

# Uncharted Territory

## Porsche Engineering is Optimizing Crane Cabins for Terex Cranes

\_\_\_\_\_ When it comes to development projects for external customers, Porsche Engineering likes to venture into unknown territory and put its automotive development experience to work for other industries. One successful collaboration of this type was the optimization of the crane cabin design for Terex Cranes, which was recently honored with a design prize.

*By Jörg Thoma and Frederic Damköhler  
Photos: Terex Corporation*

*The Terex® Challenger 3160.  
The cooperation between Porsche Engineering  
and Terex Cranes to optimize crane cabins  
resulted in a new brand look for the crane models.*





Crane cabins and Porsche: at first glance, that may not sound like a very likely combination, but it turned into an exciting and successful cooperation. When you operate a crane for the first time, it's surprising how complex the operating sequences are. It quickly becomes clear that optimal working conditions are essential to maneuver the crane safely. With its commitment to continual improvement, the heavy equipment manufacturer Terex Cranes charged Porsche Engineering with developing a new vehicle cabin and crane cabin design—which ultimately visibly impacted the face of the Terex brand.

### **Design prize**

The Terex Corporation, which develops solutions for work sites around the globe, is among the largest manufacturers of heavy equipment. The company has many years of experience and an extensive product lineup, including in the fields of construction machines and cranes. The new Terex “Superlift 3800” crawler crane is proof positive of the company's success. It was recently awarded the design prize of the state of Rhineland-Palatinate. Every year the Ministry of Economics, Environmental Protection, Energy, and State Planning honors outstandingly designed series products from industry and the trades. The Vice President of Marketing at Terex Cranes, François Truffier, explains: “At Terex Cranes, we strongly believe in the importance of our investments in product design, both from a functional and an aesthetic standpoint. The result is a crane that operators love to work with and bears the unmistakable look of Terex Cranes.”

### **Form and function**

One significant aspect of the prize-winning “Superlift 3800” design can be traced back to the collaboration with Porsche Engineering. Terex first contacted Porsche Engineering back in 2006 with the task of redesigning both the exterior and interior of the vehicle and crane cabins. The objective was to unite functionality and aesthetics, together with technical aspects, to create an appealing design.

The underlying idea was centered on the keywords ergonomics, function, and mobility. But in designing the exterior and interior of the cabin of a construction machine, Porsche Engineering was entering new territory. The engineers were confronted with the challenge of translating their expertise in the automotive field to the world of heavy equipment.



*Terex® Quadstar 1075L*

### **Customer-oriented solutions**

Extensive market analyses and illuminating conversations with Terex customers yielded some initial clues as to what design criteria had to be fulfilled to satisfy the complex requirements of crane operators. Various cabins were examined with regard to their properties and characteristics and customer-oriented solutions were determined, which then served as the specifications for the development process.

By including Terex customers in the process, it became clear that comfort and ergonomics should not be regarded as luxuries but as critical elements for mobility. That made them a top priority in designing the operator's work space. Operating a crane demands great skill and absolute concentration on the complexity of the functions. Any physical discomfort, for example due to unwieldy operation or impaired views resulting from poor design, makes the crane operator's job more difficult. The task for Porsche Engineering was therefore to work on optimizing various components to make it easier for crane operators to carry out their demanding maneuvers.

### Efficiency and comfort in the cabin interior

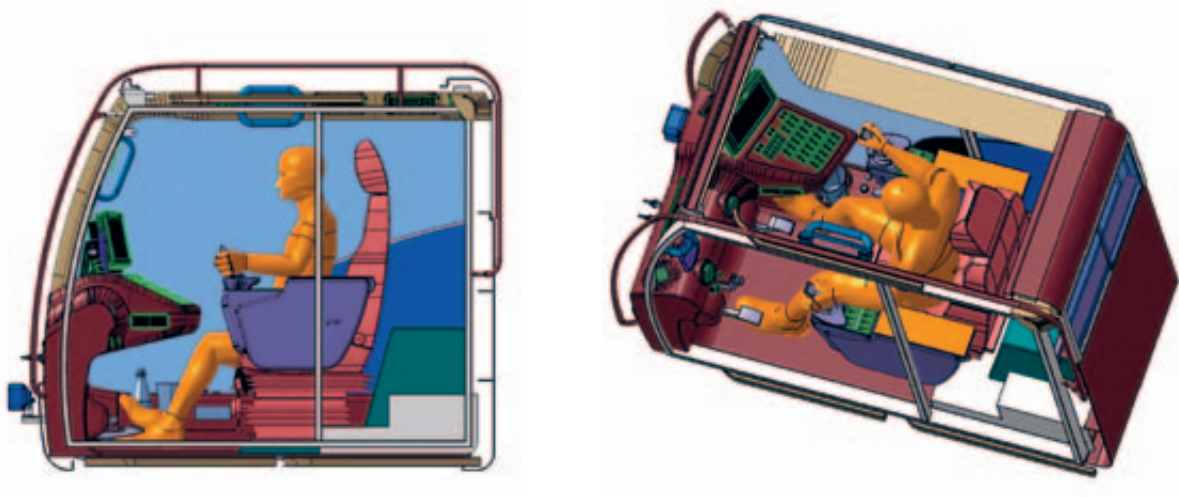
The interior of a cabin must be precisely dimensioned to ensure that steering the crane and operating all control processes is possible from the workplace while also enabling space and access for servicing and repairs. One major challenge was to position the individual components in the interior so that they would be easy to reach and operate.

To optimize the arrangement of the components and improve user-friendliness, the individual operating elements were assessed in terms of a wide range of requirements and their ideal positions determined. The improved ergonomic characteristics of the joystick, for example, enable flawless and precise maneuvers. With the new crane control, crane operators can concentrate exclusively on their work. The intuitive system offers efficiency and comfort by enabling the user to configure the display individually by means of a touchscreen. With flexible adjustment options, the seat is both ergonomi-

cally correct and ideally suited to the complex requirements of crane operation. The seat can easily be adjusted to accommodate the size and weight of the individual crane operator. Additional storage spaces, adjustable air vents for heating and air conditioning, and an air-conditioned glove compartment that can also be used as a cooler ensure a comfortable environment in the cabin and aid the operator's performance.

### Positioning and access

In the most varied working environments, the crane must first be brought to the work site and maneuvered into a safe working position to enable full use of its capabilities. Only when the crane is properly positioned can crane operators begin work. Ensuring safe access to the cabin also requires attention to specific requirements. Among other things, the position of the handles and the width of the steps were reconsidered to enable comfortable entry into the cabin. >



First drafts for the ergonomically optimized crane cabins with rearranged controls.

*Terex cranes—in this case the award-winning “Superlift 3800”—are used in widely differing environments all over the world.*



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*“By creating a strong and uniform ‘Terex Crane’ brand, we’ve made great strides. Product design and the family look have contributed to that considerably. The defining brand identity is now clearly recognizable in all new products.”*



François Truffier, Vice President Marketing

### **Optimized visibility**

In the vehicle cabin as well as the crane cabin, unrestricted visibility is fundamental for flawless work. The size and shape of the windows must ensure maximum visibility. The driver cabin does without a B-pillar, which significantly improves the visibility of the exterior mirrors. Electrically adjustable and heatable exterior mirrors also ensure the requisite overview and remain operational in all conditions.

Thanks to a special park position of the windshield wiper in the crane cabin, the crane operator maintains a clear view of the load during the lift—even when the front window is open. A roof window wiper and tinted safety glass fend off both precipitation and strong sunlight.

The redesigned lighting system also improves safety. The lighting in the cabin as well as the use of various headlights enables the crane operator to adapt to a variety of light conditions and optimally illuminate the work area.

### **Initial concepts and validation of the new design**

In 2007 the first concepts for the new design of the vehicle and crane cabins were presented at the bauma trade fair in Munich. At the world’s largest trade fair for construction machinery, building material machines, mining machines, construction vehicles, and construction equipment, visitors were able to take a virtual tour of the crane cabin and get a sense of the optimized operation of the crane. Illuminating talks with experienced Terex customers confirmed to the heavy equipment manufacturer and thus also Porsche Engineering that the development was on the right track.

The result is cabins whose design unites ergonomics and mobility, thus facilitating safe and concentrated work. With the optimization, a design was realized that impresses with its styling and technical capabilities, uniting form and function for a great result.

### **The new brand identity**

The design of the cabin and the bold interior have made a lasting impression on Terex Cranes. Over time, the concept of the driver and crane cabins has been transferred to multiple crane models: the new face of the brand makes a Terex crane instantly recognizable. The front area of the cabins, which bears the emblem of the heavy equipment manufacturer, has serious and bold lines that underscore the strength and quality of Terex cranes. “By creating a strong and uniform ‘Terex crane’ brand, we’ve made great strides. Product design and the family look have contributed to that considerably. The defining brand identity is now clearly recognizable in all new products,” says François Truffier. ■