



Rochester Electronics Clean Room



The Challenge

Rochester Electronics is a semiconductor manufacturer specializing in the continuing production of end of life (EOL) and mature semiconductors. B2Q Associates, Inc. was retained by Rochester Electronics and National Grid to conduct a detailed engineering, modeling, and cost benefit analysis of new high efficiency energy equipment and controls as part of the design of new clean rooms at the company's manufacturing facility in Newburyport, MA. Our design review and analysis involved three new clean rooms including a Class 10,000 Die Visual clean room; a Die Unpack Class 100,000 clean room for processing silicon wafers; and a Class 100,000 New Die clean room where wafers are cleaned and tested. The challenge was to recommend the most efficient and cost-effective HVAC equipment and control strategies that would maximize energy efficiency and cost savings, while meeting the Rochester Electronics' exacting clean room standards.

The Opportunity

B2Q Associates, Inc. investigated four energy efficiency measures focusing on upgrading the efficiency of proposed air side and mechanical side HVAC equipment and instituting control strategies to reduce energy consumption and costs. Recommended measures included upgrading the energy efficiency of the 20 ton direct expansion air handling units, ultrasonic humidification, high efficiency condensing boiler, and variable speed drives on main air supply fans to reduce air flows during unoccupied periods.

The Results

B2Q Associate's analysis and recommendation of high efficiency equipment and control strategies for design of the new clean rooms resulted in projected electric energy savings of 35% and natural-gas savings of 23% above and beyond those that would be achieved through installation of standard efficiency equipment. Rochester Electronics adopted our energy efficiency recommendations and engaged B2Q Associates to provide mechanical and electrical design services for construction of the new clean rooms.