

Investigating the energy efficiency of mobile ice rinks



Management Summary

For almost 20 years, Ice Business has been producer and supplier of mobile ice rink systems. Until 2001, various types of epdm systems were produced for the rental market. Since 2001, Ice Business has made the change towards the new aluminum ice rink system.

Year after year, the users experienced an improvement of the energy efficiency of aluminum ice rinks, compared to their EPDM predecessors. The gain in energy efficiency is between 30 and 40%, with an average of 38% over three skating seasons.

The end users are looking for a more scientific approach to prove the results that have been obtained by the inquiries of the last years. Ice Business has asked Sparkling Projects to investigate the energy consumption in a scientific way, to support the experiences of the end users.

Sparkling Project made a calculation model to predict the energy consumption of various types of ice rinks for both the stationary conditions and the process of making ice. The model results show that the Ice Business aluminum ice rink system has the best energy performance. It is 10 to 25% more efficient than currently used EPDM and PE ice rinks and 33 to 40% more efficient than the ice rink systems that Ice Business used before.

The calculation model was verified by TNO and TÜV, both on a theoretical basis and under laboratory conditions. TNO and TÜV concluded that Sparkling Project's calculation model is theoretically correct. This was confirmed by the laboratory measurements that were performed by TNO and TÜV.

Therefore it can be concluded that the Ice Business aluminum ice rink system is 10 to 25% more energy efficient than other, currently available, ice rink systems. Besides, the Ice Business ice rink can maintain the ice at severe conditions where the other systems get wet.

The calculation model may be used to predict and compare the performance of the various ice rinks for specific climate conditions.

Test TNO/TÜV



¹ Sluis, S.M van der, Analysis of an ice rink energy consumption model, TNO report 034-APD-2009-00378, July

² Piers, A., Analysis of an ice rink energy consumption model. TÜV report.