European Commission

HORIZON 2020

The wafer thin, flexible, lightweight and endless scalable LED screen for dynamic ambient lighting and outdoor video walls

Results in Brief

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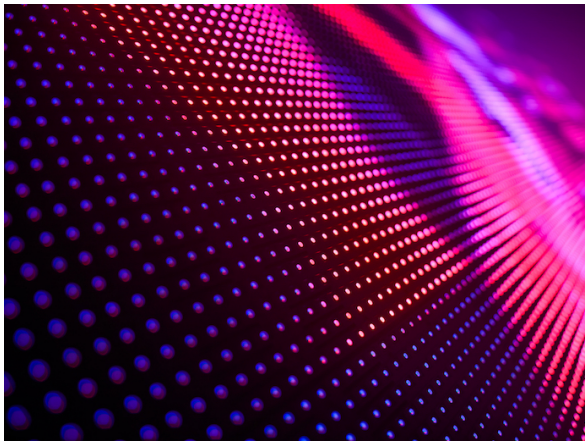
Reimagining the LED screen with digital wallpaper

Razor-thin dynamic digital monitors that can be applied like wallpaper could soon turn indoor and outdoor spaces into immersive experiences.

DIGITAL ECONOMY



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Imagine, a wall or ceiling becoming a giant, ultra-lightweight monitor capable of projecting videos and images and making any room or space more dynamic? Or flexible, digital 'wallpaper' being used to create immersive experiences inside the cabins of cars, trains and planes?

Thanks to the work being done by LightnTec, a German company manufacturing ultra-thin and flexible LED foil displays for immersive spaces, such futuristic concepts are happening now. "Easy to use and capable of transforming any space via razor-thin dynamic monitors, our Digital Wallpaper is nothing short of a game changer," says LightnTec CEO and founder Florian Kall.

Thanks to the support of EU funding, the company has further advanced its product

for both indoor and outdoor use.

Versatile and energy-efficient

Because foil is used as a substrate, the Digital Wallpaper solution is wafer-thin, flexible, extremely lightweight, rollable and even cuttable. “LCD and LED monitors have traditionally been limited by their weight, shape and flexibility,” explains Kall. “By removing all three, we can exponentially expand how and where monitors in large formats may be used.”

One of the product’s most innovative aspects is that its pixel control is integrated within the video foil, a feature that Kall says enables it to display videos and images smoothly in any size. It also means the Digital Wallpaper can be cut into any shape and opens the door to realising a range of 2D and even 3D formats.

Kall goes on to note that in some applications, Digital Wallpaper can be at least 30 % more energy-efficient than other LCD/LED wall options, the result of its use of specially coated surfaces that ensure an extremely high contrast-level of 99.5 % light absorption.

For large format indoor and outdoor displays

LightnTec has already demonstrated the value of its innovative solution via a number of applications, including outdoor displays on facades, as well as for healthcare facilities, museums, malls, cruise ships, cars, trucks and sporting arenas.

The company’s Digital Wallpaper was recently applied to the boards of ice hockey rinks. “Hockey is a high-impact sport, not only for the players, but also for our Digital Wallpaper,” notes Kall. “Thanks to its flexibility and protective coatings, the LED foil display is able to withstand the impact of a hockey puck – or player.”

Ready to compete in the global display manufacturing market

As the company looks to bring its Digital Wallpaper to market, it leveraged the support of EU funding to help overcome challenges to adapting the product to market needs, increase sales in the EU and United States and scale up production.

“We did not foresee that industrialising suitable micro-optic structures would be such a hurdle – so there’s still more work to be done,” remarks Kall. “But using a rollable substrate is a key to manufacturing energy-efficient and pixel-controlled lighting solutions and LED foil displays that weigh 10 times less and thus use significantly fewer materials than alternative solutions.”

Kall adds that the EU funding has been influential in bringing the core competence of display manufacturing back to Europe. “Ultra-thin, flexible, lightweight LED foil displays are popping up everywhere,” he says. “Thanks to the support of EU funding, our company, and Europe in general, is well-positioned to compete on a global level in this exciting, rapidly evolving market.”

Keywords

Digital Wallpaper, energy-efficient, LED, LCD, digital monitors, video foil, display manufacturing

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