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IOT in Welding

Real time data collection for monitoring welding parameters and quality checks are possible by Digitally controlled welding machines

REAL TIME DATA COLLECTION

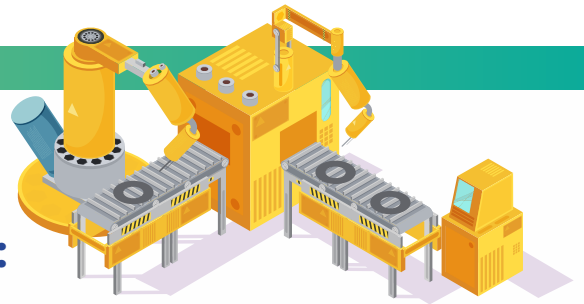


Intelligent Manufacturing

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IOT in the Manufacturing Industry:



Manufacturing has emerged as one of the high growth sectors in India. Attracted by India's market of more than a billion consumers and increasing purchasing power, global giants have either set up or are in process of setting up manufacturing plants. In India, the adoption of Industry 4.0 is still at a nascent stage. High investment outlay will have to be planned in order to implement it as Industry 4.0 requires the utilization of wide set of technological platforms. It also needs to address the need of appropriate infrastructure and education to handle such technologies.

Penetration of Industry 4.0 will vary as per sector needs. Seamless end to end communications ensuring greater flexibility will aid Industries with large product portfolio's such as the automotive industry, while industries which demand high quality such as pharmaceuticals will benefit from the churned data, enabling improvements that reduce error rates. While capital – intensive sectors such as Automotive are already gaining from adoption, other industries in order to actively shape the transformation and reduce the total cost of ownership have developed optimal solutions through forming common platforms and alliances with many different partners.

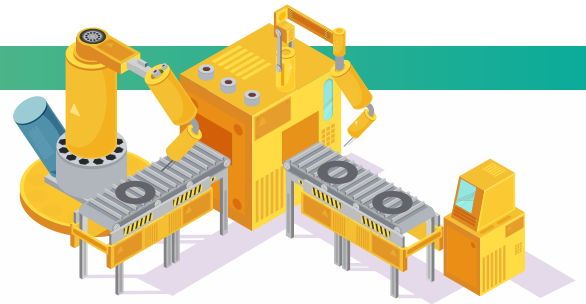
As the industry uses smart materials by 2020 there will be significant opportunities to program and control subsequent welding operations. This new technology will be exploited by product designers, manufacturers and welders to improve the entire manufacturing cycle. The virtual factory is a term that will be heard frequently over the next 20 years as computer modelling and simulation tools become common place in welding operations. Welding will move from being an 'art' to a manufacturing science with the help of computers.

In India, various industries are still in the dilemma of identifying the right technology that can best address their needs. While high cost of digital technology is a major concern, what exactly do they hope to transform is still an uncharted territory. Lack of infrastructure, both physical and digital, have further dampened the scenario. The lack of knowledge with new age technologies such as IoT, data analysis etc, both at the plant and leadership level have further added to the crunch currently faced. Significant contributions will be a key factor in up - skilling the workforce capable of handling digitalisation creating a more adaptable, responsive and unified environment empowered in making more informed decisions.

IOT enabled Welding Equipment by Ador Welding

Real time data collection for monitoring welding parameters and quality checks are possible by Digitally controlled welding machines today. Digital controlled welding machines can be IOT enabled. All Ador Welding's inverter equipment with digital controllers can be readily IOT enabled by adding a Hardware called 'Data gateway'. The Data Gateway is connected to the welding machine either through an external connector or inside the machine. This Gateway PCB accepts real time serial data from the welding equipment and converts this data in the form of Wi-Fi, Blue Tooth, GPRS (If SIM is inserted in the PCB) or USB format for storage on memory. This Gateway also has a GPS module which provides the real time location of machine. Wi-Fi data or GPRS data goes to the assigned Cloud/Server. There is a software application being developed for using this real time welding data for Computer as well as for mobile. Bluetooth connectivity is given for adding the feature of a wireless remote controller which can be universal remote controller for all the models. This remote controller will have Lithium Ion battery which can give longer time back up (at least one month if charged once).





The Software will provide the user with the following benefits:

- 1) Monitoring of real time welding parameters for monitoring the performance of the machine remotely
- 2) Reporting the Idle time of machine, Arc on time and measure the productivity, efficiency, energy consumption and its cost for user.
- 3) Quality checking by counting number of joints, under and over weld by measuring the welding time and monitoring the welding parameters as per WPS.
- 4) Centrally monitoring the machine performance, its utilization, breakdown status and its location from all working sites of customer.
- 5) It will also provide the advice the tips to user about maintenance if certain components in the machines are under stress due to working conditions.
- 6) Its artificial Intelligent will take the corrective actions dynamically by adjusting the welding parameters appropriately while actual welding.
- 7) Its intelligent software recognizes the real time power utilization, shielding Gas consumption and temperature of machine power components and decide the Fan speed, Water cooling requirement for torch and based on these parameters recognize if any malfunctions in the machine working like any Gas leakage, Fan end of life or it will inform user for maintenance/abnormalities in his operation or working conditions.

As for the immediate future its applicability seems most practicable in robotised mig welding automobile applications. Champ Pulse 500 is the latest state of the art wholly indigenous pulse mig equipment from the AWL stable meant to cater to such critical requirements.

