
Editorial

Diego Galar

Division of Operation and Maintenance Engineering,
Luleå University of Technology,
SE-971 87 Luleå, Sweden
E-mail: diego.galar@ltu.se

The maintenance function is inherent to production. Even so, understanding and quantifying its activities can be problematic. For a long time, maintenance was carried out by the workers themselves, with no defined parameters. However, this lack of performance measures do no longer exist since maintenance department is a key role player in the overall picture of the companies. The focus is now to keep track on the creation of value provided by the maintenance function due to two main reasons:

- First, there is a need for higher plant availability in a global economy. Global markets suffer from expansions, purchase of industrial buildings, production equipment, acquisitions of companies in the same sector, regardless of the country. Global competition means that companies want their productive capacities to remain at a maximum. Therefore, organisations are beginning to worry about keeping track of the parameters that may affect the availability of their plants and machinery.
- Second, the bottom line is chrematistic, i.e., related to money-making. When organisations begin to optimise their production costs, they start to question their maintenance costs. This function, in recent years, has grown in assets, personnel, etc., and now consumes a significant percentage of the overall organisation budget.

Actually, the maintenance budget cannot be neglected at all within the total budget. At the same time, however, the organisation's maintenance must meet availability and quality parameters. A constant concern, then, is maximising availability at the lowest cost. Not surprisingly, methodologies and technologies to determine the best way to achieve this balance are increasingly popular.

This recent discipline has been given the name of maintenance performance measurement (MPM) which is defined as the multidisciplinary process of measuring and justifying the value created by maintenance investment, and taking care of the organisation's stockholders' requirements viewed strategically from the overall business perspective. MPM allows companies to understand the value created by maintenance, to re-evaluate and revise their maintenance policies and techniques, justify investment in new trends and techniques, revise resource allocations, and to understand the effects of maintenance on other functions and stakeholders as well as on health and safety, etc.

Unfortunately, first attempts to deploy these techniques have failed and maintenance metrics have been often misinterpreted and they are often incorrectly used by businesses. That is why the selection of right indicators, which are able to evaluate the process and are not used only for paper records is crucial to build up an effective and efficient MPM framework, Pacaiova et al.

The metrics should not be used to show workers that they are not doing their job. Nor should they be used to satisfy the organisation's ego, i.e., to show that the company is working excellently. Performance measurements, when used properly, should highlight opportunities for improvement, detect problems, and help find solutions as Berges et al. state.

This historical view of maintenance, mixed with traditional issues of performance measurement, creates problems in the development and implementation of a comprehensive packages of maintenance performance management. Papers contained in this issue address maintenance performance issues from different point of views, from economic aspects to those related to human factors. These issues shown in the issue reinforce the idea that the measurements should combine the internal functioning of maintenance with its interaction with external actors, particularly clients. At the same time, they must honour the objectives of management, as it is management who will propose improvements after reading the indicators.

This special issue overviews the state of maintenance, its current problems and the need for adequate metrics for its quantification. Papers contained here try to eradicate the common belief in many companies where maintenance is seen in industry as a necessary evil, an expense or loss, which the organisation must incur to keep its production process operative. Because of this, the priorities of a company do not typically focus on maintaining assets, but on the production that they represent. Thus, according to Maletič et al. the purpose of maintenance processes is not only to keep the plant machinery and equipment available (and reliable), but to maintain high quality and productivity, as well.

The different papers selected for this issue contain aspects which reveal how maintenance role getting more relevance within the organisations and creating more value. However, during this growth, companies need to create and preserve knowledge which will be the driver for change and the main contribution to an enlarged and more efficient maintenance function, as Sandberg's article states. This preservation of knowledge collides many times with the aging effect of maintenance crew and the adoption of the use of electronic maintenance support systems in industries still tied to traditional paper-based knowledge support, McArthur et al.

Actually, these phenomena are happening in all kind of industries. For example, Baglee and Knowles' paper describes the feeling of food and drink industry about maintenance evolution. While many manufacturing sectors have embraced and contributed to the development of modern maintenance practices, the food and drink industry is perceived to be falling behind, a trend which is having a negative effect on the productivity of this sector. However, this dilemma occurs even in sectors working at the forefront of technology like transport, defence, energy, aviation, etc. In fact, Nielsen et al. describe in their paper how to face these issues in large infrastructure like railway bridges. Optimum maintenance and performance measures for such large investment project are a main concern all over the world due to the criticality of the infrastructure to support economic growth and the huge amount of money involved in this sector.

Many factors must be taken into consideration when a company decides to deploy a MPM system. Different papers in this issue relate about technologies, methodologies and people involved in such process. However, there are additional factor which surround the maintenance function and clearly affect the context where these actions are performed. Environmental, operational, cultural, societal and other issues can dramatically change the way to measure the expected performance. Therefore, context should be considered as a relevant factor. In this regard, Lipsett and Anzabi's paper expand the idea of how

seasonal conditions affect performance of assets like tires. These seasonal aspects can be integrated in the MPM systems improving their accuracy.

In summary, maintenance performance and current maturity in the different organisations is not clearly measured from holistic point of view unlike quality, health and safety or others. Therefore, there is a real need of research and development of maintenance metrics in all sectors and geographical scenarios.