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MC A - Mario Cucinella Architects with WASP

TECLA A 3D-Printed Eco-Habitat

Designed by MC A - Mario Cucinella Architects and engineered by WASP (World's Advanced Saving Project), TECLA is an eco-sustainable habitat model made of raw earth that is assembled using collaborative 3D printing. The heart and inspiration for this design is the ever-growing importance of sustainability and, in this project, it takes the very specific form of a circular housing model created using materials that are found locally, without any waste. The name comes from the words "technology" and

"clay", although it also has a fortuitous link to the great Italian novelist Italo Calvino's *Invisible Cities*.

The physical creation of this design was in a town called Massalombarda, which is not far from Bologna in the central/northern heart of Italy. Mapei was involved in the project by analyzing the local terrain and clay, and coming up with a specific mix that was both fluid enough to be used in the printing phase and sturdy enough once constructed. It produced a series of recommended

solutions that helped facilitate the printing phase, while also optimizing the performance of the raw earth. Mapesoil 100, a fiber-reinforced powdered stabilizing agent that is used to consolidate soil, made the mixture of earth and water far more uniform, which translates into increased durability and less leaching following extrusion. Dynamon SR4 super-plasticizing admixture was used to keep the mixture workable and pumpable even hours after preparation. Planicrete synthetic latex rubber and Planiseal WR 100 ready-mixed water-repellent were used, respectively, to help the material bond more firmly to surfaces that had already set and to make the structure waterproof after just 12 hours. The TECLA printing project entered the construction phase in September 2019 and is complete. The fitting out and public presentation of the project is due in spring 2021.

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