**Part 6: Beverage Plant – Production System Simulation Modelling**

Beverage is the most essential a necessity through the human history, which is why, it has a wide range of production and consumption. Production has begun to digitalize with the developing technology, changing customer demands, and increasing competition between businesses. Due to the digitalization of production, automation has undergone major vicissitudes that experts refer to as the “fourth industrial revolution” or “Industry 4.0” that can be defined as the development of manufacturing technologies to allow higher levels of interconnectivity, leading to greater communication between machines and local processing of data. Nowadays, the systems in the beverage industry are centrally controlled, while in the future the machines and raw materials will be used in information and communication technologies for communication objectives. Future factories will be smart and cross-linked (Otles & Sakalli, 2019) .

Check the data for two-week beverage plant production, recorded in time study presented as Excell data (Excel file). Analyse the results of the data and perform manufacturability analysis regarding the workstations capacity, production output per week and all the recorded breakdowns.

Following the facility layout presented in the drawing (Autocad file), design “Digital Twin” of your

manufacturing system by using Enterprise Dynamic software and considering all the data extracted from given two-week time study. In no more than 1,500 words, develop and write the report of above stated tasks.

Part 7: Quantitative and Qualitative Simulation Data Analysis

Write a report (no more than 1,500 words) containing:

• Simulation results when using Digital Twin model

• Data analysis of the simulation model designed (this can involve tables and different types of

diagrams)

• Evaluate and suggest optimisation by exploiting the potentials of Lean manufacturing and

Industry 4.0