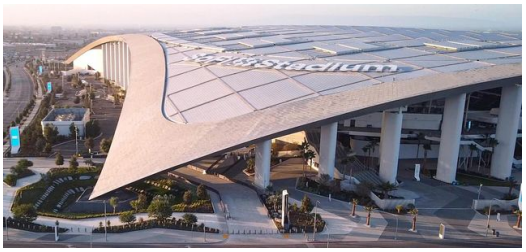
DANIEL KURR

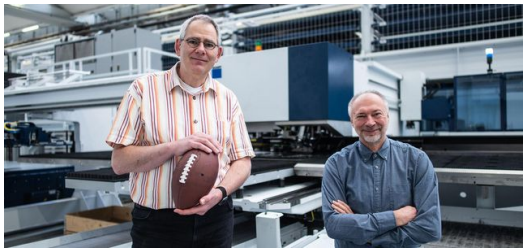
Touchdown for TRUMPF

The LA Rams play the Cincinnati Bengals in the Super Bowl on February 13 – but whoever wins, TRUMPF is already guaranteed a place on the podium. The high-tech company played a key role in the construction of the SoFi Stadium in California, this year's venue for the world's most famous football game. The SoFi represents a truly remarkable achievement, not just for the US professional football league, but also for the future of sheet metal fabrication.

Built at a cost of some 5 billion euros, the SoFi Stadium sports and entertainment complex near Los Angeles, with its event venues, parks and restaurants, is said to be the most expensive stadium in the world. The execution of the project was an extraordinary challenge for TRUMPF and its US customer, architectural engineering company A. Zahner. To build the SoFi, the Kansas City, Missouri-based metalwork experts used three TRUMPF machines to cut and punch 37,000 unique panels featuring some 30 million holes distributed at irregular intervals. This was made possible thanks to a customized software solution developed in Ditzingen.



The roof of the SoFi Stadium is light and elegant. The cover made of the translucent plastic ETFE can be opened and closed. (Source: JESSE PACHECO, ARKO | © A. ZAHNER COMPANY)



Proud of the SoFi Stadium, excited about the Super Bowl - TRUMPF colleagues Hans-Jörg Schmid (left) and Roman Schwarz (right) played a key role in its success.

Making architectural dreams come true

Sheet-metal fabricator A. Zahner is renowned for turning architectural visions into reality. Over the past few decades, the company can proudly lay claim to have created façades for some truly remarkable buildings. Intricate, curved, and occasionally hovering tantalizingly above the ground, its designs range from the playful to the austere – and no two projects are alike. Their creations encompass everything from museums, theaters and public buildings to Google's new headquarters in Mountain View, California and the SoFi stadium itself.

Ready for the 2028 Summer Olympics

Zahner is constantly redefining the limits of what is possible – and the SoFi Football stadium, which was completed in September 2020, is a prime example of their singular accomplishments. The arena, which seats just over 70,000 people, is home to the National Football League's Los Angeles Rams and Los Angeles Chargers. The Super Bowl kickoff on February 13 will once again see more than 100 million Americans and many millions of fans worldwide tune into one of the biggest sporting events in the world. The capacity of the stadium itself will be increased from 70,000 to 100,000 to allow as many people as possible to attend this premier event. The SoFi Stadium will also take center stage in 2028 when it hosts the opening and closing ceremonies of the Los Angeles Olympic Games.

The world's biggest video screen

These prestigious events will even be visible from the air: the stadium's canopy roof is made of ETFE, the same translucent plastic that was used to build the Allianz Arena in Munich, Germany. Beneath the roof, engineers have incorporated 80 million LED pixels. Together, they form the biggest video screen in the world, says architects' firm HKS, which came up with the design. Aircraft pilots and their passengers will be able to watch a live stream of events from the air, while fans in the stadium may find their attention being drawn away from the pitch and onto the captivating video board above their heads.

"Originally, it would have taken us 15 minutes to do two panels, but we eventually got that down to seven seconds. I was able to complete the programming of the entire roof in a matter of weeks,"says engineer James Coleman, Zahner's Vice President of Innovation.

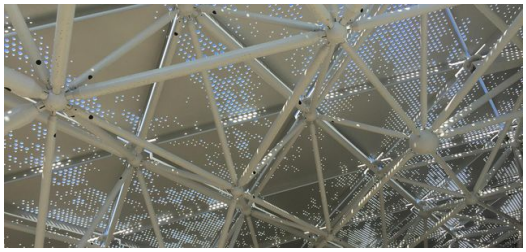
37,000 unique panels

But the ETFE roof canopy and LEDs are not the only remarkable features of this innovative stadium. The roof is framed by some 37,000 custom aluminum panels, each of which has its own unique design. So how did the fabricator accomplish such a seemingly impossible task? The architects used a complicated algorithm to distribute holes across each panel in an apparently arbitrary fashion, focusing primarily on aesthetics and the way in which light would fall through the resulting canopy. "Producing those panels in any kind of conventional way would have taken forever, however many programmers we had," says engineer James Coleman, Zahner's Vice President of Innovation.

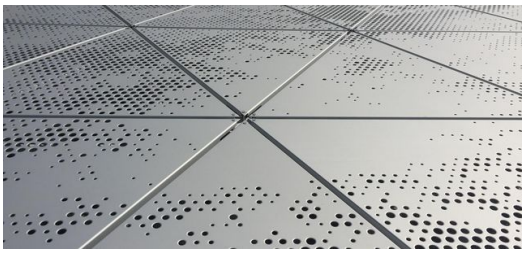
From 15 minutes to seven seconds

In need of assistance, Coleman turned to TRUMPF. Together with TRUMPF programmers Hans-Jörg Schmid and Roman Schwarz from the Software Customization Team, he began adapting TRUMPF's TruTops software to the challenge – and the results were remarkable: "Originally, it would have taken us 15 minutes to do two panels, but we eventually got that down to seven seconds. I was able to complete the programming of the entire roof in a matter of weeks," Coleman says.

The perforated panels allow light and air to pass through - it was the architects' ambition to build an open arena in which people are nevertheless protected. (Source: © A. ZAHNER COMPANY)



For the SoFi, A. Zahner used three TRUMPF machines to cut and punch 37,000 different panels with around 30 million irregularly distributed holes. (Source: © A. ZAHNER COMPANY)



Each of the approximately 37,000 panels is unique. The distribution of the holes was created using a specially developed algorithm. (Source: © A. ZAHNER COMPANY)

Three parts down

The next step was to actually fabricate the panels. Three Zahner employees spent a total of 18 months working in two shifts on three TRUMPF machines. "And we still finished ahead of schedule!" says Coleman. He is understandably proud of what they achieved: "Only three of the 37,000 panels had to be fabricated a second time. Not because they turned out wrong, but simply because the parts were so small that they accidentally ended up in the recycling bin with the other punching scrap."

Setting new standards

"The customer was absolutely delighted," says James Coleman. "It's an example to architects everywhere of the extraordinary things you can do with sheet metal." In the past, the company would probably have had to limit the project's creative flair by restricting the one-of-a-kind panels to perhaps just 50 designs in order to finish on time. "But what we offer nowadays actually encourages architects to get creative rather than forcing them to water down their designs." Even so, insists James Coleman, none of their impressive work on the SoFi Stadium would have even been possible without TRUMPF.

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