Spring 2016
Sustainable Retrofit of Dresser-Rand Facility in Olean, NY

Overview
Dresser-Rand’s effort toward sustainability includes a strategies to increase energy efficiency and reduce their carbon footprint while providing the best service to the client. Siemens mission is to be climate neutral by 2030. This project aims to support Dresser-Rand by Siemens’s mission to be climate neutral by 2030 to reduce CO₂ emissions related to energy footprint of its production facilities and buildings using an initial investment for improving energy use.

Objectives
There are two objectives: (1) to reduce energy consumption and (2) to reduce carbon emissions at Dresser-Rand Olean facility. The ultimate motivation for accomplishing these objectives is to reduce its energy costs as well as acquire positive rapport through publicized efforts toward becoming an environmentally-conscious company.

Approach
Energy management system is the main concept that includes automation system and energy efficient drive system. 3 strategies are proposed: installation of economizers and solar rooftop array, and fuel mix analysis.

- Economizer: A standard boiler economizer was designed to capture flue gas heat from 5 industrial boilers. Each economizer can recycle 7% of the outlet energy. It was assumed that flue gas temperature is 260°C and the inlet water temperature is at 20°C.
- Solar: The module selected to be installed on top of Dresser-Rand’s tech center is SunPower SPR-205-BLK-U; a monocrystalline silicon solar panel with maximum power of 205W DC power. The rooftop system capacity is approximately 101 kW (1900m²).

- Fuel mix: Dresser-Rand’s electricity fuel mixture produces an annual carbon footprint of approximately 22 million lbs. With 20% and 66% conversion to renewables, the annual carbon footprint becomes 14 million lbs and 0 lbs emission respectively.

Outcomes
Approximately 25% of carbon reduction can be achieved by:
1. Increase renewable energy sources in fuel mix (18%)
2. Installing economizers (6%)
3. Installing rooftop solar array (1%)

Further carbon footprint reduction strategies should focus on natural gas consumption; as it represents 85% of total CO₂ emission.