

**Waldmann** **W**  
ENGINEER OF LIGHT.



# TWIN-C REPORT

INDUSTRIAL | MAG

CURRENT INFORMATION ABOUT INTELLIGENT LIGHTING SOLUTIONS FROM WALDMANN



# INNOVATION - IN ITS EARLY STAGES

WALDMANN FINDS THE CORRECT LIGHT FOR EVERY REQUIREMENT – EVEN IF IT MEANS DEVELOPING A NEW LUMINAIRE.



When it comes to lighting, machine manufacturers are bound by EN 1837. The standard determines the average brightness level in machines, especially in the machining area. According to this standard, the brightness level must be a minimum of 500 lx. Machine manufacturers are not only required to comply with EN 1837, but must also document it. This gives rise to many new questions for machine design engineers. After all, not only the minimum requirement specified by the standard, but also the trend toward more compact machines equipped with smaller surfaces for connecting luminaires, must be taken into account during the lighting planning process.

#### **MAG Hüller Hille: Introducing NBV 400**

MAG Hüller Hille in Mosbach, Germany, is an internationally leading specialist for the manufacture of horizontal machining centers. In addition, it is a member of MAG Industrial Automation Systems.

The MAG group of companies includes several of the most renowned machine building companies and is the sixth largest machine tool manufacturer in the world. In addition to Hüller Hille, for example, Boehringer, Cincinnati, Fadal, Giddings & Lewis and Hessap are also part of MAG. In the market, MAG Hüller Hille is primarily equated with NBH machines - numerical horizontal machining centers. The interiors of the traditionally high-quality NBHs are generally illuminated with Waldmann products. However, things are quite different with the innovative NBV 400 machining center. It is the first MAG Hüller Hille machine of a scheduled series of vertical machining centers. The extremely compact machine stands out with its modular design and universal application possibilities in tool and mold making, the aerospace industry, medical technology, mechanical engineering, and in the contract manufacturing sector.



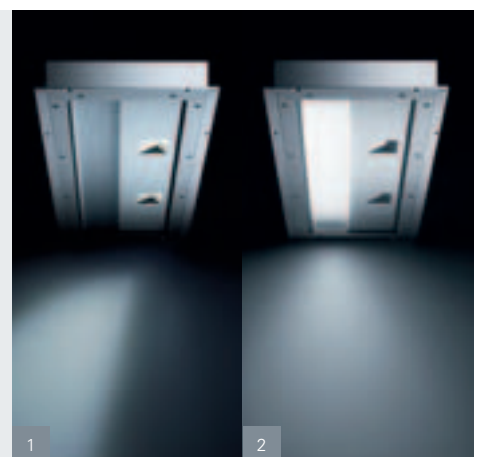
The most extraordinary feature of the relatively small Millturn center is that it allows the machining of comparatively large workpieces, such as aircraft turbines. In addition, the lower purchasing and operating costs are an attractive incentive and increase the competitive edge.

**Waldmann:  
Introducing the FLAT TEC HYBRID**

The Waldmann lighting solution and its evolutionary history is just as unique as the NBV 400. The solution was designed on the basis of the lighting planning process for the new machine. The result was a completely new type of industrial luminaire: the **FLAT TEC HYBRID** – providing spot and flood lighting in one housing.

**The right path toward proper lighting.**

The idea of integrating Waldmann into the lighting design phase for the NBV 400 at an early stage came up at MAG Hüller Hille during a design workshop held on the topic of innovative lighting solutions. CAD data of the machine compartment formed the basis of the Waldmann TWIN-C concept. Simulations of lighting solutions using different Waldmann components were conducted, and the solutions were assessed based on brightness levels - both in the machine compartment and in the machining area. The combination of two 24 watt Waldmann FLAT TEC units, each featuring two 6 watt LEDs, produced the best result: a mean brightness level of 995 lx. Due to the limiting attachment surfaces, both lighting technologies were combined in one housing.



- 1 Asymmetrical and precise illumination of the machining area using two LEDs
- 2 Comprehensive illumination of the machine compartment using a highly efficient fluorescent lamp.

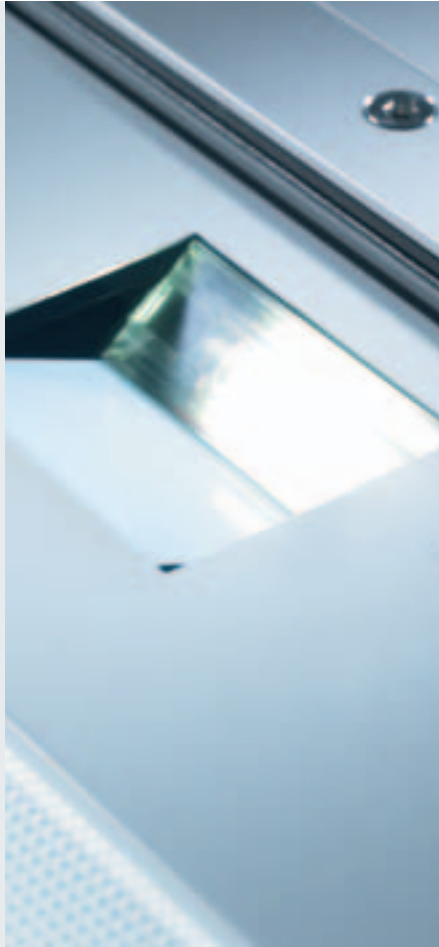
# TWO LIGHTING TECHNOLOGIES IN ONE HOUSING.

The FLAT TEC HYBRID is not only brimming with ingenuity, but also provides maximum efficiency. For example, in the form of a 24 watt T16 fluorescent tube measuring only 16 mm in diameter for the large-scale illumination of the machine compartment. This tube produces a significantly higher luminous flux than conventional 26-millimeter lamps. The results are higher efficiency and lower energy consumption. The 3D conic prismatic screen not only ensures symmetrical light distribution, but also optimal diffusion – an important added safety feature for the operating staff.

In addition, the FLAT TEC HYBRID is equipped with two 6 watt LEDs for the targeted illumination of the machining area. The special feature is that the LED light is focused through a special 30° lens onto the machining area.

Both types of light can be switched together and separately.

The TWIN-C solution at MAG Hüller Hille consists of two FLAT TEC HYBRID units, which are integrated almost seamlessly on either side of the machine wall.



## INNOVATIVE DETAILS:

### Housing:

Anodized aluminum, integrated into the machine wall as a built-in luminaire – no chip accumulations and damage by the impact of chips.

### Symmetrical base lighting:

1 x 24 watt T16 light tube (16 mm diameter) with 3D conic prismatic screen for optimal diffusion.

### Asymmetrical spot lighting:

2 x 6 watt LED with 30° lens.

### Lamp cover:

4 mm thick single-pane safety glass.

### Protection rating:

IP 69K

## MORE ABOUT TWIN-C:



### TWIN-C brochure

Find out, in our TWIN-C brochure, how industrial workplaces can become even more productive through lighting. 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.

Waldmann goes even one step further than is required by EN 1837: It focuses not only on complying with the standard from a technical aspect, but also on the financial benefit for the customer.

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)