Conclusions

The most significant finding from the Time & Motion Study was that choosing to install Siemens Ultimate™ Load Center produces substantial cost savings.

There were other important results of the study related to enhanced efficiencies and superior ease of use. These included the following:

- **Fewer tasks**: the INSTA-WIRE™ of the Siemens product speeds up and simplifies installation.
- **No additional training costs**: assuming knowledge of conventional load center systems, there is no need for further instruction.
- **Advantages of a preassembled ground bar, hanging tabs, slot/square-head screws, and roomy interior** make installing Siemens Ultimate™ Load Center a cost effective choice.

The Time & Motion Study clearly demonstrated the superior performance of the Siemens product which translates into significant cost savings for contractors.

As a result, the RSMeans Business Solutions Team confidently projects continuing competitive advantage in the marketplace.
Executive Summary

Siemens Industry, Inc., a global leader in providing complete electrical, engineering, and automation solutions to industry, energy and, health care sectors, is offering the Ultimate™ Load Center, that delivers comprehensive labor saving features and significantly lowers installation costs.

RSMeans was commissioned to conduct a Time & Motion Study to provide third party confirmation that contractors using Siemens Ultimate™ Load Center will realize bottom line savings. The research objective was to compare the time and cost of installing the Ultimate™ Load Center with the time and cost of installing five different load center products manufactured by competitors.

On September 28, 2010, the Time & Motion Study was conducted in a facility owned by Siemens Industry, Inc., in Tucker, Georgia. Representatives from RSMeans witnessed and recorded data on six applications: Competitors 1A, 1B, 2A, 2B, 3, and the Siemens Ultimate™ Load Center.

The most important finding from the study was that the Siemens product requires less installation time, ranging from 5 percent compared with Competitor 2’s products, with an average time saving of approximately 15 percent.

By comparing labor costs among the six applications, RSMeans engineers found that the dollar savings were correspondingly $2 over Competitors 1A and 3, and $16 over Competitor 2A, for average savings in the $7–8 range.

Additional significant advantages of Siemens Ultimate™ Load Center emerged from the study. They are attributable to the following features that differentiate the product from those of its competitors:

- The INSTA-WIRE™ of the Siemens product has back out screws ready for wire insertion.
- The interior of Siemens Load Center provides sufficient room to make the wire connection without cramping the installer.
- The ground bar is preassembled inside the load center.
- Quality control is consistent as to shape of circuit breaker screws; no need to change tools during installation.
- The trim for the Siemens product hangs from tabs, so the electrician can have both hands free to use tools.
- The combination slot/square-head screws inside the load center provide installation flexibility. Each of these features, taken alone, reduces installation time slightly and lessens installer fatigue; collectively, they account for significant time savings for users of the Siemens product.

The findings of the Time & Motion Study clearly validate the labor and productivity savings, enhanced efficiencies and superior ease of installation for Siemens Load Center, and point to even larger cost savings as installers’ productivity increases over time.

Methodology

Work Measurement tasks (excluding noninstallation activities) were identical for all six applications: (1) remove and install one single-phase, three-wire, 120/240 Volts, 200 Amp load center with a 200 Amp main circuit breaker on the wall; (2) connect and fasten wire to ground terminal bar; (3) connect and fasten wire to neutral terminal bar; (4) install 36 branch circuit breakers in load center: 15 @15 Amp, 1 pole; 15 @20 Amp, 1 pole; two @30 Amp, 2 pole; two @40 Amp, 2 pole, and two Arc Fault @20 Amp, 2 pole; (5) install wire for each branch breaker; (6) install cover onto load center.

The work crew, consisting of three electricians, arrived to find the materials which had been off-loaded, inventoried and stored within 150–200 feet. There is no clarification where job conditions and mobilization service installation activities. This is known as Group Timing Technique (GTT). Using a stopwatch, the observer recorded the start and finish times on each application at five-minute intervals. At the end of data collection, the amount of time spent on each application was determined by subtracting the start time from the finish time.

Figure 1 Installed Time Comparison (Hours)

Figure 2 Installation Cost Comparison (Dollars)

Figure 3 Installation Cost Savings (Percentage)

Figure 4 Ultimate™ Load Center Cost Savings over Competitors

Cost Savings Analysis

Labor costs are based on normal job conditions and mobilization within 150–200 feet. There is no adjustment for existing structural conditions, for a learning curve, or for a highly productive crew. In determining the labor costs, RSMeans used an electrician’s rate of $72.85, based on a bare labor rate of $49 (union wages) averaged for 30 major U.S. cities, plus $23.85 contractors’ overhead and profit. Marathon Electric Company, Inc. was contracted to install the representative electrical services.

The actual installation cost for Siemens Ultimate™ Load Center was $40. In the first application, the cost for Competitors 1A and 3 was $42; for Competitor 1B, $53; for Competitor 2A, $56; and for 2B, $46.

Thus dollar savings for the Siemens Ultimate™ Load Center installation ranged between $2 and $16.
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Siemens would like to acknowledge the participation of Marathon Electric Company, Inc., which installed the representative electrical services for this Time & Motion Study.