

Reducing Labor Costs While Increasing Employee Satisfaction



Complevo helps businesses tap into their full growth potential. With re-imagined digital processes that fit seamlessly into your existing environment, Complevo is minimally invasive, maximally efficient, and always user-oriented. At the interfaces where there is no standard software and there are no concepts for new solutions, our tailor-made software will simplify your work.

Industry: Business Services
Location: Europe
Use Cases: Cost Reduction, Workforce Scheduling
Website: complevo.de/en

Results

- Decreased staff costs
- Decreased overtimes
- Increased hiring
- Increased staff happiness

Complevo decreased staff costs and overtimes while increasing hiring and staff happiness.

Stress, hectic pace, sudden change of plans, and overtime used to be the norm in the Discher Bakery, a medium-sized company in Baden-Württemberg, Germany. The personnel planning was done manually and could, for example, be compromised by a sudden notification of illness. This scenario can be found in many small and medium-sized companies. This issue is now something of the past.

The Business Sector

COMPLEVO, a Berlin-based consultancy firm, has designed an automatic personnel planning tool called FREI ZEIT, which significantly increases the transparency and flexibility of planning. Stress, hectic situations and unpleasant surprises do not occur and even special requests can be effortlessly taken into consideration.

FREI ZEIT has been designed for medium-sized businesses and allows automation of optimal personnel planning by using mathematical

optimization. The results are even more surprising, seeing as prior to this, in the Discher Bakery optimization models were unheard of.

In Germany, small businesses employees can easily influence how they use their flex-time accounts. However, these accounts have to be managed in order to avoid having an excess of unworked hours and expensive overtime. In this scenario FREI ZEIT steps in and can, for example, try to manage flexi-time. It is also efficient at dealing with issues arising due to sick leave.

The Model

The FREI ZEIT software takes into account all eventualities. The circumstances of the bakery are modeled in a mixed-integer linear programming model. The differing opening times of the branches, the number of sales staff needed together with their desired working hours are incorporated into this model. In this way, individual staff wishes regarding

“ We are very satisfied with the customer support, documentation, and support offered by Gurobi. ”

Rico Gujjula

Managing Director, Complevo, Ltd



holiday leave can be taken into account, as well as personal scenarios like “On Wednesday afternoon I want to take my grandson to football” or “I would like to have every other Saturday off”. All these scenarios can be formulated as linear constraints with partially integer and binary variables. Gurobi then solves the model, taking them into account.

The bakery staff does not have to understand any of the math going on in the background. Employees can enter individual staff restrictions into a calendar, the program constructs the model and transfers it to the Gurobi optimizer so that a solution can be found. After a few seconds it comes up with the optimal duty-roster. In this way, it not only ensures that individual requests are met, but it also makes sure that the weekly working hours are as evenly distributed amongst employees as possible. If any staff availability changes, the updates can be easily entered and the schedule resolved.

In addition, the employer can choose between various optimization objective functions, like for example a reduction in flex-time. If several objective functions with a variety of priorities are chosen, then the optimization is carried out hierarchically, one after the other.

The use of Gurobi can also help identify and address any infeasibility. In an infeasible model there are constraints that contradict each other. For instance, if nobody wants to work on the first Saturday of the month when the branch should be open, then that contradicts itself. Problems like this are resolved in individual discussions. In this case the program could set up a model where, if there are four members of staff, each one must work on the first Saturday in every fourth month.

Results

In the Discher bakery, staff costs were cut by four percent and the number of temporary staff taken on has been reduced by six percent. At the same times, a reduction in the amount of overtime has reduced costs sufficiently that even more staff can cost-effectively be hired. Staff are now happier due to better schedules while the company is paying less overtime.

The aspect that staff are most pleased



Gesamtplan Mitarbeiter

Zeitraum: 15.12.2014 bis 21.12.2014
Erstellt am: 26.02.2015 15:04:34
Erstellt von: Admin
Unterschrift:

Hauptstandort	Name	Soll [h]	Ist [h]	Pause [h]	Ausl. [%]	89,5%	Mo (15)	Di (16)	Mi (17)	Do (18)	Fr (19)	Sa (20)
Charlottenburg	Baier, Dietlinde	26,09	24,75			94,9%	06:15-12:00 Ch Verkaufen (S) (VS) 14:30-18:15 Ch Verkaufen (S) (VS)	06:15-12:00 Ch Verkaufen (S) (VS) 14:30-18:15 Ch Verkaufen (S) (VS)	14:30-18:15 Ch Verkaufen (S) (VS)			08:00-10:00 Ch Verkaufen (L) (VL)
Charlottenburg	Koch, Johanna											
Friedrichshain	Fuhrmann, Brigitte	40,00	19,50	0,50	48,8%		15:00-18:15 F Verkaufen (L) (VL)	15:00-18:15 F Verkaufen (L) (VL)	05:45-13:00 F Verkaufen (S) (VS)		15:00-18:15 F Verkaufen (L) (VL)	07:30-10:30 F Verkaufen (L) (VL)
Mitte	Herzberg, Silke	40,00	9,50	0,25	23,8%			05:30-12:00 M Verkaufen (L) (VL)		15:00-18:15 F Verkaufen (L) (VL)		
Mitte	Junker, Mandy	17,39	30,50		175,4%				06:15-12:00 Ch Verkaufen (S) (VS)	06:15-12:00 Ch Verkaufen (S) (VS)	06:15-12:00 Ch Verkaufen (S) (VS)	06:30-12:15 Ch Verkaufen (S) (VS)
Mitte	König, Torsten	40,00	24,00	2,00	60,0%		05:30-12:00 M Verkaufen (S) (VS)	05:30-12:00 M Verkaufen (S) (VS)	05:30-12:00 M Verkaufen (S) (VS)	05:30-12:00 M Verkaufen (S) (VS)		
Mitte	Moench, Kerstin	40,00	38,75	1,75	96,9%		05:30-12:00 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	05:30-12:00 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	05:30-13:30 M Verkaufen (L) (VL)
Mitte	Pfeiffer, Anna	17,39	11,00	0,50	63,3%				08:00-13:00 P Verkaufen (S) (VS)		05:30-12:00 M Verkaufen (L) (VL)	
Mitte	Reiniger, Mathilde	17,39	39,50		227,1%		05:45-13:00 F Verkaufen (S) (VS)	05:45-13:00 F Verkaufen (S) (VS)	15:00-18:15 F Verkaufen (L) (VL)	05:45-13:00 F Verkaufen (S) (VS)	05:45-13:00 F Verkaufen (S) (VS)	05:45-13:00 F Verkaufen (S) (VS)
Mitte	Winkel, Lisa	26,09	39,50		151,4%		12:00-18:30 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	12:00-18:30 M Verkaufen (L) (VL)	06:30-13:30 M Verkaufen (S) (VS)
Mitte	Zimmermann, Leon	40,00	31,50	2,50	78,8%		12:00-18:30 M Verkaufen (S) (VS)		12:00-18:30 M Verkaufen (S) (VS)	12:00-18:30 M Verkaufen (S) (VS)	12:00-18:30 M Verkaufen (S) (VS)	05:30-13:30 M Verkaufen (S) (VS)
Prenzlauer Berg	Osterhagen, Stephan	36,75	36,75	2,25	100,0%		08:00-12:30 P Verkaufen (S) (VS)	08:00-12:30 P Verkaufen (S) (VS)		08:00-12:30 P Verkaufen (S) (VS)	08:00-12:30 P Verkaufen (S) (VS)	08:00-13:00 P Verkaufen (S) (VS)

with is the fact that their individual needs are being catered for on a more regular basis and the extra workload that arises when someone is off sick, is distributed more evenly. Furthermore, the time spent planning for the bakery has seen a significant reduction. Individual requests are all digitally recorded and are automatically taken into account. The three hours per week which was needed for every branch previously has now become three hours monthly in which all seven branches are organized. Digitalization of staff planning has also made invoicing simpler, instead of each branch spending two hours per week on this, it is now done at the push of a button.

Why We Work with Gurobi

Gurobi doesn't just offer an extremely fast solver, but also great flexibility. We can adapt the Gurobi Optimizer to meet our needs.

We have just revised and reformulated the linear optimization model which our software FREI ZEIT is based on. It is extremely straightforward to implement new customer demands and requirements thanks to the Python interface. Moreover, the intuitive and clear way that the Python interface has been written, makes getting used to it very quick.

The scalability of the solver is impressive as any scale of personnel planning problem can be resolved efficiently and within a time limit. It is

not unusual for a duty roster to become infeasible, for example when several staff are ill or on vacation and the usual framework cannot be adhered to. Gurobi allows us to simply analyze these unforeseeable occurrences and detect the bottlenecks. This enables us to find a solution which all staff are happy with and that violates as few constraints as possible.

Gurobi's pricing structure enables us to implement mathematical optimization for middle-sized companies, something which up until now has not been possible due to cost and know-how reasons.

Experience Gurobi for Yourself

Our 30-day evaluation license includes:

- Free benchmarking services
- Free model tuning services
- Free access to our world-class technical guidance and support
- Two free hours of one-on-one consulting services

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