



ATIGROUP

Energy & Systems Solutions

General Motors Chiller Plant, Fairfax, Kansas

ATIGROUP, Inc.'s experience with General Motors involved the complete design and installation of a new chiller plant. It involved specific costs estimates adhering to strict energy cost targets and the creation of design drawings and cost analysis.

While General Motors (GM) has a strong in-house global engineering team to achieve their established energy goals, they required a professional mechanical engineering firm with strong energy efficiency expertise to design and construct a new paint shop for their facility in Fairfax, Kansas. After interviewing several professional firms, GM selected ATIGROUP based on our experience and proven results for energy efficient design and implementation. Specifically, we offered GM the ability to perform computerized annual simulation studies to determine the kind of chillers, type of pumping, and piping system designs and operations which would help them establish a method of cooling their plant using the absolute least amount of energy. Our team worked closely with the GM Global Engineering Team to design a system which would allow them to meet their strict energy cost targets for each car painted as well as design a system which would operate with their standardized PLC and DDC control systems.



General Motors

ATIGROUP modeled the GM Fairfax paint shop as a 24-hour operational facility with a block cooling load of 4,500 tons. We modified the cooling load profile created by the chiller plant analyzer program to include the winter process load of approximately 1,600 tons. We also modeled the chilled water plant with multiple water-cooled, variable-speed, centrifugal chillers. Finally, we modeled a dedicated constant-flow cooling tower with variable-speed fans for capacity control for each chiller.

ATIGROUP engineers performed many parallel simulations, comparing capacity chillers with varying temperatures which also required changing the pumping capacities accordingly. We then presented GM with multiple options for potential systems for their shop, and highlighted the benefits and differences of each. Once a system was selected by GM, ATIGROUP developed bid specifications to allow for competitive bids to construct the paint shop and the associated mechanical and control systems. Our team was also in charge of constructing the paint shop for this project.