



# PARTICLE ACCELERATORS

The roads are paved with gold: 26 billion euros and thousands of hours caught in traffic could be saved each year if highway construction sites took advantage of modern methods to improve efficiency. Porsche Consulting and the Kirchhoff construction group of companies demonstrate just how this can be achieved.



Training camp: At the Porsche Akademie, Kirchhoff CEO Jörg Eschenbach demonstrates how work flows will be optimized. Practical implementation takes place on site.

A practical Porsche Consulting project very near to the hearts of ordinary citizens brought an interesting fact to light: Road works, especially on motorways, can actually be completed much faster. Better organization saves time and money, reduces gridlock, and even increases the quality. The results, which Porsche Consulting has documented, are



The figure is virtually astronomical: If the 130,000 traffic jams registered on German highways in 2008 could be strung together, this would add up to a stretch of 375,000 kilometers—just short of the distance from the Earth to the Moon. 15 percent of all bottlenecks are caused by road works. However, in terms of length, this figure jumps to 21 percent, and if one takes into account the time lost, 34 percent of all hours spent in traffic jams can be traced back to road works. This results in 80,000 kilometers of gridlock with a total of just under 80,000 hours

At the same time, quite a large number of construction companies are against the idea of extended working hours, simply because they are not equipped for them. And, as Eschenbach is the first to acknowledge, "the construction industry has a reputation for conservatism." Opportunities to reduce construction times are generally not identified, and as a result they are never implemented. However, Kirchhoff has already made great strides in this regard: In April 2006, Jörg Eschenbach brought the Stuttgart-based Porsche Consulting firm on board.

The problems quickly became apparent: For instance, at times there were no trucks with fresh asphalt; at other times, they were backed up on site. The reason for this was the less-than-efficient asphalt mixing facility just 15 kilometers away. "One of the success factors on the road to lean organizational forms is a willingness to change," according to Eberhard Weiblen.

The Kirchhoff Managing Board and top management now committed themselves to the second stage: three days at the Porsche Academy for anyone wishing to drive change. The methods used

### THIS IS WHAT REORGANIZATION OF CONSTRUCTION SITES CAN ACHIEVE:

#### ASPHALT PROCESSOR

Tons per hour  
**+50%**



#### WORK TEAM PERFORMANCE

Tons per employee  
**+52%**



#### WAITING TIMES FOR MACHINERY/TRUCKS

Average in minutes  
**-65%**



#### MACHINE OPERATING TIME

in hours  
**-35%**



### RECIPES FOR SLIMMING DOWN

With turnover of €55.1 million and more than 200 employees, Porsche Consulting is one of Germany's 20 largest management consulting firms. In Germany, the concept of "Lean Management" was first used in the 1990s in Porsche production. Toyota's production system served as the model. Since 1994, Porsche Consulting has continuously refined the concept. The company now works with customers from a wide variety of business industries. Its clients include car manufacturers and suppliers, the aerospace industry, engineering, the food industry, the construction industry, the retail market, banks and insurance companies and the public health sector.

at a standstill because the highway network requires repairs or additional links. Costs quickly add up when everything grinds to a halt. Traffic delays result in economic losses of 122 billion euros each year. Nearly a third of this sum can be attributed to road works. The same holds true for the additional 26 million tons of CO<sub>2</sub> emissions produced during bottlenecks. Then there are the 12 billion liters of wasted fuel. And last but not least, each motorist fritters away over 60 hours a year while trapped in one gridlock or another.

**It doesn't have to be this way: Traffic congestion could be greatly minimized.** "Construction times on highways are clearly too long," says Jörg Eschenbach, Chairman of the Executive Board of the Kirchhoff construction group headquartered in Leinfelden, near Stuttgart. In his view, the fault lies both with public authorities as well as with the construction industry. "For example," notes Eschenbach, "as a rule contractors are not prepared to adopt a 24-hour work day for road works." The extra costs associated with expedited completion are not assessed in terms of the costs incurred due to traffic congestion and accidents and are hence rejected.

Sports cars and construction vehicles—are they a good match? Absolutely. In the early '90s, the vision of a lean company organization put the car manufacturer back on course while simultaneously inspiring a new business idea: Porsche Consulting, a 100-percent subsidiary of the sports car specialist (see box).

"This simple idea—to evaluate all work flows in terms of added value or waste and to make changes accordingly—can be adopted for use in any industry," says Porsche Consulting Managing Director Eberhard Weiblen.

The new Kirchhoff brief was this: How to speed up asphalt road surfaces to reduce costs? As in the past, the consultant team utilized a proven three-stage method: To begin with, every imaginable parameter was examined over a two-week period: How is planning done, how is work preparation carried out, what specific capacities are required for machinery, materials and personnel, and how are orders processed at the Kirchhoff local office? "The starting point for analysis is always at the construction site," says Jörg Kaiser, principal for lean production and logistics at Porsche Consulting. Three projects were examined in detail.

included practicing with model construction vehicles to examine options for accelerating road surfacing: trucks back up, the asphalter pushes them forward, and at the same time the trucks load the asphalter with 27 tons of material.

At last came the most difficult stage: A two-week workshop with those actually working on site, so that they learn how to balance the organization of people, machinery, materials and mixing facilities. "It's an amazing mental leap for anyone in this industry, considering every site supervisor is used to planning and carrying out the job on his own," says Jörg Kaiser. However, success appears to be the best motivation: As a result of its Porsche weight-loss diet plan, the asphalt machine on a Kirchhoff construction site near Pforzheim now processes 300 tons per hour instead of 180 tons. The construction time has been reduced from twelve to seven days, and both personnel and machinery costs have been reduced by 40 percent.

By Brigitte Haschek

attracting the interest not only of the media such as *auto motor und sport* (see above), *Spiegel*, *Focus*, *Wirtschaftswoche* and *ZDF*, but also of state ministries and road construction authorities. This attention means there may be some grounds for hope—perhaps rapidly completed road works may become the rule rather than the exception.