REFERENCES

Bahl, H.C., Ritzman, L.P. and Gupta, J.N.D. (1987). 'Determining lot sizes and resource requirement: a review', *Operations Research,* Vol. 35(3), pp. 329-345.

Buzacott, J.A., and Shanthikumar, J.G. (1994). 'Safety Stock versus Safety Time in MRP Controlled Production Systems', *Management Science,* 40(12), pp. 1676-89.

Collier, D.A. (1980). 'A Comparison of MRP Lot Sizing Methods Considering Capacity Change Cost', *Journal of Operations Management,* Vol. 1, pp. 23-29.

Davis, Aquilano, Chase, (2003). Fundamentals of Operations Management (4th Edition), McGraw-Hill.

Esteal, C. and Davis, G. (1989). Software Engineering Analysis and Design, McGraw-Hill.

Grasso, E.T. and Taylor, B.W. (1984). 'A simulation based investigation of supply/timing uncertainty in MRP systems', *International Journal of Production Research,* Vol. 22(3), pp. 485-497.

Gupta, S.M. and Brennan, L. (1995). 'MRP Systems under Supply and Process Uncertainty in an Integrated Shop Floor Control Environment', *International Journal of Production Research,* Vol. 33(1), pp. 205-220.

Haddock, J. and Hubicki, D.E. (1989). 'Which lot-sizing techniques are used in material requirements planning?', *Production and Inventory Management Journal,* Vol. 23(1), pp.15-21.

Karmarkar, U.S. (1993). 'Manufacturing Lead Times, Order Release and Capacity Loading', In S. Graves, A. Rinnooy, and P. Zipkin (eds.), *Logistics of Production and Inventory,* Vol. 4, Ch. 6, Elsevier (North Holland).

Melnyk, S.A. and Piper, C.J. (1985). 'Leadtime errors in MRP – the lot sizing effect', *International Journal of Production Research, Vol. 23(2), pp. 253-264.*

Molinder, A. (1997). 'Joint optimization of lot-sizes, safety stocks and safety leadtimes in an MRP system', *International Journal of Production Research,* Vol. 35(4), pp. 983-994.

Orlicky, J. (1975). Material Requirements Planning, McGraw-Hill.

Peterson, L.D. (1979). 'Design considerations for improving the effectiveness of MRP', *Production and Inventory Management Journal,* Vol. 16(3), pp. 48.

Petroni, A. (2002). 'Critical factors of MRP implementation in small and medium-sized firms', *International Journal of Operations & Production Management,* Vol. 22(3), pp. 329-348.

Petroutsos, E. (2000). Mastering Database Programming with Visual Basic 6, Sybex Inc.

Ramakrishnan, R. and Gehrke, J. (2000). Database Management Systems, McGraw-Hill.

Silver, E.A. and Meal, H.A. (1973). 'A Heuristic for Selecting Lot-Size Quantities for the Case of a Deterministic Time-Varying Demand and Discrete Opportunities for Replenishment', *Production and Inventory Management Journal,* Vol. 14(2), pp. 64-74.

Silver, E.A., Pyke, D.F. and Peterson, R. (1998). Inventory Management and Production Planning and Scheduling (3rd Ed), Wiley.

Smith, S.B. (1989). Computer Based Production and Inventory Control, Prentice Hall.

Sounderpandian, J. (1994). 'MRP on Spreadsheets: An Update', *Production and Inventory Management Journal,* Vol. 35(3), pp. 60-64.

Theisen, E.C. (1974). 'New Game in Town – the MRP Lot Size', *Production and Inventory Management,* Vol. 15, pp. 1-13.

Vollmann, T.E., Berry, W.L. and Whybark, D.C. (1997). Manufacturing Planning and Control Systems (4th Ed), Irwin.

Wemmerlov, U. (1979). 'Design Factors in MRP Systems: A Limited Survey', *Production and Inventory Management Journal,* pp. 15-34.

Whybark, D.C. and Williams, J.G. (1976). 'Material requirements planning under uncertainty', *Decision Sciences,* Vol. 7, pp. 595-606.

Yenradee, P., Dangton, R. and Sirikrai, V. (2000). 'Development of a Finite Capacity MRP System for Small-to Medium-Sized Industries in Thailand', *Proceedings of the 5th Annual International Conference on Industrial Engineering - Theory, Applications, and Practice*, Hsinchu, Taiwan, R.O.C. (CD-ROM).

APPENDIX A

INTERVIEW QUESTIONAIRES

Production Manager (Interview 1)

What are the problems within the TKM Department?

- Cannot meet deadlines because items are out of stock and there is a delay in obtaining the components.

What is the current process from customer order placement to order delivery?

- Once an order is confirmed at the sales department, I draft a production schedule for the month according to deadlines.
- At the beginning of each day, the jobs for that day are sorted.
- The component requirements are calculated for the day, and material requests are placed at the stock department.
- If the components are in stock for a job then the job can be started.
- If some components are not in stock then the job has to be delayed while the components are ordered or produced by ABC subsidiary. When the new components arrive they are recorded at the stock department, and they stay there until the re-scheduled job comes up.
- Completed items stay in the stock department until an order is complete. When an order has been completed it is sent to the customer.

Production Manager (Interview 2)

What do you expect from an MRP system?

- To automate the planning of material requirements
- To help decide if a production schedule is feasible in terms of ABC subsidiary's, and TKM department's capacity

How should the system perform?

- Operate on a weekly time period
- Should be simple so people with limited computer experience can operate the system without difficulty
- An option should be made to save and load draft production schedules
- The production schedule from the MRP system should be used as a substitute for the old paper version
- The LFL techniques should be used for the time being because it is considered to maintain system stability better that dynamic lot-sizing techniques

What information do you require in the component order schedule?

- Component Code
- Component Name
- Lot-sizing technique
- Estimated Leadtime
- Gross requirements
- Projected inventory
- Net requirements
- Order schedule

Purchasing Manager

What information do you require to place orders for components?

- Component Code
- Component Description
- Quantity
- Supplier
- Date to order component
- Expected date of delivery

Table B-1 Master production schedule used in the final test run of the MRP system

Master Production Schedule at 27/05/2003

Order ID	Model Code	Description	Qty	Man Hour	Start Date	End Date	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
030204	112005	PLC	20	280	03/06/2003	27/06/2003	5	5	5	5				
030220	222007	AC Power Supply 0-250V 2A	50	75	11/06/2003	27/06/2003		15	15	20				
030121	222006	Signal Function Generator	55	110	11/06/2003	24/06/2003		19	18	18				
030120	210001	Motor - 3 Phase 2 Speed	1	10	19/06/2003	27/06/2003			1					
030125	222012	Double Outlet & Schuko Socket 16A 220V AC	150	75	24/06/2003	10/07/2003				50	50	50		
021202	112001	PLC	10	60	30/06/2003	04/07/2003					10			
021212	211007	Vehicle Alternator 12V	50	32	30/06/2003	03/07/2003					50			
021220	112002	PLC	3	32	30/06/2003	03/07/2003					3			
030106	112005	PLC	20	300	03/07/2003	15/07/2003					9	9	2	
031222	222009	AC/DC Power Supply	15	30	03/07/2003	18/07/2003					5	5	5	
031330	222004	Power Supply Console	5	40	09/07/2003	11/07/2003						5		
030124	222001	Power Supply Console	25	16	10/07/2003	14/07/2003						15	10	
031252	222020	Traffic Light	1	2	10/07/2003	10/07/2003						1		
031253	222025	Silo System	1	2	10/07/2003	10/07/2003						1		
031254	222023	Star Delta Control	1	2	10/07/2003	10/07/2003						1		
031256	222019	Filling System	1	2	10/07/2003	10/07/2003						1		
030116	211006	Vehicle Alternator 12V	30	150	14/07/2003	18/07/2003							30	
030115	211006	Vehicle Alternator 12V	30	8	14/07/2003	31/07/2003							15	15
021221	112002	PLC	10	60	14/07/2003	31/07/2003							5	5
030206	222003	Power Supply Console	5	40	21/07/2003	25/07/2003								5
030127	222002	Power Supply Console	25	100	23/07/2003	31/07/2003								25

Signature _____ Date _____

Table B-2 Component order schedule from final test run

(1)

200100			Order Quantity:		Lot-for-lot		Leadtime:		1
Aluminium Alloy Motor Casing							Safety Stock:		1
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements				1					
Projected Inventory	1	1	1	1	1	1	1	1	1
Net Requirements		0	0	1	0	0	0	0	0
Order Schedule		0	1	0	0	0	0	0	

(2)

200150			Order Quantity:		Lot-for-lot		Leadtime:		1
Fan Casing							Safety Stock:		1
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements				1					
Projected Inventory	3	3	3	2	2	2	2	2	2
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(3)

200200			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic Casing							Safety Stock:		10
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements							45	15	
Projected Inventory	60	60	60	60	60	60	15	10	
Net Requirements		0	0	0	0	0	0	10	
Order Schedule		0	0	0	0	0	10		

(4)

200201			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic Casing							Safety Stock:		10
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					50				
Projected Inventory	60	60	60	60	60	10	10	10	10
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(5)

200205			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					10				
Projected Inventory	11	11	11	11	11	3	3	3	3
Net Requirements		0	0	0	0	2	0	0	0
Order Schedule		0	0	0	2	0	0	0	

(6)

200206			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					10				
Projected Inventory	11	11	11	11	11	3	3	3	3
Net Requirements		0	0	0	0	2	0	0	0
Order Schedule		0	0	0	2	0	0	0	

(7)

200210			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					10				
Projected Inventory	12	12	12	12	12	3	3	3	3
Net Requirements		0	0	0	0	1	0	0	0
Order Schedule		0	0	0	1	0	0	0	

(8)

200211			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					6		10	10	
Projected Inventory	13	13	13	13	13	7	7	3	3
Net Requirements		0	0	0	0	0	0	6	10
Order Schedule		0	0	0	0	0	6	10	

(9)

200214			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					3		5	5	
Projected Inventory	14	14	14	14	14	11	6	3	3
Net Requirements		0	0	0	0	0	0	0	2
Order Schedule		0	0	0	0	0	0	2	

(10)

200215			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements		5	5	5	5	9	9	2	
Projected Inventory	15	10	5	3	3	3	3	3	3
Net Requirements		0	0	3	5	9	9	2	0
Order Schedule		0	3	5	9	9	2	0	

(11)

200218			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements		5	5	5	5	9	9	2	
Projected Inventory	14	9	4	3	3	3	3	3	3
Net Requirements		0	0	4	5	9	9	2	0
Order Schedule		0	4	5	9	9	2	0	

(12)

200219			Order Quantity:		Lot-for-lot		Leadtime:		1
Plastic PLC Casing							Safety Stock:		3
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements		5	5	5	5	9	9	2	
Projected Inventory	13	8	3	3	3	3	3	3	3
Net Requirements		0	0	5	5	9	9	2	0
Order Schedule		0	5	5	9	9	2	0	

(13)

202001			Order Quantity:		Lot-for-lot		Leadtime:		1
12 Terminal Block							Safety Stock:		1
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements				1					
Projected Inventory	2	2	2	1	1	1	1	1	1
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(14)

202010			Order Quantity:		Lot-for-lot		Leadtime:		1
Terminal Base							Safety Stock:		1
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements				1					
Projected Inventory	2	2	2	1	1	1	1	1	1
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(15)

202011			Order Quantity:		Lot-for-lot		Leadtime:		1
Terminal Cover							Safety Stock:		1
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements				1					
Projected Inventory	2	2	2	1	1	1	1	1	1
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(16)

300001			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						15	10		
Projected Inventory	5	5	5	5	5	5	5	5	5
Net Requirements		0	0	0	0	15	10	0	
Order Schedule		0	0	0	15	10	0		

(17)

300002			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements								25	
Projected Inventory	15	15	15	15	15	15	15	15	5
Net Requirements		0	0	0	0	0	0	0	15
Order Schedule		0	0	0	0	0	0	15	

(18)

300003			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements								5	
Projected Inventory	15	15	15	15	15	15	15	15	10
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(19)

300004			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						5			
Projected Inventory	15	15	15	15	15	15	10	10	10
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(20)

300006			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements			19	18	18				
Projected Inventory	15	15	5	5	5	5	5	5	5
Net Requirements		0	9	18	18	0	0	0	0
Order Schedule		9	18	18	0	0	0	0	

(21)

300007			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements			15	15	20				
Projected Inventory	15	15	5	5	5	5	5	5	5
Net Requirements		0	5	15	20	0	0	0	0
Order Schedule		5	15	20	0	0	0	0	

(22)

300009			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						5	5	5	
Projected Inventory	15	15	15	15	15	10	5	5	5
Net Requirements		0	0	0	0	0	0	5	0
Order Schedule		0	0	0	0	0	5	0	

(23)

300012			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					50	50	50		
Projected Inventory	15	15	15	15	5	5	5	5	5
Net Requirements		0	0	0	40	50	50	0	0
Order Schedule		0	0	40	50	50	0	0	

(24)

300019			Order Quantity:		Lot-for-lot		Leadtime:		1
Bakalite Board							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						1			
Projected Inventory	15	15	15	15	15	15	14	14	14
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	0	

(25)

300020			Order Quantity:	Lot-for-lot		Leadtime:		1
Bakalite Board						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	6	6	6	6	6	5	5	5
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	

(26)

300023			Order Quantity:	Lot-for-lot		Leadtime:		1
Bakalite Board						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	7	7	7	7	7	6	6	6
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	

(27)

300025			Order Quantity:	Lot-for-lot		Leadtime:		1
Bakalite Board						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	15	15	15	15	15	14	14	14
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0	0	

(28)

301030			Order Quantity:	Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						5		25
Projected Inventory	30	30	30	30	30	25	25	5
Net Requirements		0	0	0	0	0	0	5
Order Schedule		0	0	0	0	5		

(29)

301031			Order Quantity:	Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements					5	5	5	
Projected Inventory	18	18	18	18	13	8	5	5
Net Requirements		0	0	0	0	0	2	0
Order Schedule		0	0	0	2	0		

(30)

301033			Order Quantity:	Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements				50	50	50		
Projected Inventory	15	15	15	5	5	5	5	5
Net Requirements		0	0	40	50	50	0	0
Order Schedule		0	40	50	0	0		

(31)

301036		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	24	24	24	24	24	23	23	23
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(32)

301037		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	16	16	16	16	16	15	15	15
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(33)

301041		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	19	19	19	19	19	18	18	18
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(34)

301046		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						15	10	
Projected Inventory	17	17	17	17	17	5	5	5
Net Requirements		0	0	0	0	3	10	0
Order Schedule		0	0	0	3	10	0	

(35)

301047		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements								5
Projected Inventory	16	16	16	16	16	16	16	11
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(36)

301048		Order Quantity:		Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements		15	15	20				
Projected Inventory	30	15	5	5	5	5	5	5
Net Requirements		0	5	20	0	0	0	0
Order Schedule		5	20	0	0	0		

(37)

301049			Order Quantity:	Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						1		
Projected Inventory	20	20	20	20	20	19	19	19
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(38)

301050			Order Quantity:	Lot-for-lot		Leadtime:		2
Aluminim Module Case						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements		19	18	18				
Projected Inventory	20	20	5	5	5	5	5	5
Net Requirements		0	4	18	18	0	0	0
Order Schedule		18	18	0	0	0		

(39)

302051			Order Quantity:	Lot-for-lot		Leadtime:		3
PCB						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements								25
Projected Inventory	40	40	40	40	40	40	40	15
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(40)

302052			Order Quantity:	Lot-for-lot		Leadtime:		3
PCB						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements								5
Projected Inventory	30	30	30	30	30	30	30	25
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(41)

302053			Order Quantity:	Lot-for-lot		Leadtime:		3
PCB						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements						5		
Projected Inventory	30	30	30	30	30	25	25	25
Net Requirements		0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0		

(42)

302055			Order Quantity:	Lot-for-lot		Leadtime:		3
PCB						Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**
Gross Requirements		19	18	18				
Projected Inventory	30	30	11	5	5	5	5	5
Net Requirements		0	0	12	18	0	0	0
Order Schedule		18	0	0	0	0		

(43)

302056			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements			15	15	20				
Projected Inventory	50	50	35	20	5	5	5	5	5
Net Requirements		0	0	0	5	0	0	0	0
Order Schedule		5	0	0	0	0			

(44)

302058			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						5	5	5	
Projected Inventory	30	30	30	30	30	25	20	15	15
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0			

(45)

302061			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements					50	50	50		
Projected Inventory	30	30	30	30	5	5	5	5	5
Net Requirements		0	0	0	25	50	50	0	0
Order Schedule		25	50	50	0	0			

(46)

302063			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						15	10		
Projected Inventory	10	10	10	10	10	10	5	5	5
Net Requirements		0	0	0	0	0	10	10	0
Order Schedule		0	0	10	10	0			

(47)

302068			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						1			
Projected Inventory	30	30	30	30	30	30	29	29	29
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0			

(48)

302069			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						1			
Projected Inventory	5	5	5	5	5	5	5	5	5
Net Requirements		0	0	0	0	0	1	0	0
Order Schedule		0	0	1	0	0			

(49)

302072			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						1			
Projected Inventory	8	8	8	8	8	8	7	7	7
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0			

(50)

302074			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements						1			
Projected Inventory	30	30	30	30	30	30	29	29	29
Net Requirements		0	0	0	0	0	0	0	0
Order Schedule		0	0	0	0	0			

(51)

302078			Order Quantity:		Lot-for-lot		Leadtime:		3
PCB							Safety Stock:		5
Period	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Gross Requirements		5	5	5	5	22	9	7	5
Projected Inventory	30	25	20	15	10	5	5	5	5
Net Requirements		0	0	0	0	17	9	7	5
Order Schedule		0	17	9	7	5			

Table B-3 Component order list for current week

Component ID	Description	Qty	Supplier	Order Date	Expected DoD
300006	*Bakalite Board*	9	ABC	30/05/2003	06/06/2003
300007	*Bakalite Board*	5	ABC	30/05/2003	06/06/2003
301048	*Aluminim Module Case*	5	ABC	30/05/2003	13/06/2003
301050	*Aluminim Module Case*	18	ABC	30/05/2003	13/06/2003
302055	*PCB*	18	ABC	30/05/2003	20/06/2003
302056	*PCB*	5	ABC	30/05/2003	20/06/2003
302061	*PCB*	25	ABC	30/05/2003	20/06/2003

BIOGRAPHY

Stanley Kriangsak Crosby was born on 9th September 1978, to Stanley Nelson and Tidporn Crosby. He went to St Christopher's School in Bahrain up until he was 16, and then went to the Rutland College in the UK to complete his A-levels. In 1997, he studied at the University of Nottingham, and received a Bachelor Degree in Mechanical Engineering in 2001. After receiving the degree from the University of Nottingham, he came to Thailand, then enroled on the Master Degree course at the Regional Centre for Manufacturing Systems Engineering, Chulalongkorn University.