



CASE STUDY

UPOD MICRO



Designing and Manufacturing the uPod Micro

uPod Micro is a feat of design and engineering developed in response to a specific market need. The ultimate portable uplink system has proved an instant hit for a wide range of applications.

The uplink system comes in a range of sizes from 0.75m in diameter through 1.3m, all of which are lightweight at under 23kg each and are compliant with the package size regulations set out by the IATA. Crucially, they can be loaded as normal baggage on aircraft.

The system is the first product to be manufactured in quantity by SIS LIVE in specially built facilities at the company's premises in the UK. As such, they represent a major shift by SIS LIVE to be able to manufacture products and services for its many customers around the world.

The infrastructure required to set up the facility was itself a big challenge for SIS LIVE to ensure the products it makes are to the highest international standards.

The development

The uPod range was developed following a demand from the market for a lightweight, fully

automated, highly portable antenna that could be mounted on a car roof or checked in as standard luggage on an airplane and used as a ground mount flyaway system. In response to customers' requests, SIS LIVE's Managing Director David Meynell and Sales Director Mark Shadbolt carried out a review of possible systems that might already be available. In consultation with users of the systems, it was apparent nothing was suitable.

SIS LIVE operates the largest uplink fleet in Europe and has a lot of experience of using antennas from many suppliers, which have been integrated into SIS LIVE's own vehicle fleet. But because nothing could be found that was suitably lightweight and portable, the decision was taken to design and build a new range in-house.

"It is a big decision to move into hardware production, but it is something SIS LIVE has successfully achieved," says Chris Wright, Operations Engineering Manager, SIS LIVE. "We also achieved it in remarkably short time." It took five months for the production of a prototype and

another three months to build a production model.

The uPod range currently consists of three models for differing uplinking applications: 0.75m, 1.0m and 1.3m antenna.

Different antenna sizes

"When we designed the 0.75m parabolic reflector the advanced design exceeded all weight and cost targets, which allowed us to upsize to 1 metre for more sales applications, while still being lighter and more stable than our closest competitor's proprietary products" Wright says.

"The 1.3m product is stretching the boundaries of physics in terms of the amount of wind loading that the structure can support. It has got to have high stability in order not to be blown off its path. It was quite a challenge and sourced some specialist finite element analysis assistance from a group of consultants in Germany, who have a lot of experience in composite science within F1 motorsport. They looked at the stresses the product would suffer from and how the structure could be strengthened.

The product is 90 per cent carbon fibre material and the way it is created is in a series of laminates. You can use plies in different thicknesses and fibre orientations to choose where you want strength and stiffness so it's quite an intricate process."

As a result of the intense R&D work, the 1.3m antenna has a total 'all up' weight of only 33kg, compared to its nearest competitor. A comparable sized dish is around 70kg. The largest dish size is fully HD compatible and is ideal for Satellite News Gathering applications.

Automatic deployment

SIS LIVE has also developed the product so that the antenna can be automatically deployed. The operator only has to press a button and the antenna will automatically seek and lock on to the satellite.

Engineering Projects Team

SIS LIVE has built up a full manufacturing facility for creating products to the highest specifications. The department is responsible for developing and manufacturing the Micro system in addition to SIS LIVE's core business of building and providing market leading, dedicated satellite news gathering vehicles and fixed link infrastructures.

Electro Mechanical Development

Once a request is identified, the Electro Mechanical Development team starts the R&D process. They research what is currently available in the market and decide if SIS LIVE needs to develop a product 'in-house'. More research is then carried out on development and infrastructure costs. The next step is to take the product from the research stage to design and test all aspects of the concept.

The Electro Mechanical Department has six electronics development engineers based at Langley and Milton Keynes, responsible for systems design and integration. The department also has four 3D

CAD modelling suites.

Project Management

Project Management consists of a team of six dedicated professional project managers responsible for systems engineering, timeline management and quality assurance.

Procurement and Logistics

SIS LIVE has a team of buyers, including strategic procurement specialists. The team is also responsible for the stock in our bonded warehouses and for exporting worldwide.

Buyers work with development staff and project staff to ensure that business procurement requirements are provided for. This involves liaising with vendors and negotiating prices and terms and conditions to ensure that the best value product is supplied at the most competitive price. With components, timing is so important and the team makes sure there are sufficient supplies when they are needed.

Manufacturing

SIS LIVE has a full SAGE MRP (Manufacturing Resource Planning) software system for managing the manufacturing process from procurement, through inventory control to manufacturing orders and

warranty support data compilation.

Manufacturing also includes electrical production – from sub-system wiring through to entire truck builds – mechanical assembly, fabrication and prototype manufacturing.

SIS LIVE has eight permanent staff in production including specialist skill sets such as sheet metal fabrication, machining and wiring skills, to be able to customise trucks and products as necessary.

Test/Commission/QA/Support

With 12 permanent staff, the team is able to provide 24/7 support as required. A full RMA (Returns Material Authorisation) system is integrated within the MRP database to track everything in and out of the facility.

There are actually two departments. The first is responsible for test and Quality Assurance, certifying that everything manufactured is fit for purpose. Everything goes through a full test programme prior to leaving SIS LIVE. The second department consists of the support team who man the 24/7 helpline for customers, like Sky and the BBC, and who are sent out if there is ever an issue in the field.

