Zeiteisen

Lead this business to sustained growth!

Zeiteisen GmbH is an emerging company specializing in the development of jewelry and watches. The company established a new division a year ago, which produces a special and novel watch in a new production facility. So far, the production volume is small; however, the founder, Mr. Peter Pünktlich, expects a rapid and sustained growth.

Mr. Pünktlich has hired you as managing director to realize this growth of the new department. At your first working meeting, he explains to you how the company works in general and how the relationships between the new department and the parent company are regulated:

"Zeitisen operates on three important principles:

1) Timeliness before price,
2) Sales by technically competent salespeople,
3) Reluctance to invest in production capacity."

Regarding 1) and 2), he explains further:

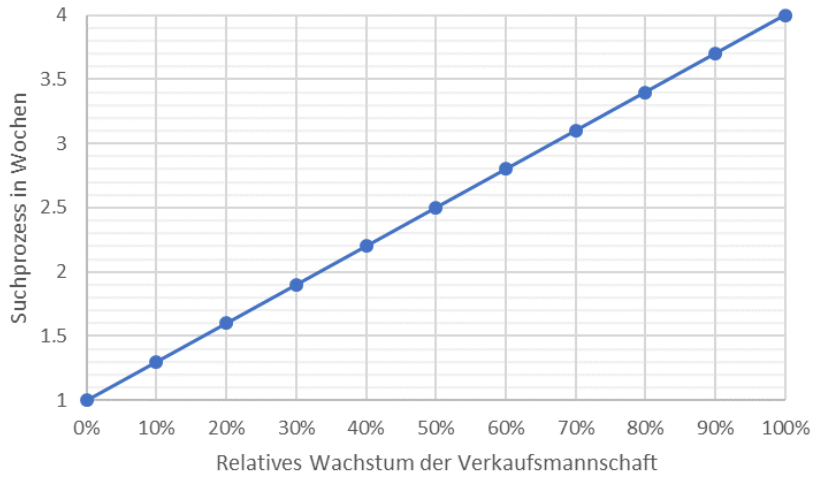
„Our customers are people who do not mind a relatively high price. Therefore, price is not an important factor for us. We would not be able to increase demand by lowering prices. On the other hand, price increases are a psychological matter: we don't want to take any risks until we are the clear market leader - and we are far from being that. That's why we're assuming for the medium term that our current prices will remain at their level and will keep them stable, in your case *€ 431*. You'll have to get to grips with that.

Much more important for us is the punctuality. Since all our watches take into account individual special requests of each customer, production starts when the orders come in. In our sales meetings we agree on a delivery time of 2 weeks. According to our experience so far, this delivery time does not fully satisfy all potential customers, but 90% of buyers agree with it. Currently, your watch model has 720 *open orders* in the backlog.

Our watches are customized, and our customers are also interested in technical information, on the basis of which they decide on a possible purchase. That is why we do not advertise: we have technically competent salespeople. And if all goes well, a salesperson can sell up to 40 pieces per month. Sure, with an average success rate of 90%, you'd better expect 36 new orders per salesperson.

In general, we want to grow as a company, and that is, after all, what we expect from you: the greatest possible sales - of course, without unnecessary overcapacity and the resulting costs. That's why we try to have as many salespeople as possible under contract for each department. You currently have 40 salespeople. For the salary costs of the salesmen (monthly wage € 3.000 gross - with 36 monthly orders per salesman therefore also € 3.000 / 36 pieces = € 83,33 per sold watch) we take 25% of the expected sales revenue. So if you book increasing sales revenue, you can also start looking for additional salespeople.

However, it takes up to 4 weeks to find, hire and train the desired salespeople. The exact duration of the search depends on how much you want to increase the sales force. It can never be done in less than a week; but if you want to double the salesforce (i.e. 100% growth), it will be 4 weeks - and if the team is to be strengthened by 50%, it will therefore take between 2 and 3 weeks to get everyone "on board". The following graphic shows you this quite clearly:



By the way, in the - unexpected - case of a drop in revenue, you should also terminate sellers."

Regarding the 3rd point, Mr. Pünktlich explains the following:

"And now about the investment in production capacity:

You currently have a maximum weekly capacity of 1,512 units. However, this production volume will only be reached if you run 3 shifts 7 days a week - and both night shifts and weekend work have extra costs. Let me explain this in more detail - using the following table:

Shifts per week	**Days per week**		
Shifts per day	**5**	**6**	**7**
1	5	6	7
2	10	12	14
3	15	18	21

So you can choose relatively flexibly between 5 and 21 weekly shifts, and this means two things. First, each number of weekly shifts corresponds to a certain capacity utilization fraction (CUF), as indicated in the following table:

Shifts per day	**Days per week**	**Shifts per week**	**Capacity utilization fraction**	**Prducible**
1	5	5	0,238095238	360
2	5	10	0,285714286	432
3	5	15	0,333333333	504
1	6	6	0,476190476	720

2	6	12	0,571428571	864
3	6	18	0,666666667	1.008
1	7	7	0,714285714	1.080
2	7	14	0,857142857	1.296
3	7	21	1,000000000	1.512

Of course: in order to keep the desired delivery time of 2 weeks, you should adjust the production as exactly as possible to the open orders: if you produce and deliver half of the open orders per week, then you can always complete the open orders within 2 weeks.

Now to the second aspect: the production costs, and in particular the labor costs of the workers. The variable unit cost is €200, and €140 is for labor costs. However, there is a 25% premium for late shift, and 50% for night shift. For weekend work, there is a 25% premium on Saturday, and 50% on Sunday.

Overall, the following considerations should be noted. The following table first shows how much labor costs increase when additional shifts are worked. The "1" represents the basic wage:

Cost coefficient per shift time	**Labor days per week**		
Shifts per day	**5**	**6**	**7**
1	1,00	1,25	1,50
2	1,25	1,50	1,75
3	1,50	1,75	2,00

Now, the fact is that the surcharges are paid only for the additional shifts, and therefore the structure of labor costs is somewhat complicated:

Cost coefficient per shift time	**Labor days per week**		
Shifts per day	**5**	**6**	**7**
1	5,00	1,25	1,50
2	6,25	1,50	1,75
3	7,50	1,75	2,00

For example, if you work 2 shifts per day, but only from Monday to Friday, then you have 5 shifts with the basic wage, and 5 shifts with a surcharge of 25%, equivalent zy 6.25 shifts at basic wage. So with 3 shifts per week and 7 days of work, you would have to charge all 9 cells in the table above. Since this is not easy to calculate, we have put it together for you in the table below:

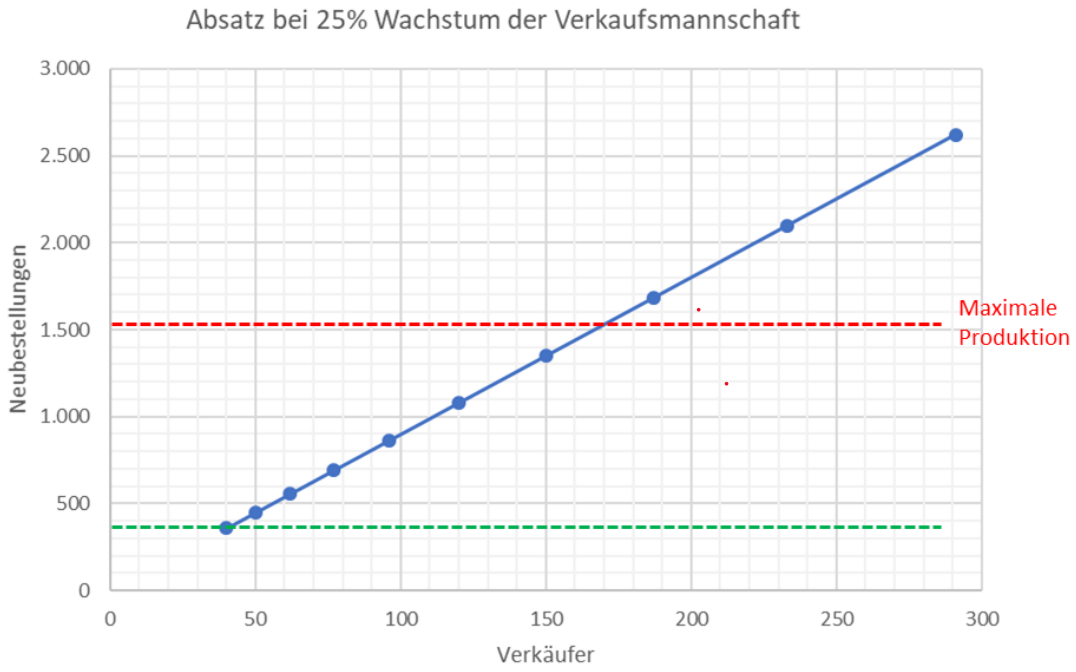
Shifts per week	**Cost coefficient**	**Extra shifts multiplier**	**Salary costs per unit**
5	5,00	1,000	140,00
6	6,25	1,042	145,83
7	7,75	1,107	155,00
10	11,25	1,125	157,50
12	14,00	1,167	163,33
14	17,25	1,232	172,50

15	18,75	1,250	175,00
18	23,25	1,292	180,83
21	28,50	1,357	190,00

So it's like the labor cost of production per piece don't really double when you run more shifts.

Let’s go on: so far we have one shift per day and work only 5 days per week. If you do the math, you come up with a weekly production of 360 pieces. So, with 720 open orders, we just manage to produce half of them and therefore we can deliver all watches in the desired delivery time of 2 weeks!

Keep in mind, however, that 25% (i.e. € 38,790) of the weekly sales revenue are available for sales force salaries. Per month, that's four times as much and enough for 51 salespeople, 11 more than currently. However, if you hire the additional salespeople, more will be sold and more will have to be produced in order not to spoil the delivery deadlines. Let's assume you increase the salesforce by a quarter each week (25%) - then you would have a growth in new orders that would soon exceed the capacity limit:



In the area between the green and the red dashed line, you can produce the required number of pieces by adjusting the shifts (of course in such a way that you stay as close as possible to the normal delivery delay of 2 weeks). Above the red line, however, you can only get further by expanding production capacity.

So if you want to extend the production of 21 weekly shifts further, you have to consider the purchase of additional production capacity. This is always a combination of machinery and labor, and we assume a lead time of 4 weeks to buy and install, find and train the skilled workers.

As a young company, we don't have excess money - so we try to use it sparingly. That's why we are reluctant to invest in production capacity.

The machines we use have a lifespan of about 8 years. For a weekly production of one watch, we need a machine that costs € 20,000 to buy. If you calculate 52 weeks per year, that makes 416 weeks in 8 years. With one watch per week, you then come to € 20,000 / 416 pieces = € 48.07 per watch. Of course, this is only an average if a clock is really produced every week for 8 years - and you can hardly know that beforehand!

If you purchase additional capacity, it will cost you € 20,000 per unit, and it will take 8 weeks after the decision until everything is purchased, installed and ready for use.

The unit costs, which depend directly on production, are € 60 for the consumption of electricity and materials, plus the labor costs - which we have just discussed - i.e. between € 200 and € 250 per watch, depending on the number of weekly shifts. Taking into account the wages of the salesfocre (€ 83,33 per clock), we arrive at a unit cost of € 283,33 to € 333,33. So, at the sales price of € 431, there remains a difference of between € 147,67 and € 97,67 per watch. From this, the acquisition costs of the machines have to be covered, which works out quite well. If we produce and sell the ideal number of 416 watches with each machine, that makes between €61,430.72 and €40,630.72, so after deducting the €20,000, we still have between €41,430.72 and €20,630.72 left over - depending on how many shifts were run per week."

That was a lot of meuer information for you. Mr. Pünktich must have noticed this from your facial expression, and so he summarizes everything once again:

"I expect you to show consistent growth in sales over the coming years - we will measure that by the total number of watches sold.