Range

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TODO: This page needs to be completed.

Range - Residential Range (explicit model)

Synopsis

```
class range {
        parent residential_enduse;
        class residential_enduse {
                loadshape shape;
                enduse load; // the enduse load description
                complex energy[kVAh]; // the total energy consumed since the last meter reading
                complex power[kVA]; // the total power consumption of the load
                complex peak_demand[kVA]; // the peak power consumption since the last meter reading
                double heatgain[Btu/h]; // the heat transferred from the enduse to the parent
                double cumulative_heatgain[Btu]; // the cumulative heatgain from the enduse to the parent
                double heatgain_fraction[pu]; // the fraction of the heat that goes to the parent
                double current_fraction[pu]; // the fraction of total power that is constant current
                double impedance_fraction[pu]; // the fraction of total power that is constant impedance
                double power_fraction[pu]; // the fraction of the total power that is constant power
                double power_factor; // the power factor of the load
                complex constant_power[kVA]; // the constant power portion of the total load
                complex constant_current[kVA]; // the constant current portion of the total load
                complex constant_admittance[kVA]; // the constant admittance portion of the total load
                double voltage_factor[pu]; // the voltage change factor
                double breaker_amps[A]; // the rated breaker amperage
                set {IS220=1, IS110=0} configuration; // the load configuration options
                enumeration {OFF=2, ON=1, NORMAL=0} override;
                enumeration {UNKNOWN=2, ON=1, OFF=0} power_state;
        }
        double oven_volume[gal]; // the volume of the oven
        double oven_UA[Btu/degF*h]; // the UA of the oven (surface area divided by R-value)
        double oven_diameter[ft]; // the diameter of the oven
        double oven_demand[gpm]; // the hot food take out from the oven
        double heating_element_capacity[kW]; // the power of the heating element
        double inlet_food_temperature[degF]; // the inlet temperature of the food
        enumeration {GASHEAT=1, ELECTRIC=0} heat_mode; // the energy source for heating the oven
        enumeration {GARAGE=1, INSIDE=0} location; // whether the range is inside or outside
        double oven_setpoint[degF]; // the temperature around which the oven will heat its contents
        double thermostat_deadband[degF]; // the degree to heat the food in the oven, when needed
        double temperature[degF]; // the outlet temperature of the oven
        double height[ft]; // the height of the oven
        double food_density; // food density
        double specificheat_food;
        double queue_cooktop[unit]; // number of loads accumulated
        double queue_oven[unit]; // number of loads accumulated
        double queue_min[unit];
        double queue_max[unit];
        double time_cooktop_operation;
        double time_cooktop_setting;
        double cooktop_run_prob;
        double oven_run_prob;
        double cooktop_coil_setting_1[kW];
        double cooktop_coil_setting_2[kW];
        double cooktop_coil_setting_3[kW];
        double total_power_oven[kW];
        double total_power_cooktop[kW];
```

```
        double total_power_range[kW];
        double demand_cooktop[unit/day]; // number of loads accumulating daily
        double demand_oven[unit/day]; // number of loads accumulating daily
        double stall_voltage[V];
        double start_voltage[V];
        complex stall_impedance[Ohm];
        double trip_delay[s];
        double reset_delay[s];
        double time_oven_operation[s];
        double time_oven_setting[s];
        enumeration {CT_TRIPPED=6, CT_STALLED=5, STAGE_8_ONLY=4, STAGE_7_ONLY=3, STAGE_6_ONLY=2, CT_STOPP
        double cooktop_energy_baseline[kWh];
        double cooktop_energy_used;
        double Toff;
        double Ton;
        double cooktop_interval_setting_1[s];
        double cooktop_interval_setting_2[s];
        double cooktop_interval_setting_3[s];
        double cooktop_energy_needed[kWh];
        bool heat_needed;
        bool oven_check;
        bool remainon;
        bool cooktop_check;
        double actual_load[kW]; // the actual load based on the current voltage across the coils
        double previous_load[kW]; // the actual load based on current voltage stored for use in controlle
        complex actual_power[kVA]; // the actual power based on the current voltage across the coils
        double is_range_on; // simple logic output to determine state of range (1-on, 0-off)
}
```

See also

- Residential module
  - User's Guide
  - Appliances
  - house class – Single-family home model.
  - residential_enduse class – Abstract residential end-use class.
  - occupantload – Residential occupants (sensible and latent heat).
  - ZIPload – Generic constant impedance/current/power end-use load.
- Technical Documents
  - Requirements
  - Specifications
  - Developer notes
  - Technical support document
  - Validation

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