

**Waldmann**   
ENGINEER OF LIGHT.



# TWIN-C REPORT

INDUSTRIAL

UP-TO-DATE INFORMATION ABOUT INTELLIGENT LIGHTING SOLUTIONS FROM WALDMANN | JULY 08



# LIGHT AS A SUCCESS FACTOR

## INNOVATIVE LIGHTING CONCEPTS FOR SUSTAINABLY HIGHER ENERGY EFFICIENCY AND GREATER LIGHTING COMFORT AT TRW IN BLUMBERG

TRW Automotive GmbH in Blumberg, Germany, is part of a corporate group with operations worldwide, which primarily manufactures components for engines and automobiles in all conceivable configurations. It is a demonstrably successful company, which is the global market leader in most of the product divisions it supports. This success is no coincidence, but the result of a systematic and continuous search for improvements in all divisions. Henry Ford I. once said: „Success is a matter of adjusting one’s efforts to obstacles and one’s abilities to a service needed by others.“ And, we would like to add, to seize every opportunity that presents itself to improve one’s own product range.

Can lighting in machines and in production contribute to success in this context?

The responsible engineers of TRW have thoroughly studied the LED-based TWIN-C lighting concept from Waldmann and in collaboration with the lighting specialists have created solutions, which sustainably save energy to a high degree, reduce CO<sub>2</sub> emissions, and at the same time significantly improve the lighting quality at the workplace.

TWIN-C from Waldmann is synonymous with an innovative lighting philosophy, which - based on the requirements at each workplace - optimally combines lighting concepts and specific lighting components. In addition to glare-free lighting comfort, the results are massive cost savings and a significant decrease in energy consumption.



1 The new TWIN-C lighting concept ideally combines flood and spot light. Protective tube luminaires were installed in this valve grinding machine for broad illumination, and innovative LED spot lighting was used for the machining operation.

2 The company TRW Automotive in Blumberg is part of the international TRW group of companies. At 1,000 employees and sales of 100 million euros, this branch is the largest plant of the worldwide valve group. Annually, this location produces more than 36 million valves for passenger cars, trucks and stationary diesel engines for all renowned manufacturers.

3 Despite sophisticated technology, TRW also consciously relies on the expertise and commitment of its own employees. Whether in production or, as in this case, during final inspection - man is the measure of all things. Proper lighting with high vision comfort promotes performance and motivation in all areas and reduces absenteeism.



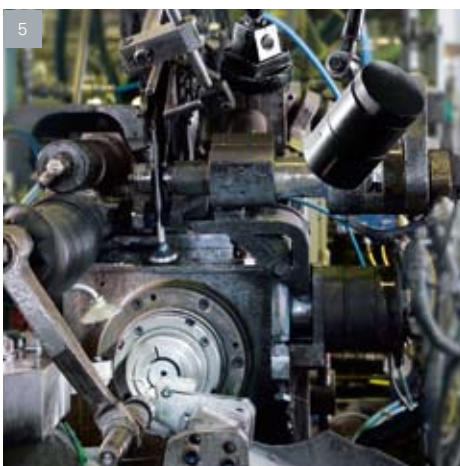


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At the Blumberg TRW plant, valves of all sizes and material configurations for the manufacture of engines are produced. Over the last few years, the demand for these engine components has increased enormously. One crucial reason was the rapidly prospering multi-valve technology. In the meantime, the demand for weight-reduced components in order to achieve lower friction loss has absolute priority. In this sector alone, TRW has performed enormous pioneering work. For example, by developing solid and hollow valves with reduced diameters, made of steel or titanium, it was able to lower the weight of the valves by up to 50 percent. The process, however, is still far from complete. Presently, valves made of aluminum and titanium aluminide are undergoing testing, which will further lower their weight and improve temperature resistance. Considering that in general 25 steps are required for the production of valves, the extraordinary demand on quality becomes apparent. The requirements include optimized working conditions and lighting quality that supports the manufacturing and testing processes as needed. Coordinated flood and spot lighting, in conjunction with effective glare suppression, are requirements for lighting installations as a factor for success. Measures for this success are

- up to 40 percent higher production,
- significantly improved accident statistics, with up to two thirds fewer accidents,
- considerably lower absenteeism as proper light promotes health
- and energy savings in the double-digit percentage range.

In addition, aspects regarding quality improvement come into play, for example, frequently requiring special lighting components with integrated high performance magnifiers.



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4 Meticulous quality assurance is indispensable during every of the 25 production steps in the valve production operation. Optimum test conditions are ensured by the Waldmann SNL 319 magnifier with two switchable lighting characteristics.

5 Strong spot lighting is provided directly in the machining area by the new SPOT LED 003. The most remarkable features of the new LED luminaire generation are low consumption data, a long service life, and low maintenance costs.

All pictures are plant photos of Waldmann

**Conclusion:**

Through an innovative, integrated lighting concept, TRW Automotive GmbH in Blumberg has created additional success factors, which sustainably promote the company's market position and based on key figures support the global leadership position. The investments made pay off within a short time and year after year provide significant reductions of costs and consumption data.

# LED LIGHT SAVES ENERGY AND IS ENVIRONMENTALLY SOUND

## RETROFITTING TO LED MACHINE LUMINAIRES AT TRW AS PART OF THE CONTINUOUS, INTERNAL IMPROVEMENT PROCESS

### Starting situation

Compared to LED luminaires, conventional machine luminaires require 15 times more energy. In addition, the high failure rate results in significant maintenance costs.

### Action

250 machine luminaires with magnetic base and incandescent lamps will be replaced with Waldmann ABLL1 and Spot LED 003 LED luminaires.

### Substantiation

Luminaires with LED technology sustainably reduce the power demand, lower the maintenance costs, and cut CO<sub>2</sub> emissions.

Analysis/cost	Light bulb	LED
	previously € 2,450.00 p.a.	new € 0.00
Energy cost at 0.08 euros/kWh	previously € 6,336.00 p.a.	new € 423.00 p.a.
CO <sub>2</sub> emissions	previously 34,056 kg p.a.	new 2,270 kg p.a.
Energy consumption	previously 79,200 kWh p.a.	new 5,280 kWh p.a.

### Annual savings

Energy	€ 5,913.00
Lamps	€ 2,450.00
<b>Total savings:</b>	<b>€ 8,363.00 and 31,786 kg p.a. CO<sub>2</sub> emissions</b>

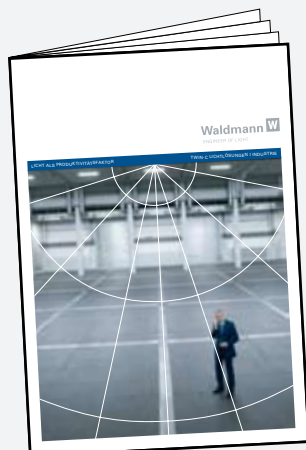


Machine and industrial luminaire SPOT LED 003

### Conclusion:

Waldmann LED luminaires save costs and energy and are environmentally sound

## MORE ABOUT TWIN-C:



### TWIN-C brochure

Learn in our new TWIN-C brochure how industrial workplaces can become more productive through light. EN 12464-1 defines how to optimize industrial workplaces with lighting technology.

Waldmann goes even a step further: It focuses not only on complying with the standards from a technical aspect, but also on the financial benefit for the customer. EN 1837 defines the requirements of machine-integrated luminaires. Machine manufacturers are obligated to comply with this standard and document their compliance. This is not a problem with a TWIN-C lighting solution from Waldmann.

Request our brochure to learn more about the applicable standards. We will show you, based on different TWIN-C lighting concepts, how "the right lighting combination" can increase your company's success.

[www.waldmann.com](http://www.waldmann.com)