ATHANASSIOS KALIUDIS

Probably the longest laser machine in the world

The M. den Oudsten Buigwerken, a Dutch company, wanted the world's largest laser cutting machine. There is only one company that dared build it.

Pieter den Oudsten stands in his new factory, admiring his Spanish eye-catcher. At four-and-a-half meters wide and 66 meters long, it is the largest laser cutting machine in the world. Headquartered in Rhenen, Netherlands, M. den Oudsten Buigwerken is a specialist for leser cutting and XXL bending. The company's laser machine cuts giant sheets and plates for truck bodies, ship hulls and buildings.

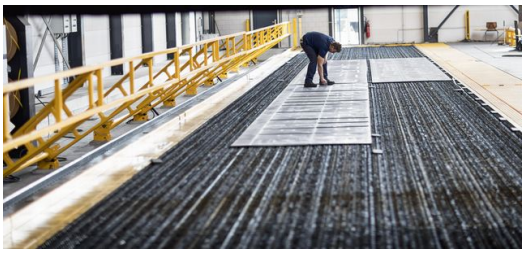
The workpieces are as large as 3 by 12 meters and as thick as 30 millimeters. These sheets and plates lie at the ready on the 66-meter cutting table, which is recessed in the floor. A laser booth 20 meters in length travels to each of five working positions one after the other. While the machine is cutting a sheet, the operator can load and unload other sheets.

You read that right: it takes just one person to operate this gigantic machine. Because the table is at ground level, inserting sheets is easy. "Instead of having to climb onto a table, the operator can simply load and unload the sheets using a ceiling crane," says den Oudsten. Once a sheet is in position, barriers at the sides tip up; then a booth moves over the sheet, covering it completely. Roller gates on both sides of the booth descend and cutting can begin.

66 Meters – a table this long is perfect for even the largest sheets, and it also creates space for loading and unloading while the machine is cutting (Photos: Norbert Voskens).

Two cutting heads equipped with 0.5 and 1 mm fibers can cut individually or in parallel (Photos: Norbert Voskens).

Pieter den Oudsten specializes in extra-large sheets (Photos: Norbert Voskens).



Because the table of the laser machine is at ground level inserting sheets is easy (Photos: Norbert Voskens).

The Spanish eye-catcher cuts giant sheets and plates for truck bodies, ship hulls and buildings (Photos: Norbert Voskens).

Two cutting heads dance across the sheet, cutting the specified shapes. Both of these optical systems are mounted on a single portal that moves over the sheet in the direction of cutting. As soon as a sheet has been cut, the roller gates ascend and the booth moves on to the next sheet. "This approach allows us to cut five or even ten sheets in one go, depending on sheet size."

Four fibers for two

This gigantic cutting machine was nearly not built at all. "It wasn't at all easy to find a manufacturer that would even consider building such a humongous machine. Only Tecoi stepped forward," says den Oudsten. Tecoi, a company based in León in northern Spain, likewise specializes in medium and oversized solutions. The oversized machines the company manufactures are at least 6 meters long,
which is unique in this market.

Mr. Jorge Luís Rodríguez, CEO at Tecoi, still clearly recalls the order from the Netherlands. The booth and the portal turned out to be challenging in making a cutting machine for Buigwerken. "It was essential that we strike a good compromise between height and weight on the one hand and, on the other hand, the booth's dynamics — or acceleration and deceleration behavior. Weight was crucial, especially when it came to the portal, because the dynamic movement must adjust precisely to the speed of cutting."

> **At first you have mass, dynamics and precision all pushing in different directions.**
>
> Jorge Luís Rodríguez, CEO Tecoi

Tecoi certainly knows how to take laser cutting to the next level: by placing two different fibers in a single cutting head. "This allows us to combine two beams that cut in different ways. The first fiber is ideal for thin materials—between just 0.8 and 1 millimeter. The other fibercuts materials as thick as 30 millimeters.

Regardless of the task athand, you don't need to change the cutting head." The Spanish company calls its innovation the double-fiber process (DFP) system. What's more, Tecoi uses two of these cutting heads per portal. They work in parallel for even faster cutting. The laser-beam source is a TruDisk 6002 made by TRUMPF.

Den Oudsten at Buigwerken in the Netherlands is a happy man. "This disk-laser system handles complicated sheet-cutting jobs twice as fast as a CO2 laser. That makes us faster and more flexible than the competition. We can deliver in less than five days, which is lightning-quick in our industry!"

Buigwerken wanted an XXL cutting machine that can produce as many as 4 large sheets per hour. After all, the more cutting tasks there are per sheet, the better the two-headed monster can leverage its superior speed.

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