Introduction:

- Siemens is studying the movement patterns of industrial robots in its Green Carbody Technologies project. The two other partners in the project are the Fraunhofer Institute for Machine Tools and Forming Technology and Volkswagen.

- The goal of the project is to analyze the robots’ energy consumption and utilize intelligent software solutions for robot programming. In this way, it should be possible to optimize the robots’ movement patterns so as to achieve energy savings of between ten and 50 percent.

- There are many ways to use energy more efficiently in industry. The options here range from the application of state-of-the-art automation and control technologies to the optimization of drive system solutions and the utilization of waste heat — for example, to generate electricity in the steel, cement, and glass industries.

Contribution to the energy transition:

- The cleanest electricity is always the electricity that’s not used. Industrial operations still harbor great potential for energy savings. For example, an automobile plant with a daily output of 1,000 vehicles can consume several hundred thousand megawatt-hours (MWh) of electricity a year — as much as a medium-sized city.

- In most plants, around two thirds of total power consumption is accounted for by electric motors of various sizes that are used to drive conveyor systems, machinery, and the joints of production robots. Optimized solutions, state-of-the-art motor technologies, and control systems that adjust motor operation in line with actual requirements can reduce the electricity consumption of industrial drive systems by as much as 70 percent.

- Industrial robot control systems also harbor considerable optimization potential. The obstacles encountered by robots as they move around, the need to make sharp turns, and incorrect installation height are just three factors that drive up their energy consumption.

- Within the framework of their cooperation project, Siemens, the Fraunhofer Institute, and Volkswagen aim to employ efficient software solutions in order to optimize production processes in a manner that will significantly lower energy consumption.

Further information is available at: