EXAMPLE 1-8 Measuring Convection Heat Transfer Coefficient

Modelica code

```
model Example_1_8 "Measuring Convection Heat Transfer Coefficient"
  import Modelica.Constants;
  import Modelica.SIunits;
  import Modelica.SIunits.Conversions.NonSIunits;

  parameter SIunits.Length              l(min=0) =            0.2  "Lenght (m)";
  parameter SIunits.Diameter            D =                   0.03 "Diameter (m)";
  parameter NonSIunits.Temperature_degC T_surr(min=-273.15) = 15   "Surr. temp. (C)";
  parameter NonSIunits.Temperature_degC T_s(min=-273.15) =    152  "Surface temp. (C)";
  parameter SIunits.Current             I(min=0) =            1.5  "Current (A)";
  parameter SIunits.Voltage             V(min=0) =            60   "Voltage (V)";

  output SIunits.Area                       A_s     "Surface area (m^2)";
  output SIunits.HeatFlowRate               Q_conv  "Convective heat flow rate (W/m^2)";
  output SIunits.CoefficientOfHeatTransfer h       "Convective heat transfer coefficient
      (W/(m^2 K))";

equation
  A_s    = Constants.pi*l*D;
  Q_conv = V*I;
  Q_conv = h*A_s*(T_s-T_surr);

end Example_1_8;
```