

# The “Ply-Picker” System

## Automated Cut Table Clearing, Kitting and Layup

*“The only automated solution to address uncut fibers, ply inspection, preform layup AND automated backer removal.”*

In response to the need for labor reduction and process improvements in cut room and composite layup operations, ARM Automation has developed a unique robotic solution for ply picking and handling. This patent-pending tool head and system provides answers to several long-standing issues which have prevented the wider adoption of automation in production of traditionally hand-laid composites.

### Features:

- Universal gripper suitable to complex shapes and sizes
- Patent pending uncut fiber detection tools
- High-resolution ply inspection and automatic FOD detection
- Pick-to-kit functions to support manual layup operations
- Automated layup of flat pre-forms for both prepreg and thermoplastic materials
- Automated backer removal and disposal
- Visual inspection of layup, ply-by-ply



**Ply-Picking to Kit Cart**



**Flat Preform Layup with  
Poly Backer Removal**

### System Benefits:

- No programming - automatic ply identification based on nest file data
- Supports super-nesting and more optimal material usage
- Higher net throughput and quality yields
- Full inspection record and tracking of all plies in production
- Consolidated flat-preforms reduce manual layup time and labor

# Ply Picker - General System Specifications

**Shapes and Sizes:** The Ply-Picker head can accommodate ply shapes of almost any width and length, from a fraction of an inch in width up to the operating limits of conventional cut tables. Once a ply shape or class is taught to the system, that pick strategy serves to allow reliable picking regardless of ply re-nesting and surrounding material state.

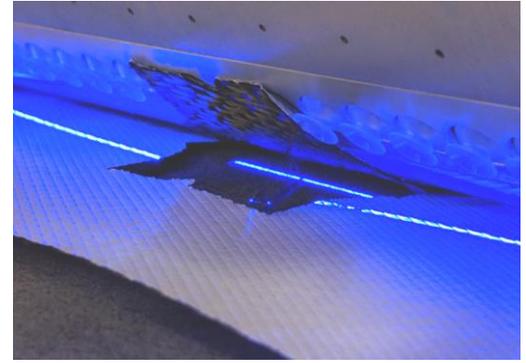
**Rates:** Pick rates vary with ply size and cut table length. Single head solutions can provide pick-to-kit rates of up to 8 plies per minute, with multi-head solutions reaching many hundreds of plies per hour.

**Kitting:** Plies can be assigned to kit stacks OR placed onto removable trays and automatically loaded into mobile “kit carts” which can provide random access to any ply on demand.

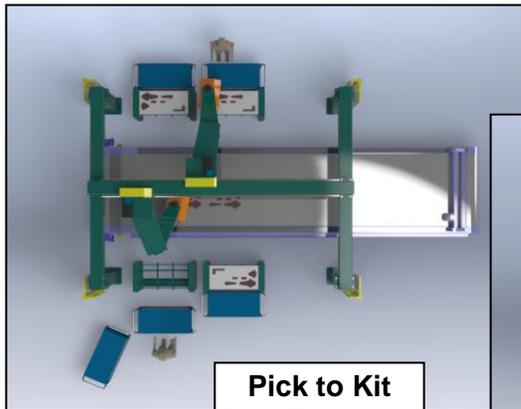
**Sorting:** Plies can be picked and stacked for bagging OR may be robotically extracted and sorted from the kit cart OR may be automatically presented to operators in the desired sequence directly from the kit cart itself.

**Layup:** Plies can be laid up automatically to create flat preforms for subsequent forming or hand layup.

**System Solutions:** The Ply-Picker head can be fitted to any suitable robot or gantry positioner. Workcell arrangement can be configured in many ways to suit the needs of different applications. Please contact ARM Automation to discuss your specific production needs and use case.

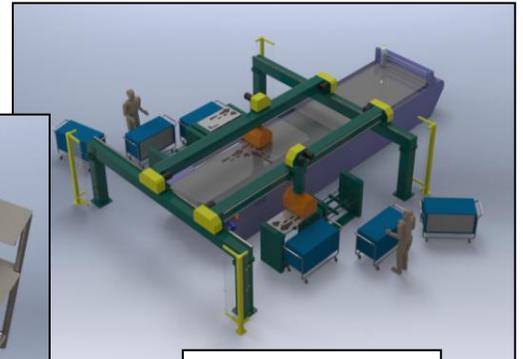
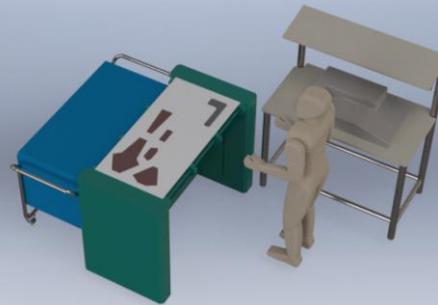


**Patent-Pending Uncut Fiber Detection Feature**

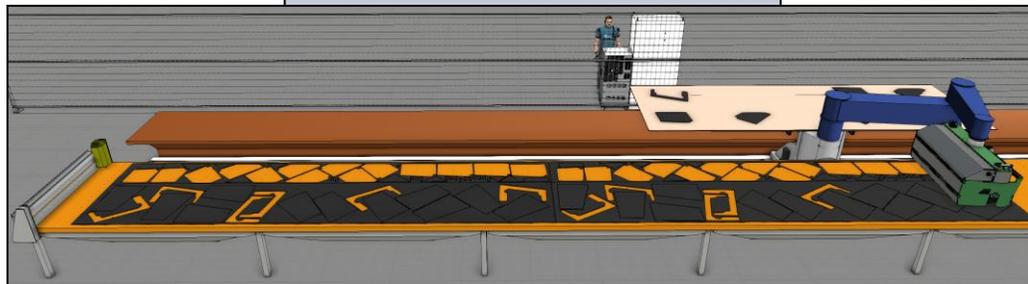


**Pick to Kit Cart Solutions**

**Automatic Ply Presentation from Kit Cart to Manual Layup Station**



**Dual Pick Head Gantry Systems**



**Robot-on-a-Rail Kit Picking for Long Static Cut Tables**

ARM Automation is a uniquely capable engineering and systems integration firm which has built a reputation for tackling challenging automation problems. Over the past 25 years ARM has worked largely behind the scenes to develop robotics and turn-key automation technology for a range of industries including aerospace, transportation, consumer goods, medical device manufacturing and petrochemical sectors.