## Energy Recovery Ventilator

### Author

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### Description

Energy recovery ventilators (ERVs) transfer some of the energy between the entering outdoor air and the leaving exhaust air. This lowers the amount of conditioning that needs to be performed on the entering outdoor air, saving energy. However, ERVs add additional an fan pressure rise to the HVAC system, and the increased fan energy may outweigh the saving in heating and cooling energy in milder climates.

### Modeler Description

For each AirLoop, add a rotary ERV with a user-specified increase in fan pressure rise. This measure currently assumes that the ERV is always creating an additional pressure rise, even when it is being bypassed. This measure also assumes that the ERV rotation motor consumes a negligible amount of energy.

### Use Case Types

Retrofit, New Construction

### Arguments

No arguments

### Initial Condition Message

The number of airloops with and without ERVs.

### Final Condition Message

The total number of ERVs that were added to the model.

### Not Applicable Messages

Not applicable if no AirLoops needing ERVs were found.

### Warning Messages

Warn if no fan was found on the airloop and therefore fan pressure rise was not modified.

### Information Messages

List each DX cooling coil’s before and after COP.

### Error Messages

Error if cannot connect an ERV to the airloop.

### Code Outline

* For each AirLoop
  + Skip if an ERV is already present
  + If not, install an ERV
  + Increase the fan pressure rise by the user-specified amount

### Tests

**This measure applies to:**

1. Large Office
2. Medium Office
3. Primary School
4. Secondary School
5. Large Hotel
6. Hospital
7. Small Office
8. Stand-Alone Retail
9. Strip Mall
10. Supermarket
11. Quick Service Restaurant
12. Full Service Restaurant
13. Small Hotel
14. Outpatient Healthcare
15. Warehouse
16. Midrise Apartment