WS WORK – TUDY

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WORK-FACTOR

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De Work-Factor Raad wil een platform bieden aan Work-Factor gebruikers, arbeidsanalisten, cost engineers en industrial engineers om problemen, oplossingen, ideeën en tips te bespreken. Daartoe zullen we regelmatig een WS Tip sturen aan “WF-leden” en geïnteresseerden. Mocht dit bericht niet op het juiste adres aankomen stuur het dan door naar geïnteresseerden en laat ons dat weten, svp.

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Het onderwerp van vorige WS Tips staat op de WF Website onder: WF en Management/Praktisch - Algemeen/WS Tips.

A practical example of the Theory Of Constraints

THE P&Q PROBLEM, Part 4

SOLUTION QUESTION 3:

Examining the (gross) margin (is Selling Price minus Materials Costs), then we get the following:
Product P: ($ 90,-) – ($ 45,-) = $ 45,-/unit
Product Q: ($ 100,-) – ($ 40,-) = $ 60,-/unit.

Calculation of work content (given that the costs per hour for the man/machine are about the same) shows the following result:
Product P: 55 min./unit
Product Q: 50 min./unit.

According to all explorations and measurements product Q is superior to P.
Delivery of the whole market demand for Q, gives a (gross) result of:
50 x $ 60,- = $ 3.000,-.

Having answered the complete market demand for Q, we are not able to deliver the complete demand for P.
The problem is the capacity of machine B.

Available time:	5 x 8 x 60	= 2400 min. mach. B
Used for Q:	50 x 30	= 1500 min. mach. B
	remaining	900 min. for production of P.

We can produce 900/15 = 60 units of P on mach. B.

Margins:	Q: 50 x $ 60,-	= $ 3.000,-
	P: 60 x $ 45,-	= $ 2.700,-
		$ 5.700,-
	-/- OE	$ 6.000,-
		-/- $ 300,- (loss).

Something went wrong: where is the profit?

VI. Let us ask the Industrial Engineer:

Try the schedule: P, Q.

Now if we do the opposite what is the result?

The manufacturing schedule will be: P, Q.

Available time:	5 x 8 x 60	= 2400 min. mach. B
Used for P:	100 x 15	= 1500 min. mach. B
	remaining	900 min. for production of Q.

We can produce 900/30 = 30 units of Q on mach. B.

P:100 x $ 45,- =	$ 4.500,-
Q: 30 x $ 60,- =	$ 1.800,-
	$ 6.300,-
-/- OE	$ 6.000,-
+	$ 300,- (profit).

We now have a far better result; what is the logic behind this?

THEORY OF CONSTRAINTS (TOC)

If there were no capacity constraints then the maximum profit would be:

Q:	50 x $ 60,-	=	$ 3.000,-
P:	100 x $ 60,-	=	$ 4.500,-
			$ 7.500,-
	-/- OE		$ 6.000,-
		+	$ 1.500,- (profit).

Due to a capacity constraint we cannot reach maximum profit.

Mach. A:	Available 2400 min.				
	Required	Q:	50 x 10 min.	=	500 min.
		P:	100 x 15 min.	=	1500 min.
					2000 min. No capacity constraint
Mach. B:	Available 2400 min.				
	Required	Q:	50 x 30 min.	=	1500 min.
		P:	100 x 15 min	=	1500 min.
					3000 min. **Capacity constraint**
Mach. C:	Available 2400 min.				
	Required	Q:	50 x 5 min.	=	250 min.
		P:	100 x 15 min	=	1500 min.
					1750 min. No capacity constraint
Mach. D:	Available 2400 min.				
	Required	Q:	50 x 5 min.	=	250 min.
		P:	100 x 10 min.	=	1000 min.
					1250 min. No capacity constraint

We have now completed the first step of the Theory Of Constraints (TOC):

Step 1: Identify your constraints
Mach. B is the capacity constraint in this system.

The next step is
Step 2: Exploit your constraints

See the next WS Tip

Voor reacties naar

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