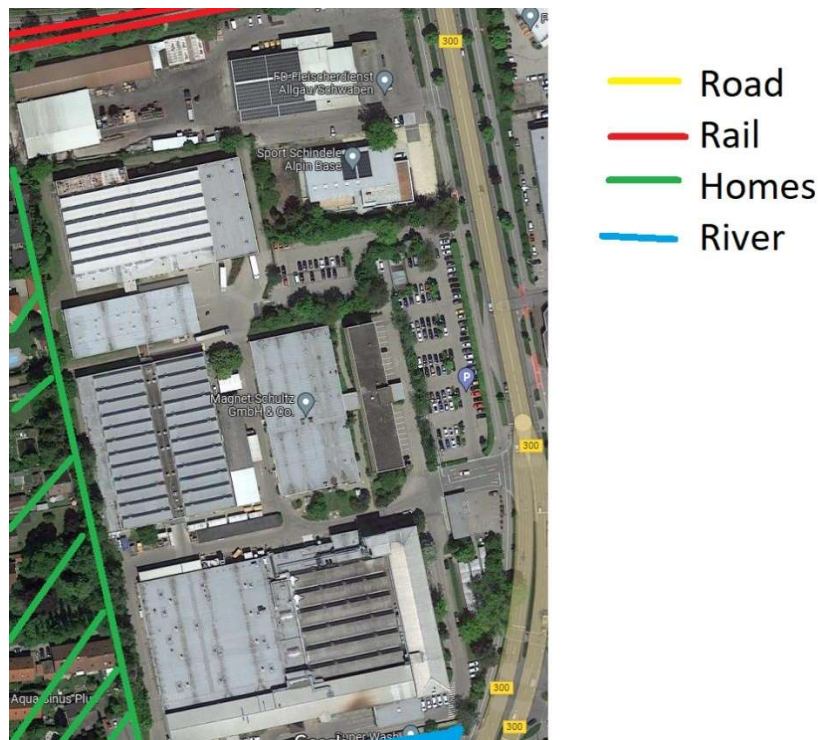


Image 1

Production was moved to Slovakia in 2019 to an external company supported by Magnet Schultz. Initially, parts supplied met the established quality standards and delivery expectations however, as traditional supply partners have failed to meet production demands, alternatives have been sourced. This has led to a dramatic fall in product quality measured by customer returns at over 18% in 2022 (UK market) compared to previous figures of 0.15% in 2018 (UK market).

Additionally, product lead time has gone from 2-4 weeks (2018) to 8-10 weeks (2020), with orders often not being satisfied for circa 14 weeks from customer instructions.

This failure in meeting the customers targets now jeopardise the long established customer relationships built up over many years.

The Legacy Product

The range is called a GFC. It is a simple electro-mechanical solenoid. A single stage coil generates a magnetic field, this magnetic field is then concentrated via an iron-based body, this forms the magnetic circuit and performs/behaves much like an electrical circuit in that it follows the path of least resistance. At the centre of the solenoid is an armature that is allowed to move freely within the solenoid and is mounted using 2 PTFE lined brass bearings. When power is applied to the coil, the magnetic field pulls the armature towards the pole piece. When the power is removed, the

magnetic circuit falls away and the armature is allowed to return to its resting position (typically with the aid of a spring).



Image 2

Proposal

Magnet Schultz Ltd (UK) are the primary consumer of the legacy GFC products consuming 44% of all GFC products manufactured. The parts are then supplied directly onto end users or incorporated into Magnet Schultz Ltd products offerings such as the Electric Bolt Lock (EBL) (image 3).



Image 3

Magnet Schultz Ltd (UK) would like to take the facility set up in Slovakia, move it to the UK site and establish the first solenoid production centre in the UK for Magnet Schultz.

As the production of the solenoid would return to the Magnet Schultz group, Magnet Schultz Ltd (UK) would seek to exploit the buying power of the Magnet Schultz group to use previous supply routes, restore previous lead times and impose greater quality control within production.

In addition, due to the volatile political and confrontation within Eastern Europe, production within the UK could offer greater security whilst opening up new markets due to the UK's non-European union status.

In addition to the site advantages, Magnet Schultz Ltd (UK) would look to change the production method from a 4-spindle system (4 solenoids produced at the same time) to a 6-spindle system. This would increase the output 50% from the current set-up without any changes to the cycle timing.



Image 4 – current production coil winding

Due to the project details being confidential, the specifics of the product costing review cannot be issued however, the high-level details are:

Slovakia:

- Production – 4 off units
- Cycle time – 30 seconds
- Man power – 45 seconds
- Labour cost - £0.35
- BOM cost - £16.52
- Non-direct costs - £0.80

Unit production cost - £4.42 (rounded). Production capacity – 120 units per hour.

UK:

- Production – 6 off units
- Cycle time – 30 seconds
- Man power – 45 seconds
- Labour cost - £0.63
- BOM cost - £21.48
- Non-direct costs - £2.10

Unit production cost - £4.04 (rounded). Production capacity – 180 units per hour.

Magnet Schultz Group internal automation team (Magnetics) has estimated the project investment as follows:

- Changes to tooling and production settings - €24,000
- Relocation of production equipment currently in Slovakia - €92,000
- Residual value of production equipment in Slovakia - €177,000
- Training for Magnet Schultz (UK) team - €18,000

When considering the aspects provided by Magnetics, the total cost to implement the production move would be £270,400 (allowing £/€ 1.15).

Limitation of financial measurables

Whilst financial measurables can be invaluable in assessing a project viability, this must be done with caution, as often a financial marker will focus on a small aspect of the project and mask underlying issues.

New present value (NPV) – In order to calculate NPV, we have to make some assumptions about the project finances. This is mostly done in the investment needed for capital. If the assumptions are too low or too high, the NPV value can be misleading and result in false conclusions. In addition, the NPV doesn't consider any pre-project costs that might be present, such as research and development. Omitting these values can be misleading when presenting the project.

Internal Rate of Return (IRR) – One of the key issues of IRR is that it does not consider the financial scale of the overall project. A small-scale project might display better IRR stats when compared to a much larger project, but the total project return or scale is not considered and it is more than possible that the larger project yields considerably more return in absolute terms.

Whilst these measurables have to be used cautiously when considered a part of a wider analysis, the results are an extremely valuable tool.

Project Financial Review

Site location financial considerations.

Slovakia is considered to be a low-cost manufacturing location when compared to the UK.

When we consider the labour costs and overheads, the UK has a considerably higher cost at +80% on labour and +260% on non-direct cost.

It is then a wonder why this proposal is valid knowing that production is moving to a higher cost location however, if we take into consideration the improvements proposed within the production process, the unit cost of manufacture is actually improved from £4.42 in Slovakia to £4.04 in the UK, an improvement of 8.5%. However, areas such as energy consumption were considered to be cost neutral but given recent changes within the market, the UK has seen considerable energy price increases. This will need to be taken into account before any final decision are to be made.

This is only a small focus on improvements when we consider the wider issue of customer returns. If we were to only consider the cost of UK customer returns in 2022 of £11,480 and the damage to our reputation further eroded by the current lead time issues, then the transfer of production to the UK would be justified.

Return on Investment.

Unlike a typical production project, this product has no expected end of production date. It has currently been in production for circa 53 years, and the volumes have been stable for the past 15 years. As forecasts are only available for a maximum of 10 years (accurate forecast for 5 years) the project has been reviewed as per the production data available.

Key project financial details are:

Total investment - £270,400

Project Duration – 10 years

Weighted average cost of capital – 10.5%

Project break-even point – year 4

Net present value - £308,211.05

Rate of return – 34.85%

The above is with consideration of moving the equipment to the UK site and equipment improvements however, it makes no considerations towards potential profits and turnover that may be available if the equipment were to remain at the site in Slovakia.

To validate the figures calculated, we can use the benefit cost ratio and profitability index.

The BCR will have a negative value until the project investment has been repaid. The BCR value for the project is BCR – 1.14

The PI works in a similar way to BCR, in that the value remains below 1 until the project investment has been returned. The PI for this project is PI – 2.14

To ensure a complete financial review is conducted, the accounting rate of return has been calculated. For the project review, there is no residual capital value considered.

Deprecation = project investment / duration = £27,040

ARR - 68.71%

Profit - £929,026

Total Cash flow - £1,199,426

Project Funding

The Magnet Schultz group has agreed to fund the project on behalf of Magnet Schultz (Ltd) on a low interest loan basis of 2% year on year over the 10 years.

The cost of finance has not been included within the calculations however, this 2% loan will attract interest of £28,123 over the 10-year term. This will account for 9% of the total project funds.

Alternatively, Magnet Schultz Ltd (UK) could fund the project directly from funds available within the business. Obviously, this would be interest free, but would consume nearly ½ of the readily available funds the company has. While this would not attract any interest, should the company require a draw on cash flow, it would put considerable strain on the companies finance and possibly the need to look for finances at a higher interest rate than that offered from the parent company.

If Magnet Schultz Ltd (UK) wanted to run the project financially independent from the parent company, whilst not risking its operating capital, then external options would need to be reviewed. These could include:

A business loan from a traditional financial institution. This would be one of the most common forms of project financing and the risk of the project, companies trading history and financial measurables. These types of loans also require the borrower to contribute to the project and have assets to the value of the loan for security. The company can expect funding of the project from 25-65%, if the overall finance secured against company assets. As of today, these typically range from 3%-14% however, for illustration purposes I will consider 6%, as this is in keeping with the project, value and company profile of Magnet Schultz Ltd. This would attract interest payments of £89,706 over the duration of the projects, considerably more than using the groups offer of finance. As stated, this is for illustration only, formal application and research will need to be conducted to confirm the applicable interest rates for Magnet Schulz Ltd.

Equity provided by sponsors, government, angel investors, directors loans can be used to quickly fund the project as needed however, this form of funding demands a higher rate of interest to compensate what is perceived to be a much higher financial risk and the larger portion of funding of the project (typically between 75 – 95%). These types of loans have a very broad range of interest due to the eclectic nature of financial source and projects that they fund however, the company can assume that this form of funding will be 2-5 times the interest cost than that of a business loan.

Government grants for UK investment and growth might also be available. These are designed to attract businesses to the UK to increase industry and jobs to the area. The grants available depend on the industry sector, political agendas and company profile. If the company should qualify for these grants, it could expect this to cover 10-40% of the project costing, with the most desirable projects being offered 0% interest or even only partial repayment.

Conclusion

Whilst moving a manufacturing location from Slovakia to the UK represents an increase in labour rates and overheads, the improved buying power of the Magnet Schultz group and equipment improvements will reduce the over all cost of manufacture.

Returning the manufacturing control of the product withing the Magnet Schultz Group will allow quality concerns to be addressed and restored to previous levels, while addressing the issue of production lead times.

The capital investment needed at the Magnet Schultz Ltd (UK) site can be funded by multiple sources, depending on the business strategy selected, and should yield a profit for the company from year 4 onwards.

The increased manufacturing capacity of the equipment will support reduction of the units lead time, whilst extending its ability to support future capacity and the demand needs.

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Appendix 1 – Project Review

Project Investment	£	270,400.00
Number of Years	10	
NPV	£	308,221.05
IRR		34.85%
PI		2.140
BCR		1.140

Year		0	1	2	3	4	5	6	7	8	9	10
Profit	£	270,400.00	£ 63,304.00	£ 130,412.00	£ 136,393.00	£ 114,947.00	£ 93,966.00	£ 88,948.00	£ 81,712.00	£ 76,249.00	£ 72,193.00	£ 70,902.00
Investment	£	270,400.00	£ 207,096.00	£ 76,694.00	£ 59,709.00	£ 174,656.00	£ 268,622.00	£ 357,570.00	£ 439,282.00	£ 515,531.00	£ 587,721.00	£ 658,626.00
Payback			1	2		-0.562228267	0.519448093	1.859	3.019989207	4.375979048	5.761150966	7.141010901
												8.289244309

Discount Rate (WACC)	10.50%											
Denominator	1	0.905	0.819	0.741	0.671	0.607	0.549	0.497	0.450	0.407	0.368	

Net Benefits	£	270,400.00	£ 57,288.69	£ 106,835.35	£ 101,089.31	£ 77,098.96	£ 57,037.35	£ 48,861.02	£ 40,620.93	£ 34,303.30	£ 29,392.37	£ 26,123.76
Net Present Value (NPV)	£	270,400.00	£ 213,111.31	£ 106,335.96	£ 5,216.65	£ 71,882.31	£ 128,919.66	£ 177,780.68	£ 218,401.61	£ 252,704.92	£ 282,097.29	£ 308,221.05
Rate of Return (IRR)			-76.59%	-17.87%	9.51%	21.29%	26.92%	30.25%	32.25%	33.49%	34.30%	34.85%
Profitability Index (PI)			0.212	0.607	0.981	1.266	1.477	1.657	1.808	1.935	2.043	2.140
BCR			-0.788	-0.393	-0.019	0.266	0.477	0.657	0.808	0.935	1.043	1.140

Appendix 2 – Rate of Return

Initial Investment	£ 270,400.00
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Time Scale	10
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Year	Income	Depreciation	Profit
1	£ 90,344.00	£ 27,040.00	£ 63,304.00
2	£ 157,452.00	£ 27,040.00	£ 130,412.00
3	£ 163,433.00	£ 27,040.00	£ 136,393.00
4	£ 141,987.00	£ 27,040.00	£ 114,947.00
5	£ 121,006.00	£ 27,040.00	£ 93,966.00
6	£ 115,988.00	£ 27,040.00	£ 88,948.00
7	£ 108,752.00	£ 27,040.00	£ 81,712.00
8	£ 103,289.00	£ 27,040.00	£ 76,249.00
9	£ 99,233.00	£ 27,040.00	£ 72,193.00
10	£ 97,942.00	£ 27,040.00	£ 70,902.00
	£ 1,199,426.00	£ 270,400.00	£ 929,026.00

Difference	£ 270,400.00
Depreciation	£ 27,040.00
Average Investment	£ 135,200.00
Average Profit	£ 92,902.60
ARR	68.71%
Total Cashflow	£ 1,199,426.00
Profit	£ 929,026.00

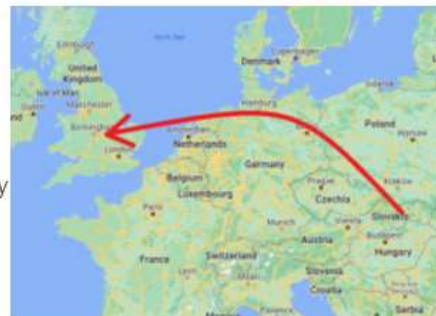


Project Review

The Proposal:

Move production of the GFC product range from Slovakia manufacturing location to UK to improve production quality and lead time.

Improve equipment to increase production capacity in support of lead time reduction



Magnet Schultz Ltd (UK)

Magnet Schultz Ltd (UK) is the primary user of the GFC product range at 44% usage.

This product is supplied directly to the end customers or incorporated into Magnet Schultz UK own product offerings such as the EBL.

Magnet Schultz UK has a small batch manufacturing facility however, has yet to have any automated or high volume manufacturing set up. For this reason, training will be needed to ensure production is started efficiently.



Project capital investment

Project capital investment:

1. Equipment modification – This includes tooling, new interfaces and addition of minor equipment in support of increasing batch manufacture from 4 off to 6 off - €24,000
2. Removal, packing and shipping, and installation from Slovakia to UK site - €92,000
3. Residual value of production equipment in Slovakia - €177,000
4. Production training for Magnet Schultz UK team - €18,000

Total - €311,000 or £270,400



Comparative changes

Slovakia Production

Batch – 4 units

Cycle time - 30 seconds

Man power- 45 seconds

Labour cost - £0.35

BOM cost - £16.52

Non- Direct costs - £0.80

Cost per unit - £4.42

Production capacity – 120 units / hour

UK Production

Batch – 6 units

Cycle time - 30 seconds

Man power- 45 seconds

Labour cost - £0.63

BOM cost - £21.48

Non- Direct costs - £2.10

Cost per unit - £4.04

Production capacity – 180 units / hour

Project Finance

Key financial Points:

Total investment – £270,400

Project break even point – Year 4

Project Duration – 10 years

Net present value - £308,211.05

Weighted average cost of capital – 10.05%

Rate of return – 34.85%

Project Investment	£	270,400.00
Number of Years		10
NPV	£	308,211.05
IRR		34.85%
PI		2.140
BCR		1.140

Year	0	1	2	3	4	5	6	7	8	9	10
Profit	£	63,304.00	£ 130,412.00	£ 136,393.00	£ 114,547.00	£ 93,964.00	£ 88,948.00	£ 83,712.00	£ 76,248.00	£ 71,193.00	£ 70,902.00
Investment	£	207,096.00	£ 76,488.00	£ 59,709.00	£ 174,618.00	£ 248,622.00	£ 317,176.00	£ 439,282.00	£ 515,331.00	£ 587,714.00	£ 618,626.00
Payback		1	2	3	4	5	6	7	8	9	10

Discount Rate (WACC)	10.05%										
Denominator	1	0.908	0.820	0.742	0.673	0.610	0.550	0.493	0.440	0.390	0.343

Net Benefits	£	270,400.00	£ 57,288.88	£ 106,405.33	£ 101,089.33	£ 77,088.96	£ 57,037.35	£ 48,881.02	£ 40,620.93	£ 34,893.40	£ 29,393.37	£ 26,123.76
Net Present Value (NPV)	£	270,400.00	£ 113,111.31	£ 106,393.98	£ 5,218.85	£ 71,881.31	£ 129,919.88	£ 177,790.88	£ 214,801.81	£ 252,704.62	£ 282,087.88	£ 308,211.05
Rate of Return (IRR)		10.05%	11.81%	13.51%	15.17%	16.79%	18.37%	19.91%	21.41%	22.87%	24.30%	25.70%
Profitability Index (PI)		0.212	0.607	0.583	0.055	1.269	1.477	1.637	1.808	1.933	2.044	2.149
BCR		0.788	0.931	0.939	0.999	0.947	0.957	0.968	0.978	0.985	0.991	0.996

Project Finance cont...

Project return on investment:

BCR – 1.14

PI – 2.14

ARR – 68.71%

Profit - £929,026

Total cash flow - £1,199,426

Initial Investment	£ 270,400.00
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Time Scale	10
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Year	Income	Depreciation	Profit
1	£ 90,344.00	£ 27,040.00	£ 63,304.00
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Difference	£ 270,400.00
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Average Investment	£ 135,200.00
Average Profit	£ 92,902.60
ARR	68.71%
Total Cashflow	£ 1,199,426.00
Profit	£ 929,026.00

Project Funding

Whilst the parent group has offered to fund the project in its entirety with a small amount of interest, Magnet Schultz UK has to be mindful of all options available.

Consideration must be made towards:

- Business loans
- Sponsors
- Government investment
- Government grants
- Director loans
- Peer to peer borrowing
- Bridging loans
- Angel Investors

Conclusion

- i. Increase in labour and production overheads off-set by increased production capacity. Net affect is a 9% reduction on production cost
- ii. Magnet Schultz UK investment return by year 4
- iii. Quality control returned within the Magnet Schultz Group
- iv. Increased capacity by 50% reducing product lead time.

Questions?

