The Impact of Automation in Steel Fabrication
Matthew Cahill (K00268777)

TUS

Aim of the Project

The aim of this dissertation is to investigate the impact the introduction of automation and automated technologies have had in the steel fabrication industry. Part of this aim is to gauge the current attitude towards automation from a company owner/employee viewpoint.

Topic background

The steel industry plays a key role in economic life across the world, it is the backbone of the construction, manufacturing and energy sector to name a few. With a rising in the need for all the sectors above companies are turning towards industry 4.0 technologies and automation to meet this demand.

Objectives

The four different objectives of this dissertation are listed below:

1.Research the area of current Steel Fabrication processes in literature with a focus on the application of automated technologies.

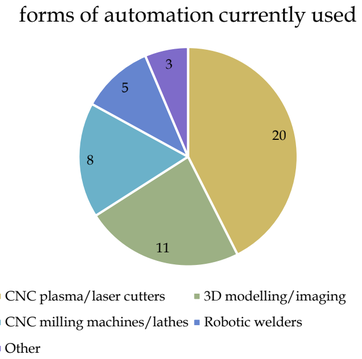
2.Investigate the current attitudes, trends and applications of automation and the use of automation in the Steel Fabrication industry, using surveys and interviews.

3.Create a Process Flow Map and Floor Layout plan for a company wishing to implement automated machinery in their Steel Fabrication plant.

4.Develop a guideline document for the implementation of automation in the Steel Fabrication industry, based on primary and secondary research findings.

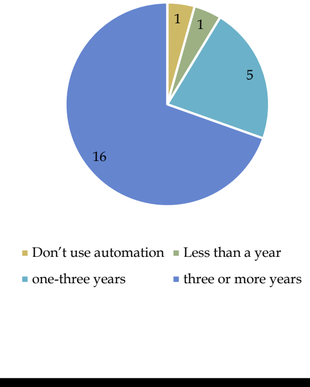
Current forms of automation

Some forms of automation that are currently being used in this industry include CNC plasma cutters for use on steel plates and beams, CNC milling machines for drilling and machining parts and automated welders for the repeated welding of parts.



.

The forms of automation listed above have many advantages in the steel fabrication industry such as improved product quality, increased productivity, and higher output in general. The graph above shows the popularity of four different forms of automation commonly used in the steel fabrication industry. This data was gathered from a survey of twenty three different steel fabrication companies as part of the dissertation.



Research methods

The methods used to research this topic were a literature review, a survey and three interviews, the literature review gave a good background into this topic and showed all the previous research done in this area. The survey was sent out to 25 different steel fabrication companies across the country, out of the 25, 23 of them filled out the survey, after the survey, any companies who indicated they would be willing to be interviewed were contacted and out of the 5 companies contacted 3 were interviewed, this gave a good insight into companies experiences with automation and their opinions on it as well as being able to make graphs from the answers gathered through the survey, this benefitted greatly to the dissertation as it gave a first hand source of information compared to reading journals on the topic which could be outdated as technology has moved on from when it was written, while the survey and interviews are very relevant and up to date with current technologies

Survey Results