Do the components and capabilities of an in-circuit tester justify the investment?

In-circuit test has always been a major purchase decision for manufacturers. System costs range from $100,000 for a basic configuration to more than half a million dollars for a full configuration, high-node-count system. Is it worth the investment?

Figure 1 shows the basic components of an ICT. They include:

- Testhead: made of rigid cages where every part of the system is designed to ease manufacturing operation. The testhead is motorized and permits rotation for ease of use for operators' board placement procedure during testing.
- Controller: A high-performance PC controller provides the development and operator interface, test control and communication with the testhead.
- Integrated development and production runtime software.

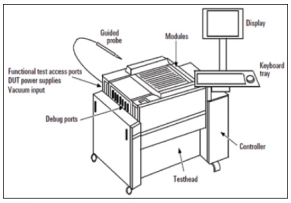


FIGURE 1. Overview of an in-circuit test system.

Testhead module. The testhead module holds one of the most important parts of the ICT system, consisting of the following **(Figures 2 and 3)**:

- ICT pin card: Hybrid digital pin card, analog pin card, utility card.
- Analog stimulus response unit card (ASRU): Provides analog measurements capability.
- Control cards.

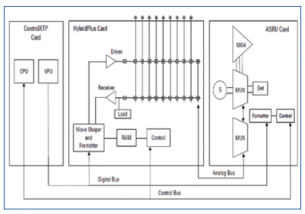
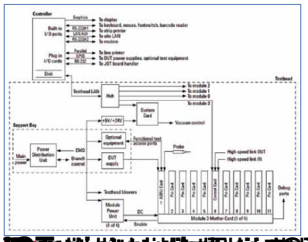


FIGURE 2. Block diagram of the ICT pin card, ASRU card and control card.



[redacted]

TABLE 1. Throughput Improvement of Throughput Multiplier

	1-UP FIXTURE*	2-UP FIXTURE**
Operator handling (placing boards in fixture)	1 sec.	0 sec.
Testing	10 sec.	12 sec.
Handling (removing boards from fixture)	1 sec.	0 sec.
Total cycle time	14 sec./bd.	12 sec./2 bd.
Output per min.	5 boards	10 boards
Output per day (21 hr.)	6,300 boards	12,600 boards

*One board in one fixture

**Two boards in 1 well; total four boards in one fixture

[redacted]

Jun Balangue is a technical marketing engineer for in-circuit test at Agilent Technologies (agilent.com); jun_balangue@agilent.com .