EXECUTIVE SUMMARY

Tools are critical to the everyday tasks of any sheet metal and HVAC contracting firm. They are responsible for significant direct project costs in the order of tens to hundreds of thousands of dollars annually. Such costs are exacerbated when tools are poorly managed, which, for example, can lead to inadequate use of tools, safety incidents, idle crews, or low labor productivity ratios. Thus, tool management is an essential capability influencing project profits and the contractor's success. However, tool management is a complex and comprehensive undertaking that includes:

- identification and procurement of needed tools;
- tracking, managing, and inventorying tools;
- making the tools needed for a task available at the right location and at the right time;
- maintaining, repairing, returning, and replacing tools.

All of the above tasks need to be accomplished while enabling the update, integration, and seamless sharing of tool data and information. Despite such complexity, contractors have historically lacked guidance on evaluating and enhancing the readiness of their tool management function or program.

In response, this practical Guide aims to address this industry dilemma by informing and educating contractors on how to manage their tools both effectively and efficiently. It summarizes the most up-to-date knowledge, experiences, and techniques into a user-friendly step-by-step process. The content channels and facilitates implementation regardless of the contractor's size and whether the contractor aims at starting a new tool management function or improving an existing one.

In developing this Guide, the authors worked with a taskforce of subject matter experts affiliated with leading sheet metal and HVAC contractors. With the help of taskforce members, we reviewed the state of knowledge and identified critical approaches, technologies, and information. Moreover, we performed structured phone interviews with subject matter experts affiliated with numerous contractors with comprehensive tool management capabilities, representing a variety of firm sizes and geographically-dispersed regions across North America. Finally, we determined the current state of tool management readiness in the industry by analyzing 41 survey responses from contractors. These multiple research methods informed the development of this Guide and provided a holistic perspective on how to manage tools, helping us uncover effective processes, techniques, and recommendations.

CHAPTER 1. THE COST OF POOR TOOL MANAGEMENT

As stated above, tools are responsible for significant direct project costs. Examples of monetary losses are the idle time of workers, time spent searching for tools, lower productivity rates, or tool-related safety incidents. Such losses cannot be easily quantified or generalized, and their estimation often requires a dedicated analysis. However, during the development of this Guide we collected anecdotal evidence of tools' strong impact on project costs in a number of firms, such as:

- *$700 per week as a result of project and tool room personnel spending excessive time to identify, find, sort, issue, and return tools;*
- *$55,000 annually for lost time of the tool manager, superintendents, and labor during the effort to inventory tools;*
- *$150,000 annually to replenish shrinking tool inventory, e.g., lost and stolen tools;*
- *$300 per worker weekly for the tools' negative impact on productivity/morale, as a consequence*