

ENGINEERING/TECHNOLOGY

Human Factors Sustainability in Airline Line Maintenance Operations

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Human factors contribute to the safety and performance of airlines and have a significant impact on line maintenance operations. The demanding nature of line maintenance, which includes time pressures and intricate procedures, can lead to the incorrect installation of an aircraft component and result in an aviation accident. The researchers partnered with a major airline to study human factors in line maintenance and to develop a process for human factors sustainability in line maintenance operations. The first phase of the methodology involved statistical analysis of historical data related to accidents and injuries at the airline's line maintenance department over the past three years in order to identify trends or predictors of injuries and accidents. During the next phase, the researchers conducted multiple visits to four of the airline's line maintenance stations to perform observational research. At each station, two shifts of

approximately eight hours each were observed, with each researcher shadowing a maintenance technician to collect the observations. These were recorded in a matrix using the SHEL human factors model. Thirty-eight criteria—the appropriate use of equipment by the technician, for example—were measured during each shift using a 1–5 Likert scale. Surveys consisting of multiple-choice and open-ended questions were distributed after visits to obtain perceptions of employees toward safety at each station. The findings have been compiled to serve as a wide source of data for the airline's management to make decisions towards developing a sustainable process by which human factors issues can be monitored by all levels of management on a daily basis.

Research advisor John H. Mott says, "These students not only had exciting opportunities to develop a better understanding of research methodology and present their findings to high-level corporate management, but also to employ statistical techniques in Bayesian inference that gave us a much clearer picture of station operations than would have been available using traditional methods."