

# Insulation Comparison Testing

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**Scope:** To determine the operation efficiencies of a spa, an independent case study was conducted with three identical spas using three different insulating methods. The test was performed to determine the most efficient insulating method available. Separate meters were installed on each tub and monitored continuously. (See Chart A)

**Test Criteria:** The tests established were of exaggerated conditions of every day usage. For 41 minutes per day, 5 days a week, with the high speed jets on for 15 minutes of that time compared to a national usage average of 30 minutes twice a week with the high speed jets on for 10 minutes of that time. A constant temperature setting of 102 degrees was used compared to a national average of 101 degrees. Three identical 7' lounge model spas were insulated differently using standard industry methods.

Test model #1 was insulated using a light urethane foam spray over the plumbing and the interior of the spa.

Test model #2 was insulated using a urethane foam fill, completely encapsulating the plumbing and spa interior (full foam).

Test model #3 was insulated using a polystyrene foam board with reflective foil on both sides around the interior of the spa cabinet and the spa floor (RTB insulation).

### **Average Daily Watts Used:**

Test Model #1: 10.59375kw

Test Model #2: 8.5625kw

Test Model #3: 7.6875kw

### **Conclusions:**

The tests concluded that there was a significant difference in the efficiencies of the test subjects. Test model #1 had the lowest amount of insulation applied to the cabinet and base and used a greater amount of energy. Test model #2 was better insulated than test model #1 and as a result, it decreased the energy consumption significantly. Test model #3 further reduced energy consumption and indicates that it is more energy conscious than test model #1 and #2. Test model #3 used RTB foam board insulation and showed to have 12% more efficient insulation capabilities than test model #2 (Full Foam). RTB foam board insulation also showed that it was 38% more efficient over test model #1 which was lightly foamed. These conclusions are supported by Chart A and the readings that were taken during the course of the test.