

1. Industry 4.0, also known as the fourth industrial revolution, refers to integrating digital technologies into manufacturing processes. This essentially paves the way for the Intelligent Industry-of-the-Future concept. It includes the use of automation, data exchange, and other advanced technologies to create a more connected and efficient production environment. PLC, or Programmable Logic Controller, is a type of industrial computer that is commonly used in manufacturing and production processes. PLCs are designed to control and automate machinery and equipment, allowing for more precise and efficient operations. In the context of Industry 4.0, PLCs play a critical role in enabling automation and data exchange between different machines and systems. They can be used to monitor and control production processes in real-time, allowing for greater efficiency, accuracy, and flexibility. PLCs can also be integrated with other Industry 4.0 technologies, such as sensors, machine learning algorithms, and cloud computing platforms, to enable more advanced automation and data analytics capabilities. This can help manufacturers optimize production processes, reduce costs, and improve product quality.
2. The proposed research aims to study how PLCs can act as the central pillar of Industry 4.0, thereby changing the outlook of the contemporary industrial environment. The study will investigate how PLCs will be used as a control system to lead everything that happens inside a smart factory by integrating technologies such as the Internet of Things (IoT), cloud computing as well as big data analytics, and also elements of AI and machine learning. The subjective environment will be equipped with advanced sensors, embedded software, and robotics for data storage and analysis, which will facilitate better decision-making in real-time. The outcomes of this study is expected to support the ongoing efforts of Intelligent Industry-of-the-Future to revolutionize manufacturing and distribution operations furnished with high-functioning digital technologies, including elevated robotization, predictive maintenance, self-optimization through feedback, and maximized efficiencies.