Fixtures are required in nearly every process of manufacturing. A common problem is that the requirement for producing specific tooling for each component leads to high tooling costs. There is a clear need in industries for reconfigurable tooling capable of adapting to a variety of parts whilst manufacturing processes are carried out.

Reconfigurable technologies have been developed in the research group:

The patented pin-array fixturing system (Patent number: US2005/0082731) utilises a modular device which has a reconfigurable and lockable clamping face that can encapsulate the blade surface topology without imparting deforming forces.

The patented screw-pin fixturing system (Patent number: GB2416504) utilises screw threaded pins that can be individually manipulated to form around complex geometry components during machining.

An integrated system which utilises the screw threaded pins, CNC machine and reverse engineering technology for the vacuum forming process is under construction. The system will enable the reconfigurable tooling technology, which reuses the die for different components.

**Feather-touch Pin-array Fixture (patented)**

- Pneumatic advance and hydraulic clamping
- Conformable to component geometry
- Reconfigurable
- Feather touch and Limited deformation
1. Mechanically self-lock
2. Cheap and rigid
3. For components with regular geometry and complex geometry

**Potential applications of screw-pin principle**

Can be extended to stretch-forming, elasto-forming, die, vacuum forming etc.

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