



## Press Fit Connection Advantages and Limitations

**Mr. Amba Prasad**

Product Architect, M/s. Tejas Networks, Bengaluru.

( [ambaprasad@tejasnetworks.com](mailto:ambaprasad@tejasnetworks.com) )

### Purpose

Printed wiring board Integration at system level includes utilization Of various types of connector IO and Power Terminations. Press Fit Pin Termination technology though introduced in late 1980s has come a long way in replacing conventional Solderable connection applications.

### Advantages of Press Fit Pin Connections:

Industry has used Press Fit Pin Terminations for both IO and Power terminations following are advantages of such techniques:

- ❖ Pins Of short length can be assembled on thick boards.
- ❖ In fact Signal Integrity Requirements call for Short Pin Lengths.
- ❖ Prevents thermal exposure of connector header housing since soldering is eliminated.
- ❖ Prevents Solder Paste and Flux Application at Connector Area.
- ❖ Environment Friendly especially in the case of thick Backplanes.
- ❖ No Shadow Effect on SMT components if done as Post Solder operation.
- ❖ Prevents Solder defects like bridges, bad wetting, flux residue, thermal expansion and cold joints.
- ❖ Hybrid Assembly possible but should be considered from design phase itself.
- ❖ Press Fit Blade Connections can carry high current in Power Supply boards.

### Limitations of Press Fit Pin Connections:

Press Fit Pin Terminations have certain disadvantages, few have been listed hereunder:

- ❖ Needs Initial Design Considerations and use of special tooling in assembly.
- ❖ PCB Press Fit holes require Controlled Plating for Hole Wall thickness, strict control on additional plating and overall tolerance on finished hole diameters'
- ❖ Bad Press In may damage Hole Walls and subsequently connection reliability.
- ❖ Connector Price is slightly higher than solderable connectors.
- ❖ Connector Removal is possible only twice in controlled repair Environments.

## SWOT analysis of Embedded Component Technologies:

### Strength:

Press fit connections can provide better Signal Performance, and better Power delivery.

### Weakness:

Limited supplier base, fabricators are in niche segments and assembly needs special tooling.

### Opportunities:

Some Times Press Fit is the best option in high density and high power requirements. Board thickness is not a limitation.

### Threat:

With an immense Strengths and a little weakness to address, opportunities in sight, the only threat is in missing Press Fit Connection terminations.

## In Conclusion

Many Industry Associations are have in their roadmap press-fit connection technology. IPC has a standard dedicated to Press-Fit Requirements, under Development.