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## INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

### **Waste Minimization in an Aircraft Maintenance Process: Six Sigma, Lean Manufacturing and Cleaner Production Approaches**

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#### **Abstract**

The aircraft maintenance involves actions designed to assess and minimize wear of parts through the preventive action (lubrication and replacement of filters, for example) and also the corrective action (replacement parts), respecting all the requirements of safety, occupational health and environment. During the maintenance procedures a variety of waste are generated, such as parts and different types of used inputs. It is noteworthy that many of these are hazardous waste, for which the possibility of minimization generation is also an opportunity to reduce costs of disposal. This article presents a case study of a Brazilian airline company focus to identify opportunities for waste minimization in aircraft maintenance step, applying approaches lean manufacturing, six sigma and cleaner production. Among the activities include the maintenance process mapping and environmental aspects identification. In addition, there is the integration of three types of approaches cited that supported the project ensuring the correct prioritization of the identified opportunities. It was observed that the use of the three approaches together provides a greater opportunity to generate gains to the company, since all potential possibilities within a process were addressed. The waste used as inputs in the process of maintenance such as filters, chemicals, paint, rags, PPE etc., represent a large reduction potential with low effort and in accordance with sector regulation. The results demonstrated that by integrating these approaches is possible to obtain gains of 10% to 15% reduction in solid waste generation and reducing the danger of same in case of no generation avoided. For market in question, numerous other opportunities reduction of waste generation can be addressed through these three methods of approach, it is suggested including benchmarking in companies in other sectors with more mature processes in terms of quality and loss control.

**Keywords:** *maintenance; waste; aircraft; continuous improvement; cleaner production.*