WHIRLPOOL
REFRIGERATION CABINET FOAM PROCESS MODELING

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Whirlpool Corporation, a $20 billion company, is the largest appliance manufacturing company in North America, Latin America, and Europe and the largest Western appliance manufacturing company in Asia. The Advanced Manufacturing (AM) organization provides research, technical guidance, and new technology guidance to Whirlpool’s businesses around the world.

The AM organization has perceived latent capacity in the cabinet foaming area of the refrigerator assembly process. After determining there was in fact latent capacity within the cabinet foam areas of several refrigerator assembly lines, the Tauber team developed recommendations to improve cabinet throughput in foaming areas. The team used ProModel computer simulation software to develop current state models of two cabinet foamlines in Amana, Iowa, and one cabinet foamline in Joinville, Brazil. After the current state models were verified, the team made several future state computer models of the cabinet foaming areas in order to improve capacity, and as a result, overall throughput.

By analyzing timing data, changeover data, and production scheduling data at each line, as well as receiving input from plant employees, engineers, and facility computer programmers, the team created several future state models for each area. Based on the future state models, the team initiated an implementation effort in Amana, Iowa. The team has shown that, by adding two additional sensors to each fixture and changing the timing logic, capacity will increase by 23% (6,000 -10,000 units annually). Additionally, the team’s future state models will serve as the baseline for Whirlpool’s efforts to standardize the cabinet foaming areas of fifty lines worldwide. The team’s summer implementation efforts in Amana, Iowa are currently in progress. Once completed, they will create a 5 year net present value for Whirlpool Corporation ranging from $3.3 to $8.2 million with 90% confidence. The team’s future state models across all three lines present a 5 year net present value opportunity ranging from $21 to $30 million with 90% confidence.