Festina Lente and Failure Analysis

George A. Pantazopoulos

Submitted: 18 January 2017 / Published online: 21 February 2017
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Hasten slowly (or run slowly) is a direct translation of the latin “*Festina Lente*” and the original Greek “*Σπεῦδε Βραδέως*.” This proverb brings to the discussion an *oxymoron*, where two conflicting terms are connected in a single argument: “run/hasten” (to go fast) and “slowly.” The meaning of this notorious sentence adopted by philosophers, scholars and academics such as the Renaissance publisher of Aristotle’s treatises *Aldus Manutius* [1], who has created an emblematic print mark consisting of a dolphin and an anchor, condensates the diachronic idea of the progress flow in every aspect of human and social life. This is eventually related to progress in society, economy and science by following a structured and reliable path.

In failure analysis projects, *festina lente* (*FL*) is a proverb which outlines a research approach with significant

and powerful value. Sometimes, this phrase is received with misunderstanding and skeptical thinking, due to the fact that the word “*lente*” (slowly) is taken with a negative meaning. However, a deeper consideration of the phrase *FL* demands a thorough understanding of the actions that have to be taken, their temporal distribution and consequences, establishing a more diligent and knowledgeable approach in cause-and-effect relationship.

According to a general approach, the application of *FL* in failure analysis can be represented schematically by the following flow (Fig. 1).

More specifically, many projects dealing with failure analysis are received as urgent jobs, where timeline is short and the customer is eager for work completion. Nevertheless, as failure analysts, we have to be quick and effective with respect to the final target and keeping focus to the customer demands. Analyzing in higher detail these six steps appeared in Fig. 1, a structured and compact breakdown covering the majority of the failure analysis services could be analyzed further below:

- *Problem/failure understanding* This step mainly includes gathering of information, e.g., production data, interviews, literature and service history aiding understanding, which can highlight the optimum and easiest/fastest path to allocate the failure/problem source. However, this step needs time and resources in order to proceed forward.
- *Target setting* The goal(s) of the investigation has or have to be determined, early enough in order to optimize efforts and resources toward the achievement of the objectives of the failure analysis investigation. Management responsibility and commitment assures

G. A. Pantazopoulos (✉)
ELKEME Hellenic Research Centre for Metals S.A., 56th km
Athens – Lamia National Road, 32011 Oinofyta Viotias, Greece
e-mail: gpantaz@elkeme.vionet.gr

Fig. 1 Simplified schematic showing the general sequence of the steps involved in failure analysis

the resources' availability toward the satisfaction of the goals. Challenges and risks should be also taken into account since their negligence constitutes a reason for failure.

- *Action planning and implementation* The design of the failure investigation process is of essential importance. Using this approach and knowing the preset targets and available resources, the process can be successfully designed and scheduled. During this planning procedure, e.g., chemical analyses, fractography, materials testing protocols are proposed and executed, simulation scenarios are suggested and implemented.
- *Performance evaluation* Investigation process progress monitoring and exchange of information through reports and communication among the interesting parties give the opportunity of "process control,"

processing/analysis of collected information. Process adjustment or revision could be the outcome of such rigorous review, leading to cancellation of unnecessary actions, establishing new ones (e.g., update test methods to be applied) and assisting to the fast delivery of the results.

- *Review of the results* The compilation of the results in a comprehensive manner offers the opportunity to review their soundness, robustness and judgment of the entire value with respect to the preset targets. The quality of the presentation and interpretation are significant indicators that built on scientific/engineering competence and expertise.
- *Decision for further actions* This step is the natural continuation coming from the last step (*Review of the results*) and requires active involvement of the investigation team members, top management commitment and engagement and very frequently the involvement of the main interested parties (e.g., customer). The outcome of the action indicates the end of the process or activates another loop of investigation.

Following a structured approach, i.e., a documented process, is essential for the success of every business operation and, of course, in failure and root-cause analysis, which also constitutes an important technique in quality and process improvement [2]. *Festina Lente* signifies the fact that timeline is always a key parameter, which has to be taken into account, measured and finally optimized, embracing the entire process steps, designed with logic, experience and attempting the actual expected benefits to be diffused among the interested parties. Care has to be taken avoiding "shortcuts" or "quick fixes," in order to succeed optimum quality per effort and safeguard the integrity and soundness of the failure investigation, becoming a solutions driving force.

References

1. https://en.wikipedia.org/wiki/Aldus_Manutius
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