

ESEIA Wireless Charging Station [Product Description](#)

Biobased Materials

The wireless charging station is made of three kinds of wood: beech and birch, both commonly used in [building industry](#), as well as poplar, a commonly used lightweight wood often used for weight critical applications. The logo circles are created from dried organic materials produced by the Tyrolian company [Organoid](#), namely moss mix (green), cornflower (blue), and rose flowers (red), which are processed onto flax fleece with a starch-based binder. The Organoid materials offer a multi-sensory experience through visible structures, haptic textures, and natural scents. The yellow circle is made of [BreadCell](#), a bread-like cellulose-based foam by the TU Graz spin-off [FOAMO](#). The ESEIA Wireless Charging Station is entirely CO₂-neutral, reusable, recyclable, as well as biodegradable.

Smart Production Process

The product consists of three main components: the baseplate, the logo, and the internal inductive charging module. Wooden materials in the form of engineered wood (wood laminates) are used. These consist of crosswise glued wooden layers to ensure homogenization of wood properties, making them suitable for engineering applications.

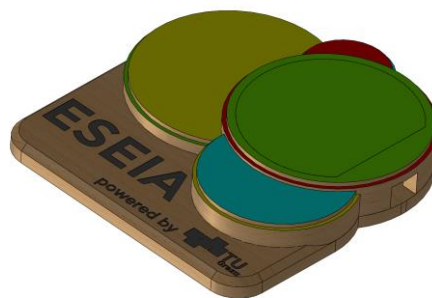


Fig. 1 CAD Design of ESEIA Wireless Charging Station

The baseplate and logo are milled from engineered wood. The lettering 'ESEIA' and 'powered by TU Graz' is laser-engraved. The inductive charging module is assembled and mounted on a poplar carrier plate. The individual parts are then adhered together and treated with nut oil to improve durability. BreadCell foam is recycled using the denser outer layer of the foam and coloured using food-grade dyes during the production process. The Organoid and BreadCell circles are laser-cut and layered onto the station to form the ESEIA logo.



Fig 2: Raw base plate, charging module, logo in the making

Technical Data in a Nutshell

Size: 10 x 10 x 2 cm, Weight: 150 g

USB-C industry standard connector: The charging station supports standard Qi wireless charging as well as fast wireless charging (up to 15 watts). Standard wireless charging works when connected to most USB power adapters. For fast wireless charging, if supported by the smartphone, a compatible phone charger is required. Standard phone chargers and USB ports generally support charging through most phone cases, however higher-powered fast chargers enable reliable fast charging even with thicker cases.

How to use it?

Connect the USB-C cable to a power source and place a Qi-enabled smartphone on the green circle to start charging.

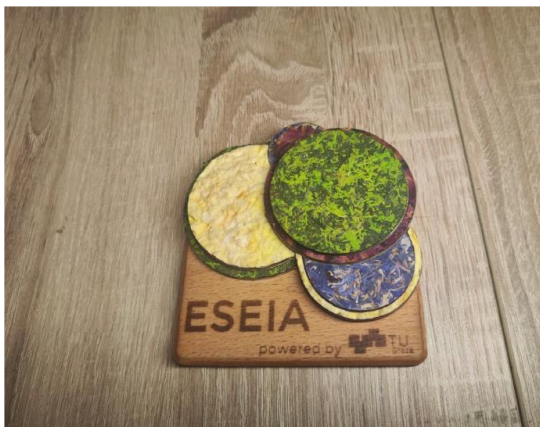


Fig. 3 Final product (left: view from top, right: view from USB-C port side)

Who made it?

Markus Wagner and Florian Feist, [Graz University of Technology](#), [Vehicle Safety Institute](#)