



# Building Integrated Relief Damper (BIRD)

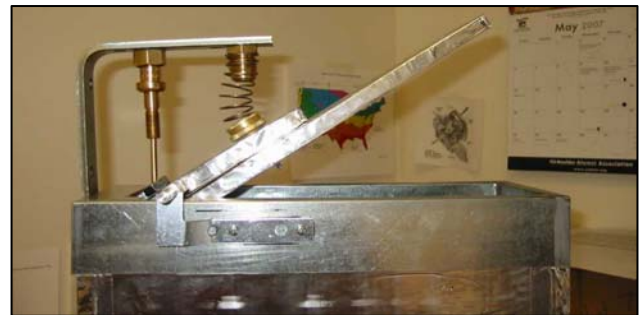
## Project Data: Building Integrated Relief Damper

Steven Winter Associates and Heyoka Solutions are working on a project to develop, demonstrate and evaluate a high performance, low-cost Building Integrated Relief Damper (BIRD) to improve occupant comfort in evaporative-cooled homes. The significant energy and peak demand benefits associated with evaporative coolers will not be widely realized until comfort performance on peak days is improved and airflow distribution effectiveness during all times is enhanced. Poor circulation of evaporative cooled air that is typically only supplied to one central location in a house has been a significant market barrier to the greater acceptance of this technology. Despite important advancements in residential evaporative cooler equipment design in recent years, little progress has been made in integrating evaporative coolers with the buildings that they cool. Existing building pressure relief damper products do not allow for effective air distribution when an evaporative cooler operates during the summer and result in a significant heating energy penalty during the winter.

With support from California Energy Commission's Energy Innovation Small Grant Program (EISG) and DOE's Building America Program, benchtop testing and initial prototype house field testing has been completed on a prototype BIRD with the following design features: (1) Mounts easily in the ceiling of a house during new construction or as a retrofit. (2) Pressure relief characteristics optimized for the next generation of high performance evaporative coolers. (3) Winter air leakage is minimized (4) has an R-value of at least 7 ft<sup>2</sup>h°F/Btu when sealed during the winter.

The field testing data results have shown that the BIRD prototype worked successfully as envisioned, allowing air flow through the damper once the attic reached a pre-set temperature as well as isolating the interior space from the attic once the temperature in the attic dropped below the set point, avoiding any possible energy waste to the attic.

Currently Heyoka Solutions is working directly with manufacturers, redesigning the original BIRD prototype so that it can be economically reproduced for the market.



*Client:* Heyoka Solutions  
*Location:* Various locations  
*Building Type:* Residential  
*Project Status:* In progress

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