

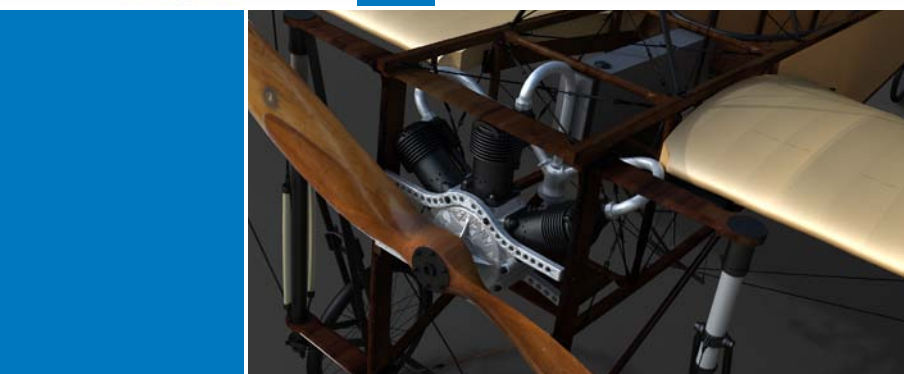
COMET®IV / COMET®5



photorealistic image of the virtual model



3D scanning of the Blériot XI model at the „Musée des Arts et Métiers“, Paris/France



photorealistic renderings of the model

THE MAKING OF THE VIRTUAL BLÉRIOT XI 3D MODEL

Being a partner of Steinbichler Optotechnik GmbH, the French service company Metra, part of the Genaris group, was contracted by the „Musée des Arts et Métiers“ in Paris to produce a photorealistic virtual 3D model of the Blériot XI, the first airplane ever to cross the channel between Calais and Dover in 1909.

There were two main goals for this sophisticated 3D scanning project: The acquired data resulted in a virtual 3D model which was used for detailed technical analysis of the airplane design, e.g., to understand the interaction of the steering mechanisms with the aerodynamical components by simulating and animating the 3D model. This added profound knowledge about the construction and functioning. The virtual model was also used for the production of advertisement material for the opening of the special exhibition „L'avion de l'exploit - 1909, Louis Blériot traverse la manche“ at the „Musée des Arts et Métiers“. From the scanning data, photorealistic images and animations were created for the accompanying website as well as educational videos showing the technical features of this 100-year-old airplane.

The original Blériot XI is displayed at the „Musée des Arts et Métiers“ in Paris, and all digitizing procedures had to take place on site. As the fragile object did not allow any contacting measurement techniques, only optical methods could be considered for this task. With the COMET IV and COMET 5 whitelight projection sensors, even the wooden construction frame and the wings, the fuselage panels, the steering mechanism including control stick and hinges as well as the motor block with propeller could be scanned in high resolution.

Besides the scanning of the especially complex object structures, a further challenge had been mastered successfully by the Metra team - the complete data acquisition could be carried out in only three days. After digitizing, the scanning data were post-processed into triangle mesh format (stl) using the Steinbichler COMETplus software. Based on the stl data, the 3D CAD model was created utilizing different software tools. By reverse engineering techniques, the freeform surfaces were then transformed into mathematical nurbs surfaces.

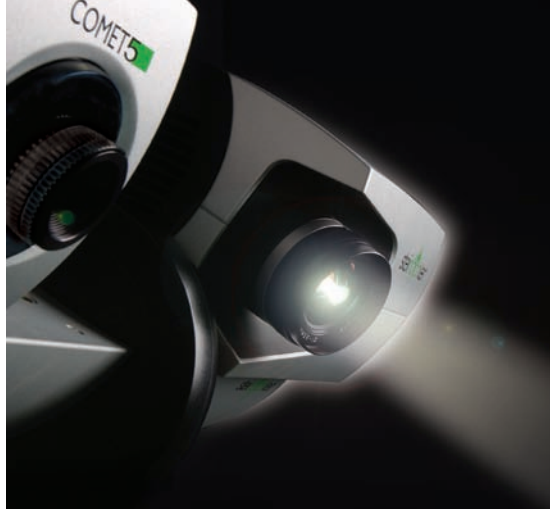
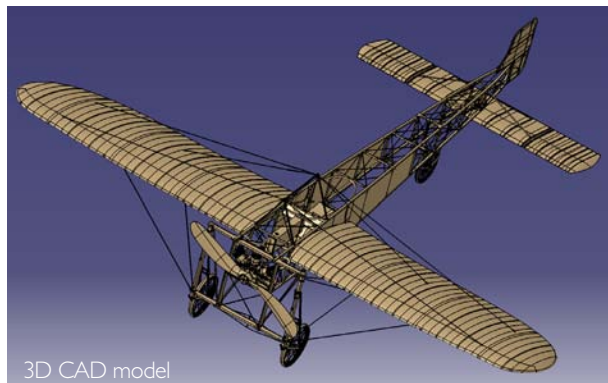
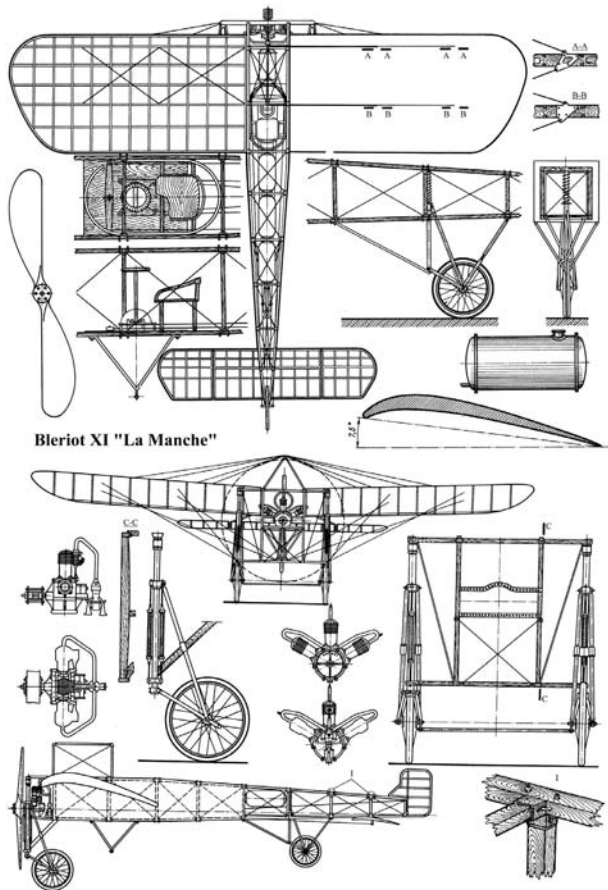


wind tunnel simulation

In combination with 3D construction software which was used to integrate constructional and functional parts etc., a fully functional model was created which can be interactively moved and used for simulations and animations. Furthermore, extensive technical analysis can be carried out, including wind tunnel simulations and investigations of the impact of the steering mechanism on the deformation of the wings and the resulting change of the aerodynamical flight behavior.

In a next step, high-resolution renderings, animations and educational videos were generated to support the marketing activities in advance to the opening of the exhibition.

For further information on the Blériot XI, please visit the official website: www.bleriot.arts-et-metiers.net



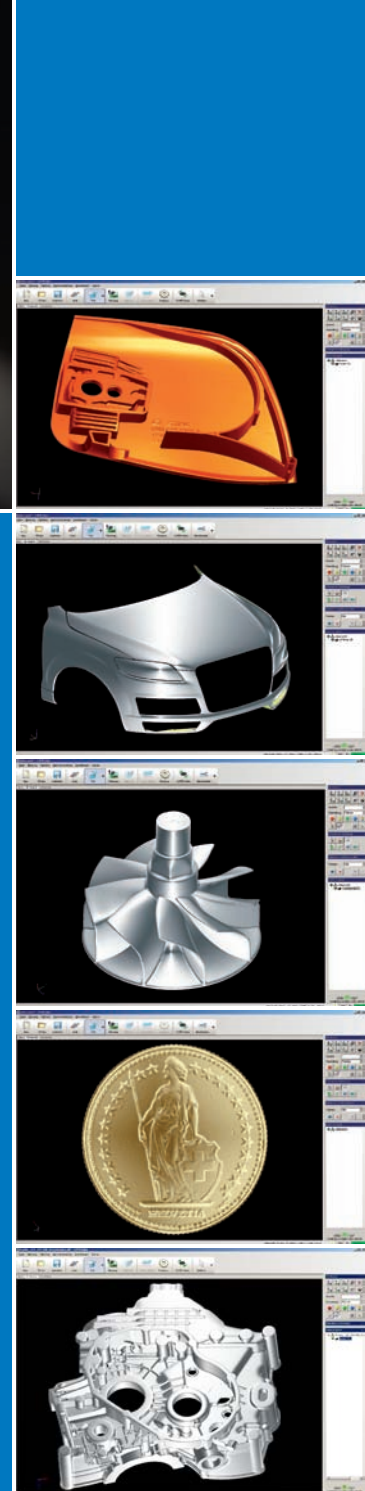
COMET®5 - THE 3D SENSOR REFERENCE

Based on whitelight fringe projection technology, the COMET 5 sensor represents the leading system generation for 3D scanning applications.

Its innovative projection method reaches new performance levels for high-speed and high-quality measurements comprising a wide application range, e.g. quality control/inspection, mold and toolmaking, design, rapid manufacturing, reverse engineering, as well as scanning of art/historical objects and medical technical applications.

Variable fields of view and a modular sensor concept allow for digitizing objects of a vast variety of sizes with highest precision. The system is available with a range of accessories for efficient and easy sensor / object positioning and can also be operated with a compact PC/control unit configuration which provides maximum mobility. In combination with a robot for sensor positioning or object handling, a fully automated measurement process is available.

The easy-to-use and comprehensive COMETplus software for data acquisition and data processing presents an efficient overview of the process steps and allows for a final export of the results for the purpose of further processing in e.g. surface reverse engineering or inspection software packages (e.g. INSPECTplus by Steinbichler).



Steinbichler Optotechnik GmbH is a worldwide leading supplier of optical measuring and sensor technology. Our systems are in operation at numerous well-known industrial companies and research institutes - to our customers, we offer innovative and effective solutions for a wide variety of applications.

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