Abstract

ESD abbreviation has become confusing causing misleading translation all over the world. Standardization bodies may not have a common understanding of the terminology and most of the people do not care how to use terms. In this paper consequences of improper use of the abbreviation are considered and consistent practices for the written and spoken language are proposed.

Introduction

Content of this paper is based on a literature and informal discussions with ESD coordinators, component specialists and failure analysis engineers. At first the usage of the ESD abbreviation is studied. Secondly consequences are considered and the current state is summarized. Finally the subject is discussed and suggestions are presented.

Electrostatic discharge (ESD)

In electronics industry ESD is well known abbreviation but there are lots of prevailing conceptions of the usage [1]. Definition of ESD varies depending on the source of information. Despite that an unequivocal meaning of ESD according to international standards is electrostatic discharge [2].

Most of the people who are dealing with ESD related issues understand both the phenomenon and an abbreviation. However, people in factories have created a new meaning for the electrostatic discharge (ESD). Furthermore, the purpose of an abbreviation is recently changed. ESD can be used as a common term of electrostatics. It can be replaced with “dissipative”. It can also be used in a front of any word which is related somehow to the electrostatics e.g. ESD garment [2], ESD material marking [3], ESD control item [4], ESD ground [4] etc.

One of the most confusing terms is ESD awareness [4]. For example component engineers who are working with a failure analysis or research and development may have a deep understanding of the physics, electrostatic discharge, devices, on chip protection and RF technology but they may not have ESD awareness [5]. On the other hand ESD coordinator may have ESD awareness without the knowledge of electrostatic discharge, devices, physics or RF technology [1].
Standardization bodies have already accepted the new approach to the terminology. For example, *ESD flooring* [4] does not actually mean electrostatic discharge flooring. In this case ESD stands for slow movement of charges instead of ESD in ordinary meaning. According to the previous versions of the international standard ESD means transfer of charge between bodies at different electrostatic potentials caused by direct contact or induced by electrostatic field [6]. Another definition for the ESD is a rapid, spontaneous transfer of electrostatic charge induced by a high electrostatic field [7].

The abbreviation has become ambiguous and that is the reason why it is unavoidable to prevent undesired consequences. In a spoken language ESD abbreviation covers the both fast and slow electrostatic events. ESD does not necessarily mean only the rapid electrostatic discharge anymore. In terms of *ESD testing* a product withstand stress is confused with a production control measurements. *Electrostatic measurements* are confused with *electrostatic discharge measurements*. A content of *ESD training* may vary from the connection of wrist strap to the three dimensional thermal model of the electrostatic discharge. Sometimes ESD is used as alone without any kind of meaning of discharge. In that case ESD stands for electrostatics in general, but the meaning varies depending on discussion [1].

Years ago an *antistatic* term was defined for materials having exhibiting properties which minimize charge generation when rubbed against or separated from the same or other materials [8]. Later on the term was considered again because of improper use. The terms *astatic* and *antistatic* should be avoided due to the different existing meanings [6]. Despite this guideline an antistatic term is still widely used all over the world in all meanings of it. It seems that the same has happened to ESD. For example *ESD flooring* can be translated as *antistatic flooring*. Thus, ESD stands for antistatic.

**Summary**

ESD abbreviation does not necessarily mean a fast discharge alone anymore according to the usage of the new terminology. ESD is widely used as a common term of electrostatics in a spoken and written language. ESD can also be used in a front of any word or alone in purposes which are related somehow to the electrostatics without the meaning of discharge. *ESD* is a tag of electrostatics.

**Discussion and suggestions**

The tendency of the terminology has not been forced by purpose. It just happened because of the improper use of the term. People who are working on electrostatic related issues have to face this confusion on a daily basis.

The definition of ESD shall be considered again so that it gives an answer to the question “Does ESD abbreviation cover the both slow and fast transfer of charge?”

There are at least two options which have to be noticed in further standard updates. The prevailing conception shall be defined or the definition shall be written in accordance with the original meaning of the electrostatic discharge.
In the case of fast transfer of charge all the slips in standards shall be systematically replaced with explicit and accurate terms. For example *ESD flooring* shall be converted to the *electrostatic dissipative flooring*. *ESD awareness* is related to the rapid electrostatic discharge, *ESD protection awareness* is related to the protection against ESD etc. People in factories who have *awareness of protection against electrostatic discharge* should learn to use the abbreviation correctly in spoken and written language.

According to prevailing conception ESD could be defined as an electrostatic discharge, which means both slow and fast transfer of charge. In addition ESD stands for electrostatics in general and the usage for expression in a front of the case specific words should also be defined.

*Mr. Static, Niels Jonassen MS, DSc, who passed away in 2006, started this discussion years ago. He wrote that it's probably too late to correct the language, but couldn't we at least limit the use of the abbreviation ESD to electronic components and circuits. Or, it would be even better if we only talk about ESD when we truly mean electrostatic discharge* [9].

**References**

[1] Discussions, Several discussions with process engineers and ESD coordinators in Asia, Europe and USA in 2007


[8] CECC 00015/1 Protection of electrostatic sensitive devices

[9] Mr. Static “From Electrostatics to ESD”: www.ce-mag.com