Loop Technology can provide vision systems for composite inspection. Machine vision systems are designed to support the process specific criteria. We have systems to monitor material deposition and surface quality.

**Lay-Up System Features Include:**
- Robot Mounted Loop Designed Vision System
- Fibre Angle Verification
- Edge Location
- Gap Detection
- Overlap Detection
- Surface Profiling
- Intuitive Operator Interface
- Integrated Robot Control Interface
- Foreign Object Detection

**Surface Inspection System Features Include:**
- Pinhole Detection
- Intuitive Operator Interface
- Integrated Robot Control Interface
- Robot Mounted Loop Designed Vision System
- Feature Categorisation

Currently under development is an inspection system targeted at in-line AFP deposition monitoring and correction.

A range of handling systems are offered for picking both dry fibre and pre-preg materials. Both 2D and 3D systems are available depending on application requirement.

Our systems are modular and therefore scalable lending themselves to either robot or gantry driven deployment systems. They can be used in a manual or fully automatic mode where pick and place data are generated from the client CAD system, for example Fibresim.

**3D Deposition Systems**
The mould deposition system utilises a fixed XY grid of vacuum cups which can be used to pick from flat surfaces and lay-up into a double curvature mould, the cups being driven vertically to replicate the surface profile of the mould. Each cup is individually controllable permitting the system to pick a wide variety of ply shapes while keeping energy consumption to a minimum.

We are currently developing a second generation system with an innovative gripper configuration which will allow surfaces from wing skins to engine nacelles to be produced automatically in either a vertical or horizontal orientation.

**Configurable 2D Gripper**
Our 2D Gripper is configurable in both X and Y axes in order to optimally place individual vacuum cups on the part being handled. The system is scaleable to suit the application, a typical configuration could be a 5 x 5 matrix of vacuum cups to cover a 1.5 metre square area. The system generates recipe files that are used at run time to automatically position the vacuum cups in the most advantageous location.

**Kitting System**
The ply kitting system is designed to take nested plies from multiple kits on the cutting table and sort them into discrete kits arranged in reverse lay-up order. The process involves using a robot mounted configurable gripper to pick material from a flat surface, be it the cutting table or a conveyor, and place into a high speed temporary store. Location within the store is logged and when a full kit is present this can be called for in the correct order and transferred via a collation system into a multi-drawer cart. The cart can then be moved to lay-up area and the kits accessed as required. Cart content is tracked via a fully programmable RFID system.