

valued innovation, on many levels, in cascade and parallel ways: from the decisive intuition, through the design and production up to installation. The solution to make this façade executable and constructible, full and rarefied at the same time, but especially unique in its evolution and show to the world, was to conceive the branches through overlappings or layers. A primary and structural repetitive layer every floor, and three architectural exterior layers everyone different. For those panels visible from the inside of the building, a fourth architectural layer is added inside. These architectural layers, all different but in a precise continuity according to the plan conceived by Nemesis & Partners, give life to the uniqueness of the ribs's scheme visible on the façade. From for the massive basements, slightly inlaid or perforated, you climb into a crescendo of branches not at random, up to rarefied panels with 3/4 voids resulting from the intersection of thin and slender branches.

The design mainly performed in 3D, involved an architectural work in collaboration with the designer, an engineering one and stress analysis. For 9000 m² of façades with 725 unique panels, were made a total of over 9000 drawings. The 3D design allows to steer not only the complexity of products design but even the manufacturing of the façades elements, the related adjustable supporting and connection systems, and the installation phases. The careful parameterization of the various branches led to new aesthetic configurations in the intersection of the various branches with variable section and inclined plans, increasing the spatial compositional articulation foreseen originally. Each panel has been modeled with specialized software and then sent to production, using a sophisticated technology to get real synthetic resin molds for each product. The manufacturing industrialized process created on the basis of previous experiences, used formworks and molds with accurate surfaces to ensure a very high quality final appearance on all sides of the products, which typically have dimensions of 4 meters per side with differentiated thickness and full / empty ratios. Formworks are vertical, horizontal, inclined or curved with dedicated molds depending on the final shape and position of the item and in respect of the extension of the required finish.

Floral concrete domes in the new Federal Criminal Court in Bellinzona (Switzerland)

Architects: Gramazio & Kohler

The former commercial school in Bellinzona has been converted and extended and turned into the new Federal Criminal Court (Fig. 7). Particular eye-catchers in the building are the floral ornamental concrete domes. In the inner courtyard the architects placed a visitor foyer that is framed by two small courtrooms and can be separated from the sacral-looking large courtroom by a wide folding door. The four square rooms are illuminated by skylights, which open at the tip of pyramid-shaped domes. These are adorned for acoustic and decorative reasons with a tracery-like open-worked floral ornamentation. The plasticity of the truncated pyramid contrasts the otherwise smooth structural elements and is based on a simple plasticine model that was translated into point-symmetrical,



Fig. 7. Federal Criminal Court in Bellinzona

triangular precast concrete elements by the architects Gramazio & Kohler, who specialise in digital fabrication. The organic pattern achieves the acoustically necessary number of holes, serves the fastening of lights and is reminiscent of the foliage of a "tree of justice", under which justice was dispensed in olden days.

Glass fibre reinforced concrete

Lake Constance pebble, Friedrichshafen (Germany)

Architecture: Braunger Wörtz

An organically formed event hall with three-dimensionally curved walls was erected using a self-developed, elaborate method. The hall is comprised of a timber/steel support frame, to which over 100 glass fibre reinforced facade elements were attached. For the production of the precast elements, the manufacture of CNC milled templates on the basis of a CAD model was out of the question for reasons of cost. The building company therefore came up with an unusual alternative: a 9 metre high, 1 : 1 model made of foam polystyrene (Fig. 8). The manufacture of the precast concrete



Fig. 8. Lake Constance pebble, Friedrichshafen