

## FLIGHTS OF FANCY

BY STAN MATE

Faced with retirement as the senior research and development executive for a major food company, Fred Kurasiewicz thought about what he wanted to do with his free time. He decided that his long-time fascination with aviation might yield the answer. That was 15 years ago.

Today, Fred has a functioning flight simulator in his home. No desk-top computer game, this technological marvel consists of a full scale enclosed cockpit replica of a Boeing 737NG-800 airliner. Built from scratch using technical specifications, it comprises many actual aircraft parts, including a complex throttle control assembly that Fred spent many months converting to simulator use. About 90 percent of a real 737's systems, represented by a dizzying array of dials, gauges and controls, are operative in the simulator. Behind the control panels is a labyrinth of wires, circuits, servos and connectors. External visuals that correspond to the aircraft's virtual location and position are projected onto an 18-foot-wide curved screen visible through the cockpit's windows. The cockpit runs on seven dual-networked high-end computers.

To construct and operate this intricate system successfully, Fred has had to learn how a 737 flies and how its various mechanicals and systems work independently and in concert. When asked how he managed to do this, he replied that he started by studying related technical references. Among others on his bookcase, you will find two dauntingly thick volumes (955 pages total) that comprise the Boeing 737 Operations Manual. Fred also acknowledged his



Fred Kurasiewicz sits at the controls of his Boeing 737 simulator.

Photo by Stan Mate

debt to the many aviation technical professionals and commercial pilots who provided invaluable advice and guidance along the way.

Piloting an airplane is a complex task, and the larger the plane, the greater the complexity. Airlines use simulators to train their pilots on responding to in-flight emergency situations, e.g., loss

of engines or hydraulics, that can't be safely duplicated in a real flight. Pilots are required to re-certify annually. Fred, who isn't a licensed pilot but thinks it might be another retirement project, prefers to use his simulator to enjoy the virtual flying without any imposed calamities.

The virtual flying is quite realistic. The sense of reality conveyed by the physical set up of the simulator is enhanced by a world-wide network of virtual air traffic controllers, accessed and linked through a website. Fred files a flight plan based on the controllers available at the time and follows the instructions of the various controllers along the flight route. The flight can take off and land anywhere in the world and follows real-world procedures. Visuals duplicate the appropriate airports layout and existing weather conditions on the ground and in the air.

To fabricate his simulator, Fred needed to employ a range of skills, including engineering, woodworking, metalworking, electronics and software programming. This certainly ranks among the ultimate do-it-yourself projects. Fred is also quick to add the most important necessity—an understanding spouse. ■



Some of the simulator's controls and instrumentation

Photo by Fred Kurasiewicz



Fred participates in an annual week-long charity event sponsored by the cockpit-building

community in early November called WorldFlight. The beneficiary is Johns Hopkins All Children's Hospital. Details can be found at [worldflightusa.com](http://worldflightusa.com).