Příloha č. 1:

Report programu GAMS – výchozí matematický model

```
GAMS 30.3.0  rc5da09e Released Mar  6, 2020 WEX-WEI x86 64bit/MS Windows - 05/25/20 01:06:31
Page 1
G e n e r a l  A l g e b r a i c  M o d e l i n g  S y s t e m
C o m p i l a t i o n


  1  Set t hours / t1*t24 / ;
  2  */ vytvoreni promenne t
  3
  4  Table data(t, *)
  5  */ vytvoreni tabulky data s promennou t
  6
  7         Dh      De      Dc     lambda
  8  t1     21.4    52.1    11.5   36.7
  9  t2     23.2    66.7    13.7   40.4
 10  t3     26.1    72.2    16     38.5
 11  t4     26.7    78.4    21.4   38
 12  t5     25.6    120.2   22     40.2
 13  t6     26.4    83.5    30.8   38.6
 14  t7     39.5    110.4   38.9   52.3
 15  t8     47.3    124.3   46.8   67.3
 16  t9     52.1    143.6   51     70.5
 17  t10    49.1    149.3   48.9   66.2
 18  t11    69.3    154.2   34.8   73.3
 19  t12    62      147.3   32.7   60.8
 20  t13    68      200.7   27.8   63.2
 21  t14    68.6    174.4   32     70.8
 22  t15    56.4    176.5   33.2   63.1
 23  t16    41.3    136.1   34.1   52.5
 24  t17    37.4    108.7   40.8   57
 25  t18    25.4    96.9    43.6   49.2
 26  t19    25.7    89.1    51.5   47.5
 27  t20    21.9    82.5    43.1   49.5
 28  t21    22.4    76.9    36.5   53.1
 29  t22    24.6    66.8    27.7   51.6
 30  t23    22.7    47.2    19.1   50.5
 31  t24    22.6    64.7    11     36.4 ;
 32  */ vstup hodnot do tabulky data
 33
 34  data(t, 'lambda')=0.6*data(t, 'lambda') ;
 35  */ opravny koeficient ceny el. energie - kontrola s v. modelem
 36
 37  variable cost ;
 38  */ zavedeni promenne cost
 39
 40  positive variables E(t), E1(t), E2(t), E3(t), G(t), G1(t), G2(t),
 41  H1(t), H2(t), SOC(t), Ec(t), Ed(t), H_ehp(t), C_ehp(t) ;
 42  */ zavedeni kladnych promennych
 43
 44  binary variables Idch(t), Ich(t), Ic(t), Ih(t);
 45  */ zavedeni binarnich promennych
```

```
46
47  scalar SOC0 / 120 / , SOCmax / 600 / , eta_c / 0.9 / , eta_d / 0.9 / ,
48  eta_ee / 0.98 / , eta_ge / 0.45 / , eta_gh / 0.35 / , eta_hc / 0.95 / ,
49  COP / 2.5 / , H_ehpMax / 200 / , C_ehpMax / 200 / ,Chpmax / 300 / ,
50  CBmax / 300 / , Fmax / 300 / , eta_ghf / 0.9 / ;
51  */ zavedeni promennych s danymi hodnotami
52
53  SOC0= 0.2*SOCmax ;
54  SOC.up(t)=SOCmax ;
55  SOC.lo(t)=0.2*SOCmax ;
56  SOC.fx('t24')=SOC0 ;
57  Ec.up(t)=0.2*SOCmax ;
58  Ec.lo(t)=0 ;
59  Ed.up(t)=0.2*SOCmax ;
60  Ed.lo(t)=0 ;
61  C_ehp.up(t)=C_ehpMax ;
62  H_ehp.up(t)=H_ehpMax ;
63  G1.up(t)=Chpmax ;
64  G2.up(t)=Fmax ;
65  H2.up(t)=CBmax ;
66  E.up(t)=1000 ;
67  */ dodatecne upresneni hodnot promennych
68
69  Equations
70  eq1 , eq2 , eq3 , eq4 , eq5 , eq6 , eq7 , eq8 ,
71  eq9 , eq10 , eq11 , eq12 , eq13 , eq14 , eq15 , eq16 ;
72  */ zavedeni potrebneho poctu rovnic s oznacenim
73
74  */ rovnice definujici matematicky model EnergyHub:
75
76  eq1..     cost =e= sum(t , data(t ,'lambda')*E(t)+12*G(t)) ;
77  */ objektivni hodnotici funkce - soucet nakladu na energie
78
79  eq2(t)..  eta_ee*E2(t)+Ed(t)+eta_ge*G1(t) =e= data(t, 'De')+E3(t) ;
80  */ tok elektricke energie z EnergyHubu
81
82  eq3(t)..  E(t) =e= E1(t)+E2(t) ;
83  */ tok elektricke energie do EnergyHubu
84
85  eq4(t)..  E1(t) =e= Ec(t) ;
86  */ definovani vstupu elektricke energie do bateriove uloziste
87
88  eq5(t)..  SOC(t) =e= SOC0$(ord(t)=1)+SOC(t-1)$(ord(t)>1)+Ec(t)*eta_c-Ed(t)/eta_d ;
89  */ zmena stavu urovne nabiti bateriove uloziste
90
91  eq6(t)..  Ed(t) =l= 0.2*SOCmax*Idch(t) ;
92  */ omezeni vybijeni bateriove uloziste
93
94  eq7(t)..  Ec(t) =l= 0.2*SOCmax*Ich(t) ;
95  */ omezeni nabijeni bateriove uloziste
96
97  eq8(t)..  Idch(t)+Ich(t) =l= 1 ;
98  */ provozni rezim bateriove uloziste (nabijeni/vybijeni)
99
100 eq9(t)..  G(t) =e= G1(t)+G2(t) ;
101 */ tok plynu do EnergyHubu
102
```

```
103  eq10(t).. eta_gh*G1(t)+H1(t)+H_ehp(t) =e= data(t, 'Dh') ;
104  */ tok tepla z EnergyHubu
105
106  eq11(t).. eta_ghf*G2(t) =e= H1(t)+H2(t) ;
107  */ fungovani plynoveho kotle
108
109  eq12(t).. eta_hc*H2(t)+C_ehp(t) =e= data(t, 'Dc') ;
110  */ tok chladu z EnergyHubu
111
112  eq13(t).. C_ehp(t)+H_ehp(t) =e= E3(t)*COP ;
113  */ omezeni vykonu tepelneho cerpadla
114
115  eq14(t).. H_ehp(t) =l= H_ehpMax*Ih(t) ;
116  */ omezeni tepelneho vykonu tepelneho cerpadla
117
118  eq15(t).. C_ehp(t) =l= C_ehpMax*Ic(t) ;
119  */ omezeni chladiciho vykonu tepelneho cerpadla
120
121  eq16(t).. Ic(t)+Ih(t) =l= 1 ;
122  */ provozni rezim tepelneho cerpadla (chlazeni/topeni)
123
124  Model hub / all / ;
125  */ vytvoreni matematickeho modelu ze zadanych dat
126
127  Solve hub us mip min cost ;
128  */ prikaz pro reseni daneho modelu pomoci MIP resitele s minimalizaci promenne cost
129
130  parameter report(t, *);
131  report(t, 'Elektrina')      = E.l(t);
132  report(t, 'Plyn')           = G.l(t);
133  display report;


COMPILATION TIME     =        0.000 SECONDS      3 MB  30.3.0 rc5da09e WEX-WEI
```

---- eq1 =E=

eq1.. cost - 22.02*E(t1) - 24.24*E(t2) - 23.1*E(t3) - 22.8*E(t4) - 24.12*E(t5) - 23.16*E(t6) - 31.38*E(t7) - 40.38*E(t8) - 42.3*E(t9) - 39.72*E(t10) - 43.98*E(t11) - 36.48*E(t12) - 37.92*E(t13) - 42.48*E(t14) - 37.86*E(t15) - 31.5*E(t16) - 34.2*E(t17)

- 29.52*E(t18) - 28.5*E(t19) - 29.7*E(t20) - 31.86*E(t21) - 30.96*E(t22) - 30.3*E(t23) - 21.84*E(t24) - 12*G(t1) - 12*G(t2) - 12*G(t3) - 12*G(t4) - 12*G(t5) - 12*G(t6) - 12*G(t7) - 12*G(t8) - 12*G(t9) - 12*G(t10) - 12*G(t11) - 12*G(t12) - 12*G(t13)

- 12*G(t14) - 12*G(t15) - 12*G(t16) - 12*G(t17) - 12*G(t18) - 12*G(t19) - 12*G(t20) - 12*G(t21) - 12*G(t22) - 12*G(t23) - 12*G(t24) =E= 0 ; (LHS = 0)

---- eq2 =E=

eq2(t1).. 0.98*E2(t1) - E3(t1) + 0.45*G1(t1) + Ed(t1) =E= 52.1 ; (LHS = 0, INFES = 52.1 ****)

eq2(t2).. 0.98*E2(t2) - E3(t2) + 0.45*G1(t2) + Ed(t2) =E= 66.7 ; (LHS = 0, INFES = 66.7 ****)

eq2(t3).. 0.98*E2(t3) - E3(t3) + 0.45*G1(t3) + Ed(t3) =E= 72.2 ; (LHS = 0, INFES = 72.2 ****)

REMAINING 21 ENTRIES SKIPPED

---- eq3 =E=

eq3(t1).. E(t1) - E1(t1) - E2(t1) =E= 0 ; (LHS = 0)

eq3(t2).. E(t2) - E1(t2) - E2(t2) =E= 0 ; (LHS = 0)

eq3(t3).. E(t3) - E1(t3) - E2(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq4 =E=

eq4(t1).. E1(t1) - Ec(t1) =E= 0 ; (LHS = 0)

eq4(t2).. E1(t2) - Ec(t2) =E= 0 ; (LHS = 0)

eq4(t3).. E1(t3) - Ec(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq5 =E=

eq5(t1).. SOC(t1) - 0.9*Ec(t1) + 1.11111111111111*Ed(t1) =E= 120 ; (LHS = 120)

eq5(t2).. - SOC(t1) + SOC(t2) - 0.9*Ec(t2) + 1.11111111111111*Ed(t2) =E= 0 ; (LHS = 0)

eq5(t3).. - SOC(t2) + SOC(t3) - 0.9*Ec(t3) + 1.11111111111111*Ed(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq6 =L=

eq6(t1).. Ed(t1) - 120*Idch(t1) =L= 0 ; (LHS = 0)

eq6(t2).. Ed(t2) - 120*Idch(t2) =L= 0 ; (LHS = 0)

eq6(t3).. Ed(t3) - 120*Idch(t3) =L= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq7 =L=

eq7(t1).. Ec(t1) - 120*Ich(t1) =L= 0 ; (LHS = 0)

eq7(t2).. Ec(t2) - 120*Ich(t2) =L= 0 ; (LHS = 0)

eq7(t3).. Ec(t3) - 120*Ich(t3) =L= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq8 =L=

eq8(t1).. Idch(t1) + Ich(t1) =L= 1 ; (LHS = 0)

eq8(t2).. Idch(t2) + Ich(t2) =L= 1 ; (LHS = 0)

eq8(t3).. Idch(t3) + Ich(t3) =L= 1 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq9 =E=

eq9(t1).. G(t1) - G1(t1) - G2(t1) =E= 0 ; (LHS = 0)

eq9(t2).. G(t2) - G1(t2) - G2(t2) =E= 0 ; (LHS = 0)

eq9(t3).. G(t3) - G1(t3) - G2(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq10 =E=

eq10(t1).. 0.35*G1(t1) + H1(t1) + H_ehp(t1) =E= 21.4 ; (LHS = 0, INFES = 21.4 ****)

eq10(t2).. 0.35*G1(t2) + H1(t2) + H_ehp(t2) =E= 23.2 ; (LHS = 0, INFES = 23.2 ****)

eq10(t3).. 0.35*G1(t3) + H1(t3) + H_ehp(t3) =E= 26.1 ; (LHS = 0, INFES = 26.1 ****)

REMAINING 21 ENTRIES SKIPPED

---- eq11 =E=

eq11(t1).. 0.9*G2(t1) - H1(t1) - H2(t1) =E= 0 ; (LHS = 0)

eq11(t2).. 0.9*G2(t2) - H1(t2) - H2(t2) =E= 0 ; (LHS = 0)

eq11(t3).. 0.9*G2(t3) - H1(t3) - H2(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq12 =E=

eq12(t1).. 0.95*H2(t1) + C_ehp(t1) =E= 11.5 ; (LHS = 0, INFES = 11.5 ****)

eq12(t2).. 0.95*H2(t2) + C_ehp(t2) =E= 13.7 ; (LHS = 0, INFES = 13.7 ****)

eq12(t3).. 0.95*H2(t3) + C_ehp(t3) =E= 16 ; (LHS = 0, INFES = 16 ****)

REMAINING 21 ENTRIES SKIPPED

---- eq13 =E=

eq13(t1).. - 2.5*E3(t1) + H_ehp(t1) + C_ehp(t1) =E= 0 ; (LHS = 0)

eq13(t2).. - 2.5*E3(t2) + H_ehp(t2) + C_ehp(t2) =E= 0 ; (LHS = 0)

eq13(t3).. - 2.5*E3(t3) + H_ehp(t3) + C_ehp(t3) =E= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq14 =L=

eq14(t1).. H_ehp(t1) - 200*Ih(t1) =L= 0 ; (LHS = 0)

eq14(t2).. H_ehp(t2) - 200*Ih(t2) =L= 0 ; (LHS = 0)

eq14(t3).. H_ehp(t3) - 200*Ih(t3) =L= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq15 =L=

eq15(t1).. C_ehp(t1) - 200*Ic(t1) =L= 0 ; (LHS = 0)

eq15(t2).. C_ehp(t2) - 200*Ic(t2) =L= 0 ; (LHS = 0)

eq15(t3).. C_ehp(t3) - 200*Ic(t3) =L= 0 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- eq16 =L=

eq16(t1).. Ic(t1) + Ih(t1) =L= 1 ; (LHS = 0)

eq16(t2).. Ic(t2) + Ih(t2) =L= 1 ; (LHS = 0)

eq16(t3).. Ic(t3) + Ih(t3) =L= 1 ; (LHS = 0)

REMAINING 21 ENTRIES SKIPPED

---- cost

cost
(.LO, .L, .UP, .M = -INF, 0, +INF, 0)
1 eq1

---- E

E(t1)
(.LO, .L, .UP, .M = 0, 0, 1000, 0)
-22.02 eq1
1 eq3(t1)

E(t2)
(.LO, .L, .UP, .M = 0, 0, 1000, 0)
-24.24 eq1
1 eq3(t2)

E(t3)
(.LO, .L, .UP, .M = 0, 0, 1000, 0)
-23.1 eq1
1 eq3(t3)

REMAINING 21 ENTRIES SKIPPED

---- E1

E1(t1)
(.LO, .L, .UP, .M = 0, 0, +INF, 0)
-1 eq3(t1)
1 eq4(t1)

E1(t2)
(.LO, .L, .UP, .M = 0, 0, +INF, 0)
-1 eq3(t2)
1 eq4(t2)

E1(t3)
(.LO, .L, .UP, .M = 0, 0, +INF, 0)
-1 eq3(t3)
1 eq4(t3)

REMAINING 21 ENTRIES SKIPPED

---- E2

E2(t1)
(.LO, .L, .UP, .M = 0, 0, +INF, 0)
0.98 eq2(t1)
-1 eq3(t1)

```
E2(t2)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
       0.98    eq2(t2)
      -1       eq3(t2)

E2(t3)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
       0.98    eq2(t3)
      -1       eq3(t3)

REMAINING 21 ENTRIES SKIPPED

---- E3

E3(t1)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      -1       eq2(t1)
      -2.5     eq13(t1)

E3(t2)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      -1       eq2(t2)
      -2.5     eq13(t2)

E3(t3)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      -1       eq2(t3)
      -2.5     eq13(t3)

REMAINING 21 ENTRIES SKIPPED

---- G

G(t1)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
     -12       eq1
       1       eq9(t1)

G(t2)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
     -12       eq1
       1       eq9(t2)

G(t3)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
     -12       eq1
       1       eq9(t3)

REMAINING 21 ENTRIES SKIPPED

---- G1

G1(t1)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
       0.45    eq2(t1)
      -1       eq9(t1)
```

```
      0.35    eq10(t1)

G1(t2)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
      0.45    eq2(t2)
     -1       eq9(t2)
      0.35    eq10(t2)

G1(t3)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
      0.45    eq2(t3)
     -1       eq9(t3)
      0.35    eq10(t3)

REMAINING 21 ENTRIES SKIPPED

---- G2

G2(t1)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
     -1       eq9(t1)
      0.9     eq11(t1)

G2(t2)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
     -1       eq9(t2)
      0.9     eq11(t2)

G2(t3)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
     -1       eq9(t3)
      0.9     eq11(t3)

REMAINING 21 ENTRIES SKIPPED

---- H1

H1(t1)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      1      eq10(t1)
     -1      eq11(t1)

H1(t2)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      1      eq10(t2)
     -1      eq11(t2)

H1(t3)
            (.LO, .L, .UP, .M = 0, 0, +INF, 0)
      1      eq10(t3)
     -1      eq11(t3)

REMAINING 21 ENTRIES SKIPPED

---- H2

H2(t1)
```

```
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
      -1      eq11(t1)
       0.95   eq12(t1)

H2(t2)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
      -1      eq11(t2)
       0.95   eq12(t2)

H2(t3)
            (.LO, .L, .UP, .M = 0, 0, 300, 0)
      -1      eq11(t3)
       0.95   eq12(t3)

REMAINING 21 ENTRIES SKIPPED

---- SOC

SOC(t1)
            (.LO, .L, .UP, .M = 120, 120, 600, 0)
       1      eq5(t1)
      -1      eq5(t2)
       0      (OLD LEVEL ****)

SOC(t2)
            (.LO, .L, .UP, .M = 120, 120, 600, 0)
       1      eq5(t2)
      -1      eq5(t3)
       0      (OLD LEVEL ****)

SOC(t3)
            (.LO, .L, .UP, .M = 120, 120, 600, 0)
       1      eq5(t3)
      -1      eq5(t4)
       0      (OLD LEVEL ****)

REMAINING 21 ENTRIES SKIPPED

---- Ec

Ec(t1)
            (.LO, .L, .UP, .M = 0, 0, 120, 0)
      -1      eq4(t1)
      -0.9    eq5(t1)
       1      eq7(t1)

Ec(t2)
            (.LO, .L, .UP, .M = 0, 0, 120, 0)
      -1      eq4(t2)
      -0.9    eq5(t2)
       1      eq7(t2)

Ec(t3)
            (.LO, .L, .UP, .M = 0, 0, 120, 0)
      -1      eq4(t3)
      -0.9    eq5(t3)
       1      eq7(t3)
```

REMAINING 21 ENTRIES SKIPPED

---- Ed

Ed(t1)
(.LO, .L, .UP, .M = 0, 0, 120, 0)
1 eq2(t1)
1.1111 eq5(t1)
1 eq6(t1)

Ed(t2)
(.LO, .L, .UP, .M = 0, 0, 120, 0)
1 eq2(t2)
1.1111 eq5(t2)
1 eq6(t2)

Ed(t3)
(.LO, .L, .UP, .M = 0, 0, 120, 0)
1 eq2(t3)
1.1111 eq5(t3)
1 eq6(t3)

REMAINING 21 ENTRIES SKIPPED

---- H_ehp

H_ehp(t1)
(.LO, .L, .UP, .M = 0, 0, 200, 0)
1 eq10(t1)
1 eq13(t1)
1 eq14(t1)

H_ehp(t2)
(.LO, .L, .UP, .M = 0, 0, 200, 0)
1 eq10(t2)
1 eq13(t2)
1 eq14(t2)

H_ehp(t3)
(.LO, .L, .UP, .M = 0, 0, 200, 0)
1 eq10(t3)
1 eq13(t3)
1 eq14(t3)

REMAINING 21 ENTRIES SKIPPED

---- C_ehp

C_ehp(t1)
(.LO, .L, .UP, .M = 0, 0, 200, 0)
1 eq12(t1)
1 eq13(t1)
1 eq15(t1)

C_ehp(t2)
(.LO, .L, .UP, .M = 0, 0, 200, 0)

```
      1      eq12(t2)
      1      eq13(t2)
      1      eq15(t2)

C_ehp(t3)
            (.LO, .L, .UP, .M = 0, 0, 200, 0)
      1      eq12(t3)
      1      eq13(t3)
      1      eq15(t3)

REMAINING 21 ENTRIES SKIPPED

---- Idch

Idch(t1)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq6(t1)
      1      eq8(t1)

Idch(t2)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq6(t2)
      1      eq8(t2)

Idch(t3)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq6(t3)
      1      eq8(t3)

REMAINING 21 ENTRIES SKIPPED

---- Ich

Ich(t1)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq7(t1)
      1      eq8(t1)

Ich(t2)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq7(t2)
      1      eq8(t2)

Ich(t3)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -120      eq7(t3)
      1      eq8(t3)

REMAINING 21 ENTRIES SKIPPED

---- Ic

Ic(t1)
            (.LO, .L, .UP, .M = 0, 0, 1, 0)
   -200      eq15(t1)
      1      eq16(t1)
```

Ic(t2)
(.LO, .L, .UP, .M = 0, 0, 1, 0)
-200 eq15(t2)
1 eq16(t2)

Ic(t3)
(.LO, .L, .UP, .M = 0, 0, 1, 0)
-200 eq15(t3)
1 eq16(t3)

REMAINING 21 ENTRIES SKIPPED

---- Ih

Ih(t1)
(.LO, .L, .UP, .M = 0, 0, 1, 0)
-200 eq14(t1)
1 eq16(t1)

Ih(t2)
(.LO, .L, .UP, .M = 0, 0, 1, 0)
-200 eq14(t2)
1 eq16(t2)

Ih(t3)
(.LO, .L, .UP, .M = 0, 0, 1, 0)
-200 eq14(t3)
1 eq16(t3)

REMAINING 21 ENTRIES SKIPPED

Model Statistics SOLVE hub Using MIP From line 127

MODEL STATISTICS

BLOCKS OF EQUATIONS	16	SINGLE EQUATIONS	361
BLOCKS OF VARIABLES	19	SINGLE VARIABLES	433 23 projected
NON ZERO ELEMENTS	984	DISCRETE VARIABLES	96

GENERATION TIME = 0.047 SECONDS 4 MB 30.3.0 rc5da09e WEX-WEI

EXECUTION TIME = 0.047 SECONDS 4 MB 30.3.0 rc5da09e WEX-WEI

G e n e r a l A l g e b r a i c M o d e l i n g S y s t e m
Solution Report SOLVE hub Using MIP From line 127

S O L V E S U M M A R Y

MODEL hub OBJECTIVE cost
TYPE MIP DIRECTION MINIMIZE
SOLVER CPLEX FROM LINE 127

**** SOLVER STATUS 1 Normal Completion
**** MODEL STATUS 1 Optimal
**** OBJECTIVE VALUE 84449.4258

RESOURCE USAGE, LIMIT 0.016 1000.000
ITERATION COUNT, LIMIT 47 2000000000

IBM ILOG CPLEX 30.3.0 rc5da09e Released Mar 06, 2020 WEI x86 64bit/MS Window
*** This solver runs with a demo license. No commercial use.
Cplex 12.10.0.0

Space for names approximately 0.01 Mb
Use option 'names no' to turn use of names off
MIP status(101): integer optimal solution
Cplex Time: 0.00sec (det. 1.81 ticks)
Fixing integer variables, and solving final LP...
Fixed MIP status(1): optimal
Cplex Time: 0.00sec (det. 0.43 ticks)
Proven optimal solution.

MIP Solution: 84449.425828 (31 iterations, 0 nodes)
Final Solve: 84449.425828 (16 iterations)

Best possible: 84449.425828
Absolute gap: 0.000000
Relative gap: 0.000000

LOWER LEVEL UPPER MARGINAL

---- EQU eq1 . . . 1.0000

---- EQU eq2

	LOWER	LEVEL	UPPER	MARGINAL
t1	52.1000	52.1000	52.1000	22.4694
t2	66.7000	66.7000	66.7000	24.7347
t3	72.2000	72.2000	72.2000	23.5714
t4	78.4000	78.4000	78.4000	23.2653
t5	120.2000	120.2000	120.2000	24.6122
t6	83.5000	83.5000	83.5000	23.6327
t7	110.4000	110.4000	110.4000	32.0204
t8	124.3000	124.3000	124.3000	38.6939
t9	143.6000	143.6000	143.6000	38.6939

t10	149.3000	149.3000	149.3000	38.6939
t11	154.2000	154.2000	154.2000	38.6939
t12	147.3000	147.3000	147.3000	37.2245
t13	200.7000	200.7000	200.7000	38.6939
t14	174.4000	174.4000	174.4000	38.6939
t15	176.5000	176.5000	176.5000	38.6327
t16	136.1000	136.1000	136.1000	32.1429
t17	108.7000	108.7000	108.7000	34.8980
t18	96.9000	96.9000	96.9000	30.1224
t19	89.1000	89.1000	89.1000	29.0816
t20	82.5000	82.5000	82.5000	30.3061
t21	76.9000	76.9000	76.9000	32.5102
t22	66.8000	66.8000	66.8000	31.5918
t23	47.2000	47.2000	47.2000	30.9184
t24	64.7000	64.7000	64.7000	22.2857

---- EQU eq3

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	.	22.0200
t2	.	.	.	24.2400
t3	.	.	.	23.1000
t4	.	.	.	22.8000
t5	.	.	.	24.1200
t6	.	.	.	23.1600
t7	.	.	.	31.3800
t8	.	.	.	40.3800
t9	.	.	.	42.3000
t10	.	.	.	39.7200
t11	.	.	.	43.9800
t12	.	.	.	36.4800
t13	.	.	.	37.9200
t14	.	.	.	42.4800
t15	.	.	.	37.8600
t16	.	.	.	31.5000
t17	.	.	.	34.2000
t18	.	.	.	29.5200
t19	.	.	.	28.5000
t20	.	.	.	29.7000
t21	.	.	.	31.8600
t22	.	.	.	30.9600
t23	.	.	.	30.3000
t24	.	.	.	21.8400

---- EQU eq4

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	.	22.0200
t2	.	.	.	24.2400
t3	.	.	.	23.1000
t4	.	.	.	22.8000
t5	.	.	.	24.1200
t6	.	.	.	23.1600
t7	.	.	.	31.3800
t8	.	.	.	.

t9	.	.	.	.
t10	.	.	.	.
t11	.	.	.	.
t12	.	.	.	36.4800
t13	.	.	.	.
t14	.	.	.	.
t15	.	.	.	37.8600
t16	.	.	.	31.5000
t17	.	.	.	34.2000
t18	.	.	.	29.5200
t19	.	.	.	28.5000
t20	.	.	.	29.7000
t21	.	.	.	31.8600
t22	.	.	.	30.9600
t23	.	.	.	30.3000
t24	.	.	.	.

---- EQU eq5

	LOWER	LEVEL	UPPER	MARGINAL
t1	120.0000	120.0000	120.0000	-26.8000
t2	.	.	.	-26.8000
t3	.	.	.	-26.8000
t4	.	.	.	-26.8000
t5	.	.	.	-26.8000
t6	.	.	.	-26.8000
t7	.	.	.	-26.8000
t8	.	.	.	-34.8245
t9	.	.	.	-34.8245
t10	.	.	.	-34.8245
t11	.	.	.	-34.8245
t12	.	.	.	-34.8245
t13	.	.	.	-34.8245
t14	.	.	.	-34.8245
t15	.	.	.	-20.0571
t16	.	.	.	-20.0571
t17	.	.	.	-20.0571
t18	.	.	.	-20.0571
t19	.	.	.	-20.0571
t20	.	.	.	-20.0571
t21	.	.	.	-20.0571
t22	.	.	.	-20.0571
t23	.	.	.	-20.0571
t24	.	.	.	-20.0571

---- EQU eq6

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	.	.	.
t2	-INF	.	.	.
t3	-INF	.	.	.
t4	-INF	.	.	.
t5	-INF	.	.	.
t6	-INF	.	.	.
t7	-INF	.	.	-2.2426

t8	-INF	-56.5143	.	.
t9	-INF	-43.3857	.	.
t10	-INF	-33.8286	.	.
t11	-INF	-54.9000	.	.
t12	-INF	.	.	.
t13	-INF	-65.5714	.	.
t14	-INF	-33.8000	.	.
t15	-INF	.	.	-16.3469
t16	-INF	.	.	-9.8571
t17	-INF	.	.	-12.6122
t18	-INF	.	.	-7.8367
t19	-INF	.	.	-6.7959
t20	-INF	.	.	-8.0204
t21	-INF	.	.	-10.2245
t22	-INF	.	.	-9.3061
t23	-INF	.	.	-8.6327
t24	-INF	-120.0000	.	.

---- EQU eq7

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	.	.	.
t2	-INF	-120.0000	.	.
t3	-INF	.	.	.
t4	-INF	.	.	.
t5	-INF	-66.6667	.	.
t6	-INF	.	.	.
t7	-INF	-120.0000	.	.
t8	-INF	.	.	-31.3420
t9	-INF	.	.	-31.3420
t10	-INF	.	.	-31.3420
t11	-INF	.	.	-31.3420
t12	-INF	-120.0000	.	.
t13	-INF	.	.	-31.3420
t14	-INF	.	.	-31.3420
t15	-INF	-120.0000	.	.
t16	-INF	-120.0000	.	.
t17	-INF	-120.0000	.	.
t18	-INF	-120.0000	.	.
t19	-INF	-120.0000	.	.
t20	-INF	-120.0000	.	.
t21	-INF	-120.0000	.	.
t22	-INF	-120.0000	.	.
t23	-INF	-120.0000	.	.
t24	-INF	.	.	-18.0514

---- EQU eq8

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	1.0000	1.0000	.
t2	-INF	1.0000	1.0000	.
t3	-INF	1.0000	1.0000	.
t4	-INF	1.0000	1.0000	.
t5	-INF	1.0000	1.0000	.
t6	-INF	1.0000	1.0000	.

t7	-INF	1.0000	1.0000	.
t8	-INF	1.0000	1.0000	.
t9	-INF	1.0000	1.0000	.
t10	-INF	1.0000	1.0000	.
t11	-INF	1.0000	1.0000	.
t12	-INF	1.0000	1.0000	.
t13	-INF	1.0000	1.0000	.
t14	-INF	1.0000	1.0000	.
t15	-INF	1.0000	1.0000	.
t16	-INF	1.0000	1.0000	.
t17	-INF	1.0000	1.0000	.
t18	-INF	1.0000	1.0000	.
t19	-INF	1.0000	1.0000	.
t20	-INF	1.0000	1.0000	.
t21	-INF	1.0000	1.0000	.
t22	-INF	1.0000	1.0000	.
t23	-INF	1.0000	1.0000	.
t24	-INF	1.0000	1.0000	.

---- EQU eq9

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	12.0000	
t2	.	.	12.0000	
t3	.	.	12.0000	
t4	.	.	12.0000	
t5	.	.	12.0000	
t6	.	.	12.0000	
t7	.	.	12.0000	
t8	.	.	12.0000	
t9	.	.	12.0000	
t10	.	.	12.0000	
t11	.	.	12.0000	
t12	.	.	12.0000	
t13	.	.	12.0000	
t14	.	.	12.0000	
t15	.	.	12.0000	
t16	.	.	12.0000	
t17	.	.	12.0000	
t18	.	.	12.0000	
t19	.	.	12.0000	
t20	.	.	12.0000	
t21	.	.	12.0000	
t22	.	.	12.0000	
t23	.	.	12.0000	
t24	.	.	12.0000	

---- EQU eq10

	LOWER	LEVEL	UPPER	MARGINAL
t1	21.4000	21.4000	21.4000	5.3965
t2	23.2000	23.2000	23.2000	2.4840
t3	26.1000	26.1000	26.1000	3.9796
t4	26.7000	26.7000	26.7000	4.3732
t5	25.6000	25.6000	25.6000	2.6414

t6	26.4000	26.4000	26.4000	3.9009
t7	39.5000	39.5000	39.5000	-6.8834
t8	47.3000	47.3000	47.3000	-15.4636
t9	52.1000	52.1000	52.1000	-15.4636
t10	49.1000	49.1000	49.1000	-15.4636
t11	69.3000	69.3000	69.3000	-15.4636
t12	62.0000	62.0000	62.0000	-13.5743
t13	68.0000	68.0000	68.0000	-15.4636
t14	68.6000	68.6000	68.6000	-15.4636
t15	56.4000	56.4000	56.4000	-15.3848
t16	41.3000	41.3000	41.3000	-7.0408
t17	37.4000	37.4000	37.4000	-10.5831
t18	25.4000	25.4000	25.4000	-4.4431
t19	25.7000	25.7000	25.7000	-3.1050
t20	21.9000	21.9000	21.9000	-4.6793
t21	22.4000	22.4000	22.4000	-7.5131
t22	24.6000	24.6000	24.6000	-6.3324
t23	22.7000	22.7000	22.7000	-5.4665
t24	22.6000	22.6000	22.6000	5.6327

---- EQU eq11

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	13.3333	
t2	.	.	13.3333	
t3	.	.	13.3333	
t4	.	.	13.3333	
t5	.	.	13.3333	
t6	.	.	13.3333	
t7	.	.	13.3333	
t8	.	.	13.3333	
t9	.	.	13.3333	
t10	.	.	13.3333	
t11	.	.	13.3333	
t12	.	.	13.3333	
t13	.	.	13.3333	
t14	.	.	13.3333	
t15	.	.	13.3333	
t16	.	.	13.3333	
t17	.	.	13.3333	
t18	.	.	13.3333	
t19	.	.	13.3333	
t20	.	.	13.3333	
t21	.	.	13.3333	
t22	.	.	13.3333	
t23	.	.	13.3333	
t24	.	.	13.3333	

---- EQU eq12

	LOWER	LEVEL	UPPER	MARGINAL
t1	11.5000	11.5000	11.5000	8.9878
t2	13.7000	13.7000	13.7000	9.8939
t3	16.0000	16.0000	16.0000	9.4286
t4	21.4000	21.4000	21.4000	9.3061

t5	22.0000	22.0000	22.0000	9.8449
t6	30.8000	30.8000	30.8000	9.4531
t7	38.9000	38.9000	38.9000	12.8082
t8	46.8000	46.8000	46.8000	14.0351
t9	51.0000	51.0000	51.0000	14.0351
t10	48.9000	48.9000	48.9000	14.0351
t11	34.8000	34.8000	34.8000	14.0351
t12	32.7000	32.7000	32.7000	14.0351
t13	27.8000	27.8000	27.8000	14.0351
t14	32.0000	32.0000	32.0000	14.0351
t15	33.2000	33.2000	33.2000	14.0351
t16	34.1000	34.1000	34.1000	12.8571
t17	40.8000	40.8000	40.8000	13.9592
t18	43.6000	43.6000	43.6000	12.0490
t19	51.5000	51.5000	51.5000	11.6327
t20	43.1000	43.1000	43.1000	12.1224
t21	36.5000	36.5000	36.5000	13.0041
t22	27.7000	27.7000	27.7000	12.6367
t23	19.1000	19.1000	19.1000	12.3673
t24	11.0000	11.0000	11.0000	8.9143

---- EQU eq13

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	.	-8.9878
t2	.	.	.	-9.8939
t3	.	.	.	-9.4286
t4	.	.	.	-9.3061
t5	.	.	.	-9.8449
t6	.	.	.	-9.4531
t7	.	.	.	-12.8082
t8	.	.	.	-15.4776
t9	.	.	.	-15.4776
t10	.	.	.	-15.4776
t11	.	.	.	-15.4776
t12	.	.	.	-14.8898
t13	.	.	.	-15.4776
t14	.	.	.	-15.4776
t15	.	.	.	-15.4531
t16	.	.	.	-12.8571
t17	.	.	.	-13.9592
t18	.	.	.	-12.0490
t19	.	.	.	-11.6327
t20	.	.	.	-12.1224
t21	.	.	.	-13.0041
t22	.	.	.	-12.6367
t23	.	.	.	-12.3673
t24	.	.	.	-8.9143

---- EQU eq14

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	.	.	.
t2	-INF	.	.	.
t3	-INF	.	.	.

t4	-INF	.	.	.
t5	-INF	.	.	.
t6	-INF	.	.	.
t7	-INF	.	.	.
t8	-INF	-200.0000	.	.
t9	-INF	-200.0000	.	.
t10	-INF	-200.0000	.	.
t11	-INF	-200.0000	.	.
t12	-INF	-200.0000	.	.
t13	-INF	-200.0000	.	.
t14	-INF	-200.0000	.	.
t15	-INF	-200.0000	.	.
t16	-INF	.	.	.
t17	-INF	.	.	.
t18	-INF	.	.	.
t19	-INF	.	.	.
t20	-INF	.	.	.
t21	-INF	.	.	.
t22	-INF	.	.	.
t23	-INF	.	.	.
t24	-INF	.	.	.

---- EQU eq15

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	-188.5000	.	.
t2	-INF	-186.3000	.	.
t3	-INF	-184.0000	.	.
t4	-INF	-178.6000	.	.
t5	-INF	-178.0000	.	.
t6	-INF	-169.2000	.	.
t7	-INF	-161.1000	.	.
t8	-INF	.	.	.
t9	-INF	.	.	.
t10	-INF	.	.	.
t11	-INF	.	.	.
t12	-INF	.	.	.
t13	-INF	.	.	.
t14	-INF	.	.	.
t15	-INF	.	.	.
t16	-INF	-165.9000	.	.
t17	-INF	-159.2000	.	.
t18	-INF	-156.4000	.	.
t19	-INF	-148.5000	.	.
t20	-INF	-156.9000	.	.
t21	-INF	-163.5000	.	.
t22	-INF	-172.3000	.	.
t23	-INF	-180.9000	.	.
t24	-INF	-189.0000	.	.

---- EQU eq16

	LOWER	LEVEL	UPPER	MARGINAL
t1	-INF	1.0000	1.0000	.
t2	-INF	1.0000	1.0000	.

t3	-INF	1.0000	1.0000	.
t4	-INF	1.0000	1.0000	.
t5	-INF	1.0000	1.0000	.
t6	-INF	1.0000	1.0000	.
t7	-INF	1.0000	1.0000	.
t8	-INF	1.0000	1.0000	.
t9	-INF	1.0000	1.0000	.
t10	-INF	1.0000	1.0000	.
t11	-INF	1.0000	1.0000	.
t12	-INF	1.0000	1.0000	.
t13	-INF	1.0000	1.0000	.
t14	-INF	1.0000	1.0000	.
t15	-INF	1.0000	1.0000	.
t16	-INF	1.0000	1.0000	.
t17	-INF	1.0000	1.0000	.
t18	-INF	1.0000	1.0000	.
t19	-INF	1.0000	1.0000	.
t20	-INF	1.0000	1.0000	.
t21	-INF	1.0000	1.0000	.
t22	-INF	1.0000	1.0000	.
t23	-INF	1.0000	1.0000	.
t24	-INF	1.0000	1.0000	.

	LOWER	LEVEL	UPPER	MARGINAL
---- VAR cost	-INF	84449.4258	+INF	.

---- VAR E

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	149.7813	1000.0000	.
t2	.	43.2157	1000.0000	.
t3	.	165.9621	1000.0000	.
t4	.	173.7055	1000.0000	.
t5	.	151.3800	1000.0000	.
t6	.	183.1399	1000.0000	.
t7	.	76.7085	1000.0000	.
t8	.	.	1000.0000	.
t9	.	.	1000.0000	.
t10	.	.	1000.0000	.
t11	.	.	1000.0000	.
t12	.	68.9650	1000.0000	.
t13	.	60.0437	1000.0000	.
t14	.	.	1000.0000	.
t15	.	106.1079	1000.0000	.
t16	.	98.6122	1000.0000	.
t17	.	78.5044	1000.0000	.
t18	.	83.3499	1000.0000	.
t19	.	78.2216	1000.0000	.
t20	.	73.0437	1000.0000	.
t21	.	63.9796	1000.0000	.
t22	.	47.1953	1000.0000	.
t23	.	26.1778	1000.0000	.
t24	.	40.8601	1000.0000	.

---- VAR E1

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	120.0000	+INF	.
t2	.	.	+INF	.
t3	.	120.0000	+INF	.
t4	.	120.0000	+INF	.
t5	.	53.3333	+INF	.
t6	.	120.0000	+INF	.
t7	.	.	+INF	.
t8	.	.	+INF	40.3800
t9	.	.	+INF	42.3000
t10	.	.	+INF	39.7200
t11	.	.	+INF	43.9800
t12	.	.	+INF	.
t13	.	.	+INF	37.9200
t14	.	.	+INF	42.4800
t15	.	.	+INF	.
t16	.	.	+INF	.
t17	.	.	+INF	.
t18	.	.	+INF	.
t19	.	.	+INF	.
t20	.	.	+INF	.
t21	.	.	+INF	.
t22	.	.	+INF	.
t23	.	.	+INF	.
t24	.	.	+INF	21.8400

---- VAR E2

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	29.7813	+INF	.
t2	.	43.2157	+INF	.
t3	.	45.9621	+INF	.
t4	.	53.7055	+INF	.
t5	.	98.0466	+INF	.
t6	.	63.1399	+INF	.
t7	.	76.7085	+INF	.
t8	.	.	+INF	2.4600
t9	.	.	+INF	4.3800
t10	.	.	+INF	1.8000
t11	.	.	+INF	6.0600
t12	.	68.9650	+INF	.
t13	.	60.0437	+INF	.
t14	.	.	+INF	4.5600
t15	.	106.1079	+INF	.
t16	.	98.6122	+INF	.
t17	.	78.5044	+INF	.
t18	.	83.3499	+INF	.
t19	.	78.2216	+INF	.
t20	.	73.0437	+INF	.
t21	.	63.9796	+INF	.
t22	.	47.1953	+INF	.
t23	.	26.1778	+INF	.
t24	.	40.8601	+INF	.

---- VAR E3

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	4.6000	+INF	.
t2	.	5.4800	+INF	.
t3	.	6.4000	+INF	.
t4	.	8.5600	+INF	.
t5	.	8.8000	+INF	.
t6	.	12.3200	+INF	.
t7	.	15.5600	+INF	.
t8	.	.	+INF	.
t9	.	.	+INF	.
t10	.	.	+INF	.
t11	.	.	+INF	.
t12	.	.	+INF	.
t13	.	.	+INF	.
t14	.	.	+INF	.
t15	.	.	+INF	.
t16	.	13.6400	+INF	.
t17	.	16.3200	+INF	.
t18	.	17.4400	+INF	.
t19	.	20.6000	+INF	.
t20	.	17.2400	+INF	.
t21	.	14.6000	+INF	.
t22	.	11.0800	+INF	.
t23	.	7.6400	+INF	.
t24	.	4.4000	+INF	.

---- VAR G

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	61.1429	+INF	.
t2	.	66.2857	+INF	.
t3	.	74.5714	+INF	.
t4	.	76.2857	+INF	.
t5	.	73.1429	+INF	.
t6	.	75.4286	+INF	.
t7	.	112.8571	+INF	.
t8	.	189.8797	+INF	.
t9	.	208.5063	+INF	.
t10	.	197.4787	+INF	.
t11	.	238.7018	+INF	.
t12	.	215.3885	+INF	.
t13	.	226.8003	+INF	.
t14	.	233.4269	+INF	.
t15	.	199.9733	+INF	.
t16	.	118.0000	+INF	.
t17	.	106.8571	+INF	.
t18	.	72.5714	+INF	.
t19	.	73.4286	+INF	.
t20	.	62.5714	+INF	.
t21	.	64.0000	+INF	.
t22	.	70.2857	+INF	.
t23	.	64.8571	+INF	.
t24	.	64.5714	+INF	.

---- VAR G1

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	61.1429	300.0000	.
t2	.	66.2857	300.0000	.
t3	.	74.5714	300.0000	.
t4	.	76.2857	300.0000	.
t5	.	73.1429	300.0000	.
t6	.	75.4286	300.0000	.
t7	.	112.8571	300.0000	.
t8	.	135.1429	300.0000	.
t9	.	148.8571	300.0000	.
t10	.	140.2857	300.0000	.
t11	.	198.0000	300.0000	.
t12	.	177.1429	300.0000	.
t13	.	194.2857	300.0000	.
t14	.	196.0000	300.0000	.
t15	.	161.1429	300.0000	.
t16	.	118.0000	300.0000	.
t17	.	106.8571	300.0000	.
t18	.	72.5714	300.0000	.
t19	.	73.4286	300.0000	.
t20	.	62.5714	300.0000	.
t21	.	64.0000	300.0000	.
t22	.	70.2857	300.0000	.
t23	.	64.8571	300.0000	.
t24	.	64.5714	300.0000	.

---- VAR G2

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	300.0000	.
t2	.	.	300.0000	.
t3	.	.	300.0000	.
t4	.	.	300.0000	.
t5	.	.	300.0000	.
t6	.	.	300.0000	.
t7	.	.	300.0000	.
t8	.	54.7368	300.0000	.
t9	.	59.6491	300.0000	.
t10	.	57.1930	300.0000	.
t11	.	40.7018	300.0000	.
t12	.	38.2456	300.0000	.
t13	.	32.5146	300.0000	.
t14	.	37.4269	300.0000	.
t15	.	38.8304	300.0000	.
t16	.	.	300.0000	.
t17	.	.	300.0000	.
t18	.	.	300.0000	.
t19	.	.	300.0000	.
t20	.	.	300.0000	.
t21	.	.	300.0000	.
t22	.	.	300.0000	.
t23	.	.	300.0000	.

t24 . . 300.0000 .

---- VAR H1

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	+INF	7.9368
t2	.	.	+INF	10.8494
t3	.	.	+INF	9.3537
t4	.	.	+INF	8.9602
t5	.	.	+INF	10.6919
t6	.	.	+INF	9.4325
t7	.	.	+INF	20.2167
t8	.	.	+INF	28.7969
t9	.	.	+INF	28.7969
t10	.	.	+INF	28.7969
t11	.	.	+INF	28.7969
t12	.	.	+INF	26.9077
t13	.	.	+INF	28.7969
t14	.	.	+INF	28.7969
t15	.	.	+INF	28.7182
t16	.	.	+INF	20.3741
t17	.	.	+INF	23.9164
t18	.	.	+INF	17.7765
t19	.	.	+INF	16.4383
t20	.	.	+INF	18.0126
t21	.	.	+INF	20.8465
t22	.	.	+INF	19.6657
t23	.	.	+INF	18.7998
t24	.	.	+INF	7.7007

---- VAR H2

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	300.0000	4.7950
t2	.	.	300.0000	3.9341
t3	.	.	300.0000	4.3762
t4	.	.	300.0000	4.4925
t5	.	.	300.0000	3.9807
t6	.	.	300.0000	4.3529
t7	.	.	300.0000	1.1656
t8	.	49.2632	300.0000	.
t9	.	53.6842	300.0000	.
t10	.	51.4737	300.0000	.
t11	.	36.6316	300.0000	.
t12	.	34.4211	300.0000	.
t13	.	29.2632	300.0000	.
t14	.	33.6842	300.0000	.
t15	.	34.9474	300.0000	.
t16	.	.	300.0000	1.1190
t17	.	.	300.0000	0.0721
t18	.	.	300.0000	1.8868
t19	.	.	300.0000	2.2823
t20	.	.	300.0000	1.8170
t21	.	.	300.0000	0.9795
t22	.	.	300.0000	1.3284

t23	.	.	300.0000	1.5844
t24	.	.	300.0000	4.8648

---- VAR SOC

	LOWER	LEVEL	UPPER	MARGINAL
t1	120.0000	228.0000	600.0000	.
t2	120.0000	228.0000	600.0000	.
t3	120.0000	336.0000	600.0000	.
t4	120.0000	444.0000	600.0000	.
t5	120.0000	492.0000	600.0000	.
t6	120.0000	600.0000	600.0000	.
t7	120.0000	600.0000	600.0000	-8.0245
t8	120.0000	529.4603	600.0000	.
t9	120.0000	444.3333	600.0000	.
t10	120.0000	348.5873	600.0000	.
t11	120.0000	276.2540	600.0000	.
t12	120.0000	276.2540	600.0000	.
t13	120.0000	215.7778	600.0000	.
t14	120.0000	120.0000	600.0000	14.7673
t15	120.0000	120.0000	600.0000	.
t16	120.0000	120.0000	600.0000	.
t17	120.0000	120.0000	600.0000	.
t18	120.0000	120.0000	600.0000	.
t19	120.0000	120.0000	600.0000	.
t20	120.0000	120.0000	600.0000	.
t21	120.0000	120.0000	600.0000	.
t22	120.0000	120.0000	600.0000	.
t23	120.0000	120.0000	600.0000	.
t24	120.0000	120.0000	120.0000	20.0571

---- VAR Ec

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	120.0000	120.0000	-2.1000
t2	.	.	120.0000	0.1200
t3	.	120.0000	120.0000	-1.0200
t4	.	120.0000	120.0000	-1.3200
t5	.	53.3333	120.0000	.
t6	.	120.0000	120.0000	-0.9600
t7	.	.	120.0000	7.2600
t8	.	.	120.0000	.
t9	.	.	120.0000	.
t10	.	.	120.0000	.
t11	.	.	120.0000	.
t12	.	.	120.0000	5.1380
t13	.	.	120.0000	.
t14	.	.	120.0000	.
t15	.	.	120.0000	19.8086
t16	.	.	120.0000	13.4486
t17	.	.	120.0000	16.1486
t18	.	.	120.0000	11.4686
t19	.	.	120.0000	10.4486
t20	.	.	120.0000	11.6486
t21	.	.	120.0000	13.8086

t22	.	.	120.0000	12.9086
t23	.	.	120.0000	12.2486
t24	.	.	120.0000	.

---- VAR Ed

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	120.0000	7.3084
t2	.	.	120.0000	5.0431
t3	.	.	120.0000	6.2063
t4	.	.	120.0000	6.5125
t5	.	.	120.0000	5.1655
t6	.	.	120.0000	6.1451
t7	.	.	120.0000	.
t8	.	63.4857	120.0000	.
t9	.	76.6143	120.0000	.
t10	.	86.1714	120.0000	.
t11	.	65.1000	120.0000	.
t12	.	.	120.0000	1.4694
t13	.	54.4286	120.0000	.
t14	.	86.2000	120.0000	.
t15	.	.	120.0000	.
t16	.	.	120.0000	.
t17	.	.	120.0000	.
t18	.	.	120.0000	.
t19	.	.	120.0000	.
t20	.	.	120.0000	.
t21	.	.	120.0000	.
t22	.	.	120.0000	.
t23	.	.	120.0000	.
t24	.	.	120.0000	.

---- VAR H_ehp

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	200.0000	3.5913
t2	.	.	200.0000	7.4099
t3	.	.	200.0000	5.4490
t4	.	.	200.0000	4.9329
t5	.	.	200.0000	7.2035
t6	.	.	200.0000	5.5522
t7	.	.	200.0000	19.6915
t8	.	.	200.0000	30.9411
t9	.	.	200.0000	30.9411
t10	.	.	200.0000	30.9411
t11	.	.	200.0000	30.9411
t12	.	.	200.0000	28.4641
t13	.	.	200.0000	30.9411
t14	.	.	200.0000	30.9411
t15	.	.	200.0000	30.8379
t16	.	.	200.0000	19.8980
t17	.	.	200.0000	24.5423
t18	.	.	200.0000	16.4921
t19	.	.	200.0000	14.7376
t20	.	.	200.0000	16.8017

t21	.	.	200.0000	20.5172
t22	.	.	200.0000	18.9691
t23	.	.	200.0000	17.8338
t24	.	.	200.0000	3.2816

---- VAR C_ehp

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	11.5000	200.0000	.
t2	.	13.7000	200.0000	.
t3	.	16.0000	200.0000	.
t4	.	21.4000	200.0000	.
t5	.	22.0000	200.0000	.
t6	.	30.8000	200.0000	.
t7	.	38.9000	200.0000	.
t8	.	.	200.0000	1.4425
t9	.	.	200.0000	1.4425
t10	.	.	200.0000	1.4425
t11	.	.	200.0000	1.4425
t12	.	.	200.0000	0.8547
t13	.	.	200.0000	1.4425
t14	.	.	200.0000	1.4425
t15	.	.	200.0000	1.4180
t16	.	34.1000	200.0000	.
t17	.	40.8000	200.0000	.
t18	.	43.6000	200.0000	.
t19	.	51.5000	200.0000	.
t20	.	43.1000	200.0000	.
t21	.	36.5000	200.0000	.
t22	.	27.7000	200.0000	.
t23	.	19.1000	200.0000	.
t24	.	11.0000	200.0000	.

---- VAR Idch

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	1.0000	EPS
t2	.	.	1.0000	EPS
t3	.	.	1.0000	EPS
t4	.	.	1.0000	EPS
t5	.	.	1.0000	EPS
t6	.	.	1.0000	EPS
t7	.	.	1.0000	-269.1156
t8	.	1.0000	1.0000	EPS
t9	.	1.0000	1.0000	EPS
t10	.	1.0000	1.0000	EPS
t11	.	1.0000	1.0000	EPS
t12	.	.	1.0000	EPS
t13	.	1.0000	1.0000	EPS
t14	.	1.0000	1.0000	EPS
t15	.	.	1.0000	-1961.6327
t16	.	.	1.0000	-1182.8571
t17	.	.	1.0000	-1513.4694
t18	.	.	1.0000	-940.4082
t19	.	.	1.0000	-815.5102

t20 . . 1.0000 -962.4490
t21 . . 1.0000 -1226.9388
t22 . . 1.0000 -1116.7347
t23 . . 1.0000 -1035.9184
t24 . 1.0000 1.0000 EPS

---- VAR Ich

LOWER LEVEL UPPER MARGINAL

t1 . 1.0000 1.0000 EPS
t2 . 1.0000 1.0000 EPS
t3 . 1.0000 1.0000 EPS
t4 . 1.0000 1.0000 EPS
t5 . 1.0000 1.0000 EPS
t6 . 1.0000 1.0000 EPS
t7 . 1.0000 1.0000 EPS
t8 . . 1.0000 -3761.0449
t9 . . 1.0000 -3761.0449
t10 . . 1.0000 -3761.0449
t11 . . 1.0000 -3761.0449
t12 . 1.0000 1.0000 EPS
t13 . . 1.0000 -3761.0449
t14 . . 1.0000 -3761.0449
t15 . 1.0000 1.0000 EPS
t16 . 1.0000 1.0000 EPS
t17 . 1.0000 1.0000 EPS
t18 . 1.0000 1.0000 EPS
t19 . 1.0000 1.0000 EPS
t20 . 1.0000 1.0000 EPS
t21 . 1.0000 1.0000 EPS
t22 . 1.0000 1.0000 EPS
t23 . 1.0000 1.0000 EPS
t24 . . 1.0000 -2166.1714

---- VAR Ic

LOWER LEVEL UPPER MARGINAL

t1 . 1.0000 1.0000 EPS
t2 . 1.0000 1.0000 EPS
t3 . 1.0000 1.0000 EPS
t4 . 1.0000 1.0000 EPS
t5 . 1.0000 1.0000 EPS
t6 . 1.0000 1.0000 EPS
t7 . 1.0000 1.0000 EPS
t8 . . 1.0000 EPS
t9 . . 1.0000 EPS
t10 . . 1.0000 EPS
t11 . . 1.0000 EPS
t12 . . 1.0000 EPS
t13 . . 1.0000 EPS
t14 . . 1.0000 EPS
t15 . . 1.0000 EPS
t16 . 1.0000 1.0000 EPS
t17 . 1.0000 1.0000 EPS
t18 . 1.0000 1.0000 EPS

t19	.	1.0000	1.0000	EPS
t20	.	1.0000	1.0000	EPS
t21	.	1.0000	1.0000	EPS
t22	.	1.0000	1.0000	EPS
t23	.	1.0000	1.0000	EPS
t24	.	1.0000	1.0000	EPS

---- VAR Ih

	LOWER	LEVEL	UPPER	MARGINAL
t1	.	.	1.0000	EPS
t2	.	.	1.0000	EPS
t3	.	.	1.0000	EPS
t4	.	.	1.0000	EPS
t5	.	.	1.0000	EPS
t6	.	.	1.0000	EPS
t7	.	.	1.0000	EPS
t8	.	1.0000	1.0000	EPS
t9	.	1.0000	1.0000	EPS
t10	.	1.0000	1.0000	EPS
t11	.	1.0000	1.0000	EPS
t12	.	1.0000	1.0000	EPS
t13	.	1.0000	1.0000	EPS
t14	.	1.0000	1.0000	EPS
t15	.	1.0000	1.0000	EPS
t16	.	.	1.0000	EPS
t17	.	.	1.0000	EPS
t18	.	.	1.0000	EPS
t19	.	.	1.0000	EPS
t20	.	.	1.0000	EPS
t21	.	.	1.0000	EPS
t22	.	.	1.0000	EPS
t23	.	.	1.0000	EPS
t24	.	.	1.0000	EPS

**** REPORT SUMMARY : 0 NONOPT
0 INFEASIBLE
0 UNBOUNDED
2 PROJECTED

---- 133 PARAMETER report

	Elektrina	Plyn
t1	149.781	61.143
t2	43.216	66.286
t3	165.962	74.571
t4	173.706	76.286
t5	151.380	73.143
t6	183.140	75.429
t7	76.708	112.857
t8	189.880	
t9	208.506	
t10	197.479	
t11	238.702	
t12	68.965	215.388
t13	60.044	226.800
t14	233.427	
t15	106.108	199.973
t16	98.612	118.000
t17	78.504	106.857
t18	83.350	72.571
t19	78.222	73.429
t20	73.044	62.571
t21	63.980	64.000
t22	47.195	70.286
t23	26.178	64.857
t24	40.860	64.571

EXECUTION TIME = 0.000 SECONDS 3 MB 30.3.0 rc5da09e WEX-WEI

USER: GAMS Demo license for Josef Kuratko G200202|0002CO-GEN
Czech Technical University in Prague, Czech Republic DL001166

**** FILE SUMMARY

Input D:\Dropbox\DP GAMS\GAMS\EH_conf3_original.gms
Output D:\Dropbox\DP GAMS\GAMS\EH_conf3_original.lst