EXAMPLE 1-10 Heat Loss from a Person

Modelica code

```
model Example_1_10 " Heat Loss from a Person"
  import Modelica.Constants;
  import Modelica.SIunits;
  import Modelica.SIunits.Conversions;
  import Modelica.SIunits.Conversions.NonSIunits;

  parameter Real                              epsilon(min=0,max=1) = 0.95 "Emiss. (-)";
  parameter SIunits.CoefficientOfHeatTransfer h(min=0) =             6    "HTC (W/(m^2 K)
      )";
  parameter SIunits.Area                      A_s(min=0) =           1.6  "Area (m^2)";
  parameter NonSIunits.Temperature_degC       T_surr(min=-273.15) =  20   "Surr. T (C)";
  parameter NonSIunits.Temperature_degC       T_s(min=-273.15) =     29   "Surface T (C)"
      ;

  output SIunits.HeatFlowRate Q_rad  "Radiation heat losses (W)";
  output SIunits.HeatFlowRate Q_conv "Convection heat losses (W)";
  output SIunits.HeatFlowRate Q_cond "Conduction heat losses (W)";
  output SIunits.HeatFlowRate Q_t    "Total heat losses (W)";

  SIunits.Temperature T_s_K =    Conversions.from_degC(T_s);
  SIunits.Temperature T_surr_K = Conversions.from_degC(T_surr);

equation
  Q_t    = Q_rad + Q_conv + Q_cond;
  Q_rad  = epsilon*Constants.sigma*A_s*(T_s_K^4-T_surr_K^4);
  Q_conv = h*A_s*(T_s-T_surr);
  Q_cond = 0;

end Example_1_10;
```