

ROLLEI SPECIAL ENGINEERING

Shift to Aerial Photogrammetry

Rollei GmbH was founded in 1920 as Rollei Fototechnik GmbH, in Braunschweig, the centre of today's Germany. Founders Paul Franke and Reinhold Heidecke wanted to build opto-mechanically-superior cameras, not only for professional photographers but also for amateurs: high quality hand in hand with ease of use. This resulted in the 1929 'twin-lens'.

With the 'twin-lens' began a long line of product developments, among them the first compact, 35mm film camera, Rollei 35, in 1966, and the first electronically controlled medium-format camera, Rolleiflex SLX, in 1976. A Special Engineering division was established in 1984 to expand the product range to terrestrial and aerial photogrammetry. Today Rollei's headquarters are in Berlin, the capital of Germany, but some of manufacturing is still done in Braunschweig, and the entire Special Engineering division resides there.

Photogrammetry

The main business of Rollei as a whole is in high-quality products for personal digital entertainment. However, Rollei also combines its longstanding history in precision optics and mechanics with new developments in electronics and software to serve the photogrammetric market. Up to two years ago this was mainly in terrestrial photogrammetry and included police applications such as documentation and archiving of car accidents, crime-scene recording and investigation and various forensic applications. Now Rollei Special Engineering (RSE) has entered the market for middle-format digital aerial cameras with production of the AIC Modular camera system and our main business has shifted to aerial photogrammetry.

The AIC Modular is a compact, high-resolution camera that can be easily customised to fit user's needs. The system is developed both for stereo photogrammetric data acquisition and for capturing imagery during Lidar survey. The system is predominantly used to support Lidar survey; 60% of all systems in use are operated for this application. Stereo photogrammetry accounts for 35% whilst 5% is used in a variety of non-traditional tasks, such as whale watching for fishery. Nevertheless, terrestrial [photogrammetry](#) continues to be a focus for serving our existing customers in police applications. Much R&D is devoted to integrating the AIC Modular system easily with other photogrammetric systems in use by our customers. For example, the cameras can be interfaced to Flight Management Systems (FMS) including TrackAir, CCNS4 and SoftNav, and to direct geo-referencing systems which record GPS and INS data onboard the aircraft, such as PosAV. While RSE has developed expertise to allow for such interfacing, Rollei will not itself develop the systems but stay focused on capitalising upon the excellence of its photographic heritage.

Focus on Cameras

The principal components of RSE business are sales, and hardware and software development. Hardware includes the optical, mechanical and electronic subsystems of Rollei aerial-camera systems. Software includes camera firmware and controlling software. As aerial photogrammetry is highly technical, comprehensive service and support is a key factor in its successful use. Approximately twenty distributors form our worldwide network, providing service and support in addition to a sales channel. This emphasis on service and support means a need for appropriate investment in the service sector as RSE products come into more global use. Today RSE comprises a team of eight people supported by many other Rollei departments, including manufacturing, optical design and administrative services. RSE specialists concentrate on design, manufacturing, integration and use of the camera systems.

Global Markets

Europe and Asia are today the main markets for digital middle-format aerial-camera systems. The European market, where the cameras are mainly used to supplement Lidar systems, is the most rapidly expanding. In Asia the market potential for aerial systems is growing, mainly for photogrammetric applications. In 2005 we started marketing in the North Americas, where our camera systems are used for texture mapping of Lidar-generated digital terrain models. Huge sales potential exists in the Middle East, and our marketing for 2006 focuses on this region. The expanding market demands an increase in the number of employees. Rollei acts as distributor for the BAE Systems software package SOCET SET in European German-speaking countries, and for Panoscan, manufacturer of the Mark III digital panoramic camera, in Europe and the US.

Moving Ahead

The need for geo-information is on the increase everywhere. This growing need drives new demands, including faster burst rates and higher resolution. Aerial images in conjunction with GIS systems can meet these demands. An example is mapping of flooding of the River Elbe some years ago, where images were used to document the disaster and to prepare scenarios for evacuation and rescue services. Its design philosophy enables Rollei to swiftly incorporate new developments into sensor technology. For example, new 5,000x7,000-pixel sensor development was completed within a few weeks of the technology becoming available. We will continue to respond to the demand for high resolution. A brand-new development is the two-camera solution for Colour-InfraRed (CIR) data acquisition; customers active in forestry and environmental studies have already shown much interest. We are also developing Forward Motion Compensation (FMC) for our camera system, and specialised versions of the system will be developed dedicated to innovative applications.

