ESSENTIALS OF SMT

Practical Know-How

Mr. Young Bong Kang

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Prologue

This is a practical technical book written by the author based on 24 years of experience. Almost all SMT books, due partially to a few SMT-related books, put weight on equipment, single process or part technology rather than deal with practical process. The book dealing with practical process know-how is rarely found and this is perhaps the first book in which overall SMT practical processes and standards are presented.

After I wrote about SMT management techniques for beginner manager in 2007, I have kept on thinking to write about overall practical processes of SMT, Nonetheless, I was deeply involved in other company and writing a book in English was felt as a burden due to my poor English, and thus my second book came out a bit late. Fortunately I met a good translator and then SMT book in English can be presented now to you.

Although now I live in India in 2013, I have experienced SMT across Korea, China, Philippines and India. Through this experience I draw my conclusion that what is happening in SMT is same regardless of countries and the smaller companies are found to have the more trial-and-error and work with wrong process due to lack of correct information of SMT.

Although audit of standardization certification organization like ISO may point out some cautions, it is difficult to expect SMT technical support in accordance with cautions. It is good to use 6 sigma tool, and yet it takes a lot of time to make statistical data for the period. Moreover, in case TFT team has no knowledge, they do not find the solution, for detecting the correct root cause from define step is never easy. Eventually know-how of internal human resources is necessary.

Standardization of SMT, in reality, has quite a difficult part. Despite the same equipment and same condition, it becomes different depending on human resources. Since company wise equipment investment is different, product group is different, environment is different, same work process cannot be applied to these.

In the area of SMT management major companies reduced error-and-trial greatly by computerizing quite a portion of manual work and standardizing work process, and yet they do not know whole process structure, since they work within a parameter of computerized process. In case of small companies they are still going through the process of trial-and-error.

If the process of major companies intends to be applied to their vendor companies, the same amount of investment and manpower should be committed. In case even one thing is lacked, it is unnatural as worn unfit clothes and work does not proceed smoothly. At the end standard and process may work separately.

This book aims to contain all the essential hands-on techniques from basic SMT to SMT management on the whole. The author wishes that this book could be a lot of help to those who just start SMT or struggle with lack of knowledge and standards although they already started.

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(From Chapter 4- Basics of SMT)

PCB Guide Design Sample:

A lot of company's R&D does not have standards of fiducial mark designing. R&D persons do not have SMT manufacturing knowledge; they couldn't consider SMT production process. (Fiducial mark size, position and shape.)

In mounter the rail is of 2.5mm. Hence, it required to make fiducial mark at-least at 5mm distance. Refer figure 1.

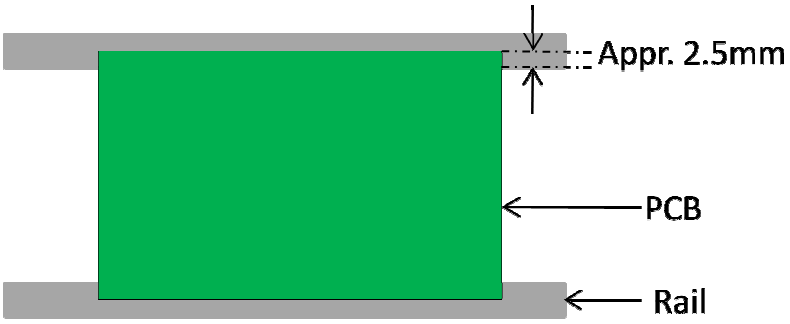

Figure 1

Figure 2 is example of wrong PCB design, No standards are followed while designing the PCB.

Figure 2

Figure 3 is the sample of fiducial mark position of mobile PCB. The method will avoid the 180° reverse production. In mobile PCB fiducial mark size is 0.8mm to 1mm usually used. If its size is bigger, the tolerance ratio also will increase.

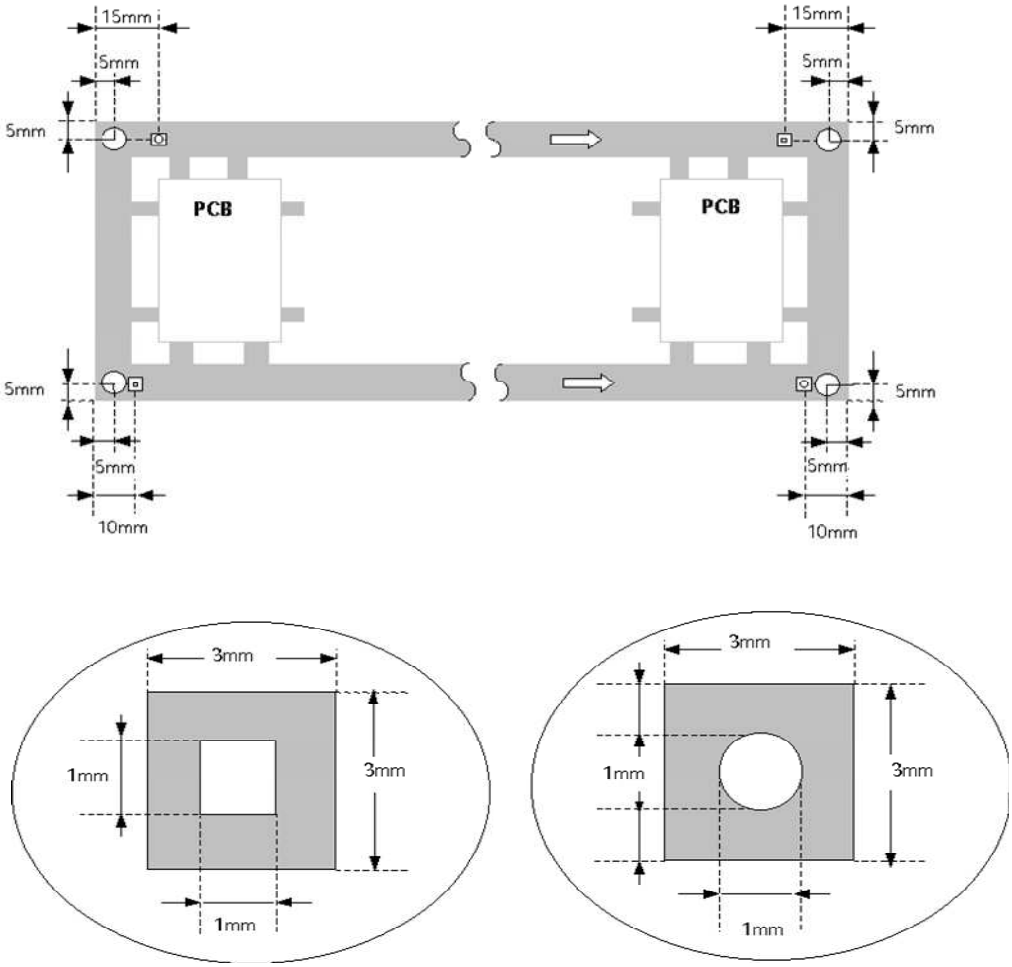

Figure 3