Addendum bd to 90.1-2019

Additional Technical Documentation

Contents

Relative Error in IPLV using the proposed performance curves 3
Graphical representation of the aggregated performance curves 4
Graphical representation of the proposed performance curves 5

Relative Error in IPLV using the proposed performance curves

Table 1 shows the relative error in IPLV obtained when using the proposed performance curves. As reported in the foreword of the addendum, the maximum error is less than 0.6%. Each set of curves is used to meet both the IPLV.IP and IPLV.SI.

Table 1 – Relative Error in IPLV Using the Proposed Performance Curves

SET	RELATIVE ERROR IN IPLV.IP	RELATIVE ERROR IN IPLV.SI
A	0.11%	0.11%
AA	0.25%	0.21%
AB	0.03%	0.17%
B	0.01%	0.04%
C	0.01%	0.48%
D	0.09%	0.57%
E	0.34%	0.49%
F	0.20%	0.39%
G	0.22%	0.43%
H	0.23%	0.37%
H	0.19%	0.39%
I	0.08%	0.13%
J	0.28%	0.30%
K	0.11%	0.01%
L	0.01%	0.29%
M	0.10%	0.52%
N	0.18%	0.45%
O	0.38%	0.53%
P	0.35%	0.32%
Q	0.39%	0.43%
R	0.08%	0.52%
S	0.26%	0.52%
T	0.36%	0.45%
U	0.37%	0.51%
V	0.01%	0.54%
X	0.46%	0.42%
Y	0.24%	0.23%
Z	0.17%	0.11%

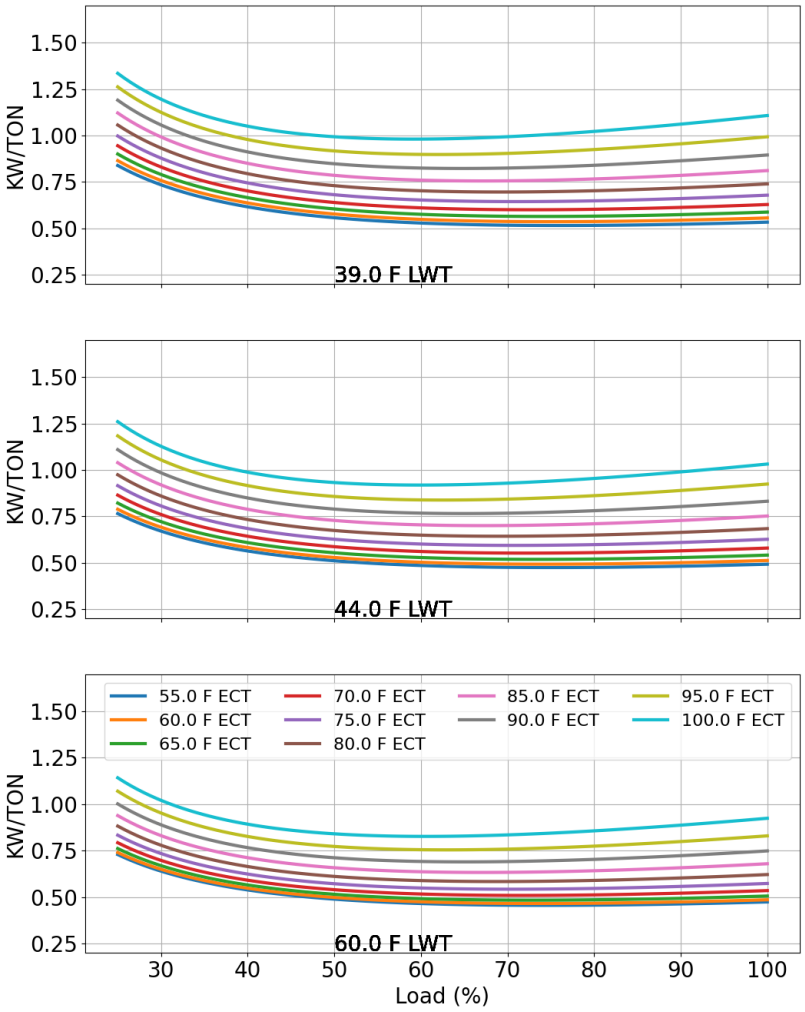
Graphical representation of the aggregated performance curves

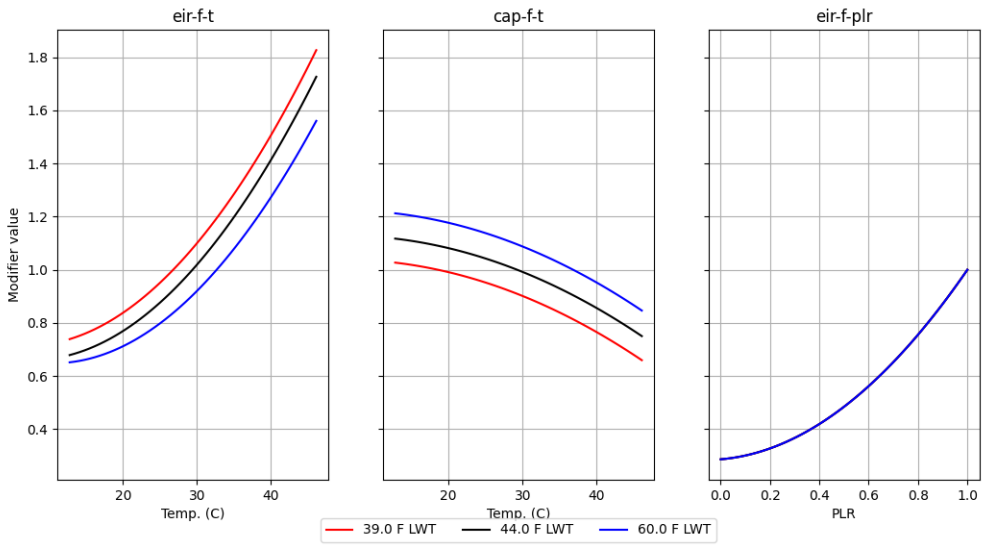
The next pages show graphical representations of the sets of curves obtained from the aggregation process described in the foreword of the addendum. Please note that these curves are not the final performance curves included in the addendum bd as they do not meet the minimum IPLV requirements in ASHRAE Standard 90.1. Refer to the next section to see graphical representation of the proposed performance curves. Two graphical representation are presented: the first one shows how the chiller efficiency varies with load for different entering condenser temperature (ECT) and different leaving chiller water temperature (LWT), the second one shows the how the individual performance curves vary with different ECT and LCT as well as part load ratio (PLR).

Seed Curves: KW/ton vs. Load(%)

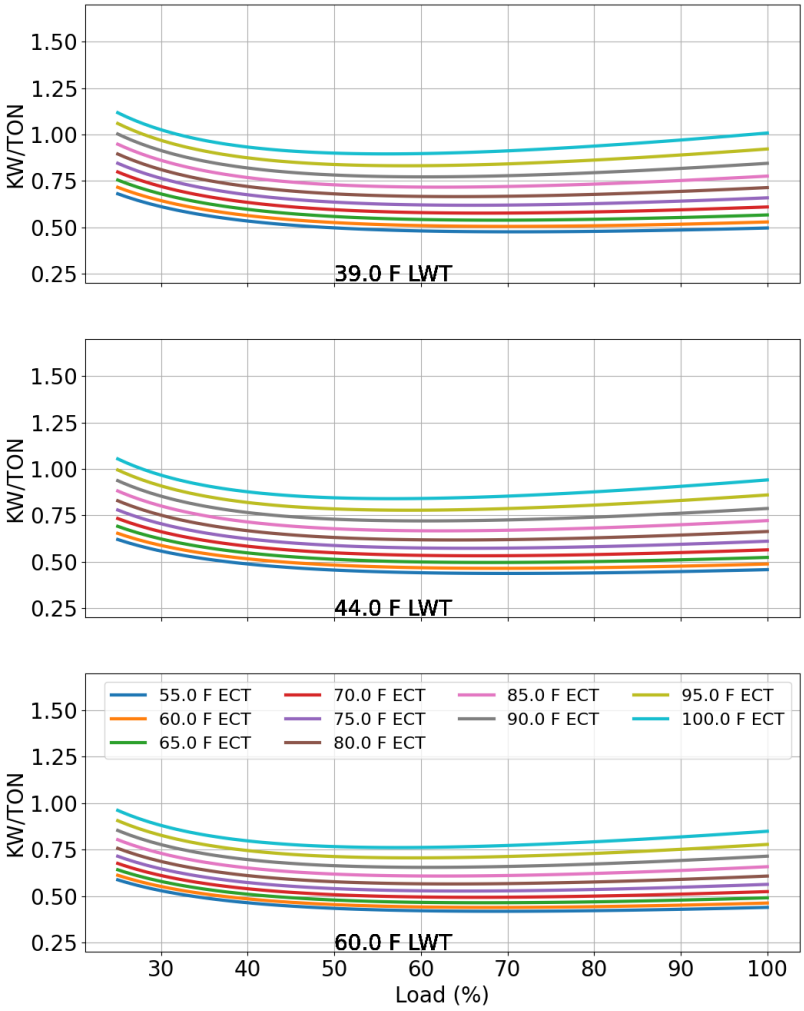
ECT: Entering Condenser Temperature
LWT: Leaving (Evaporator) Water Temperature

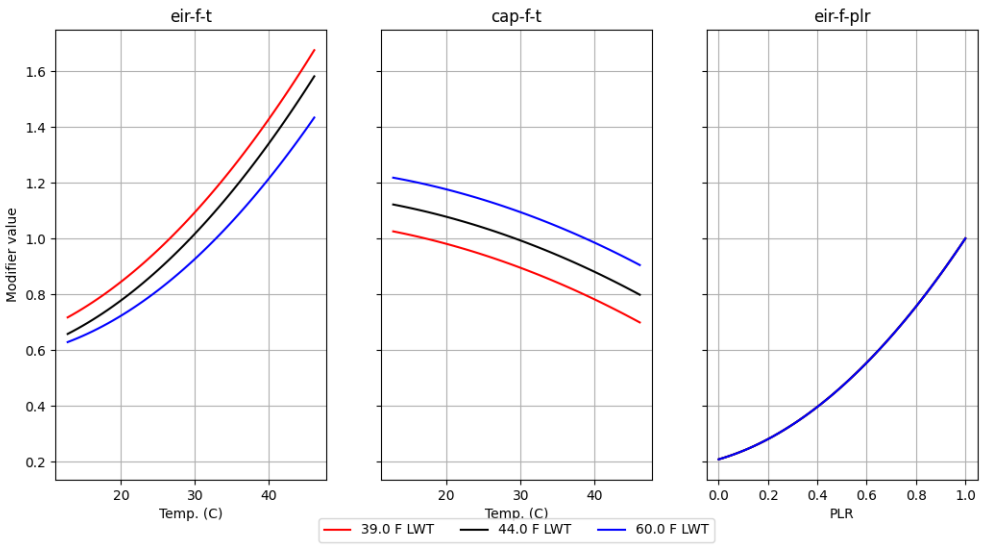
Curve: C



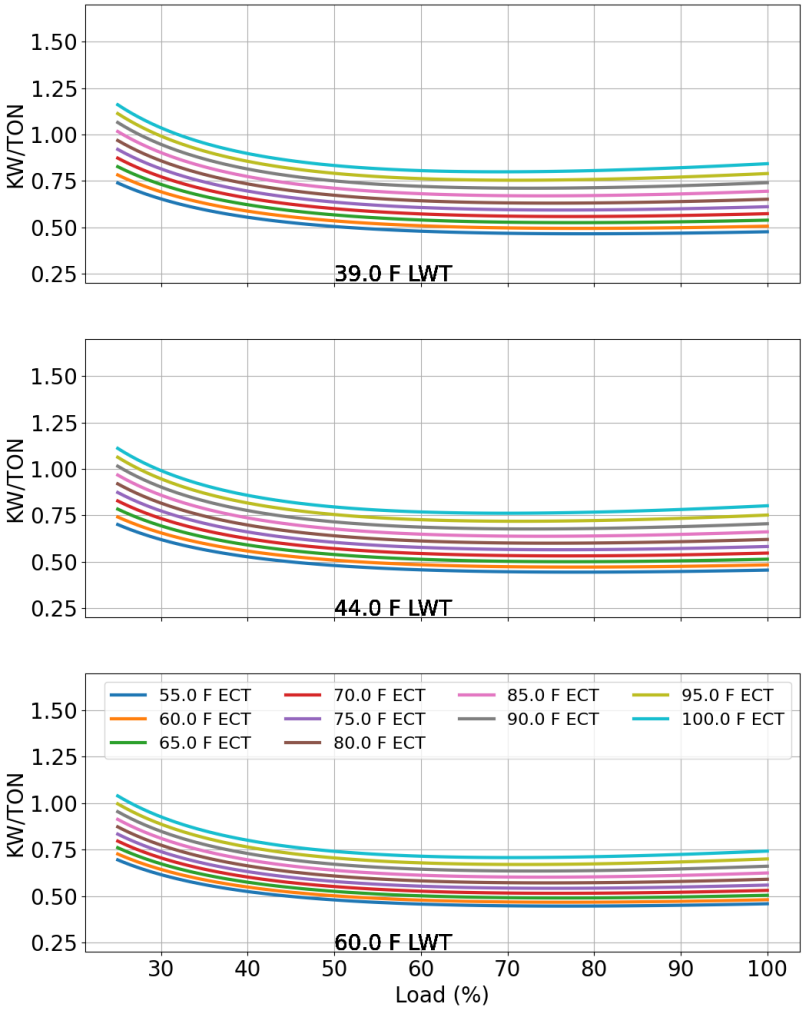


Curve: D


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: E


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
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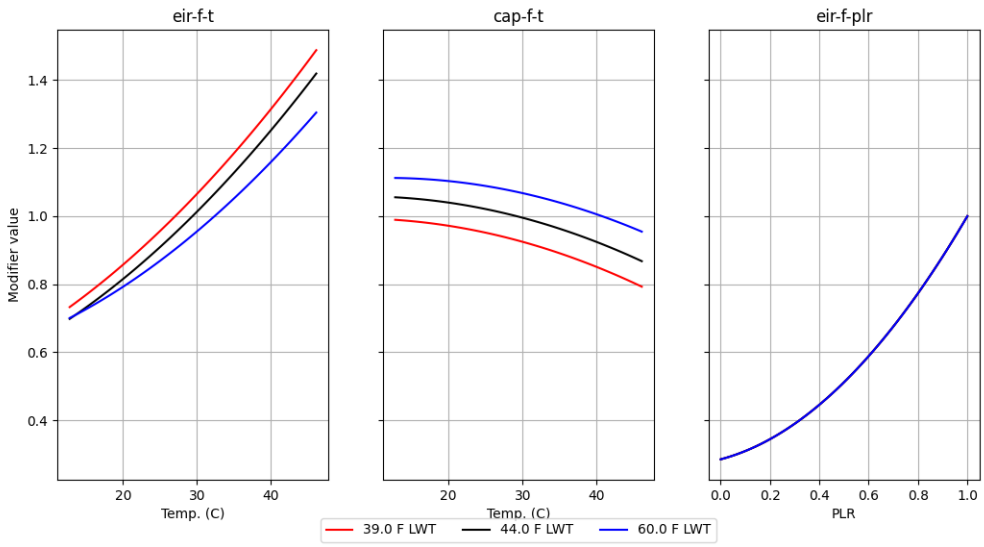
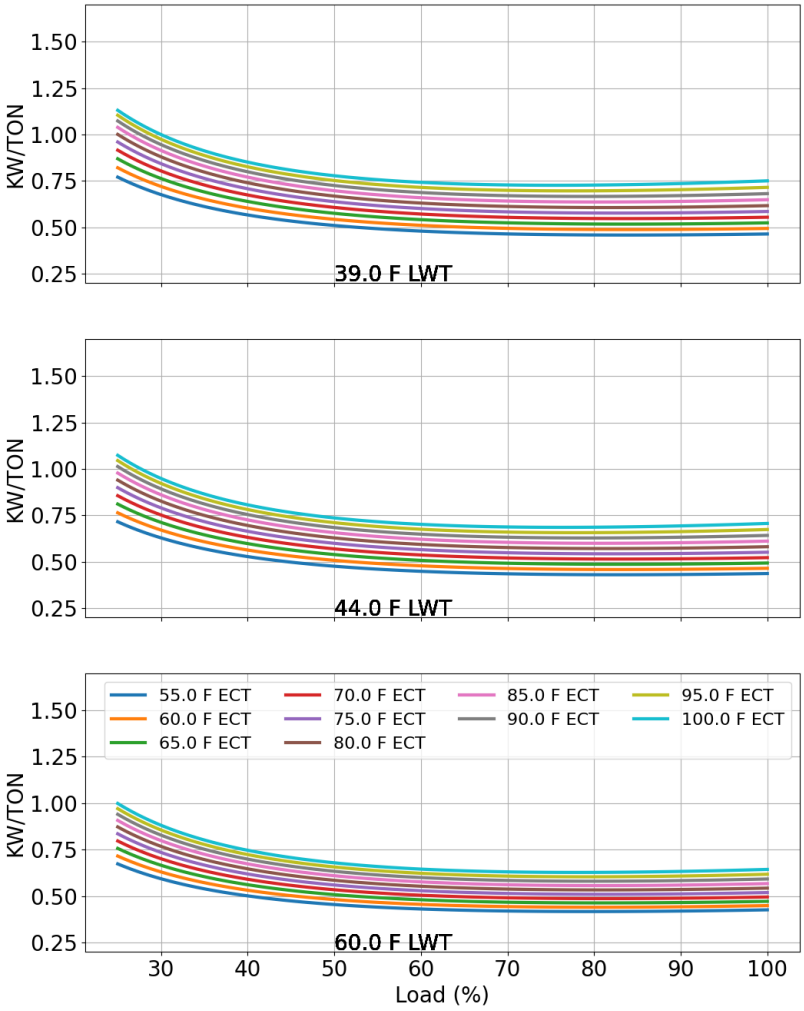
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: F


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
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95.0 F ECT
100.0 F ECT
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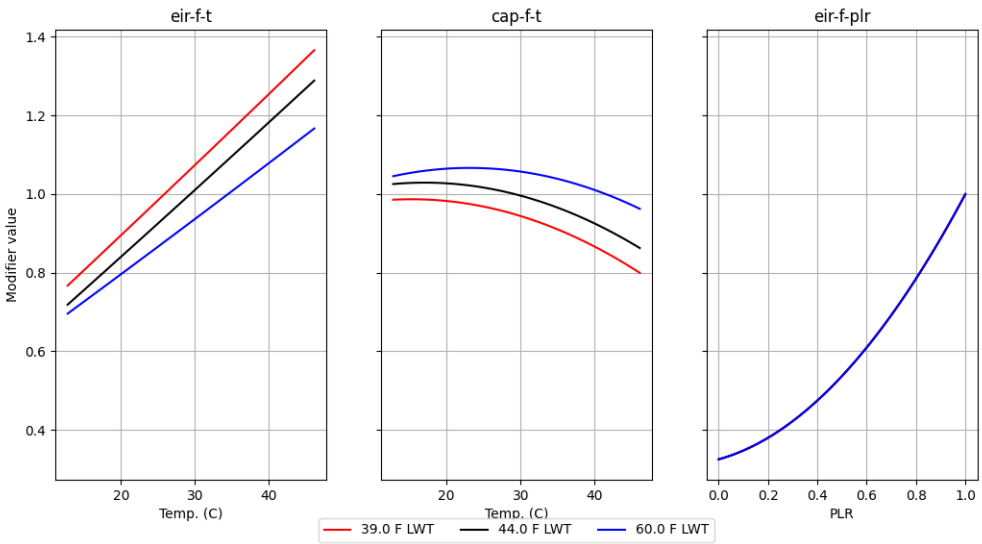
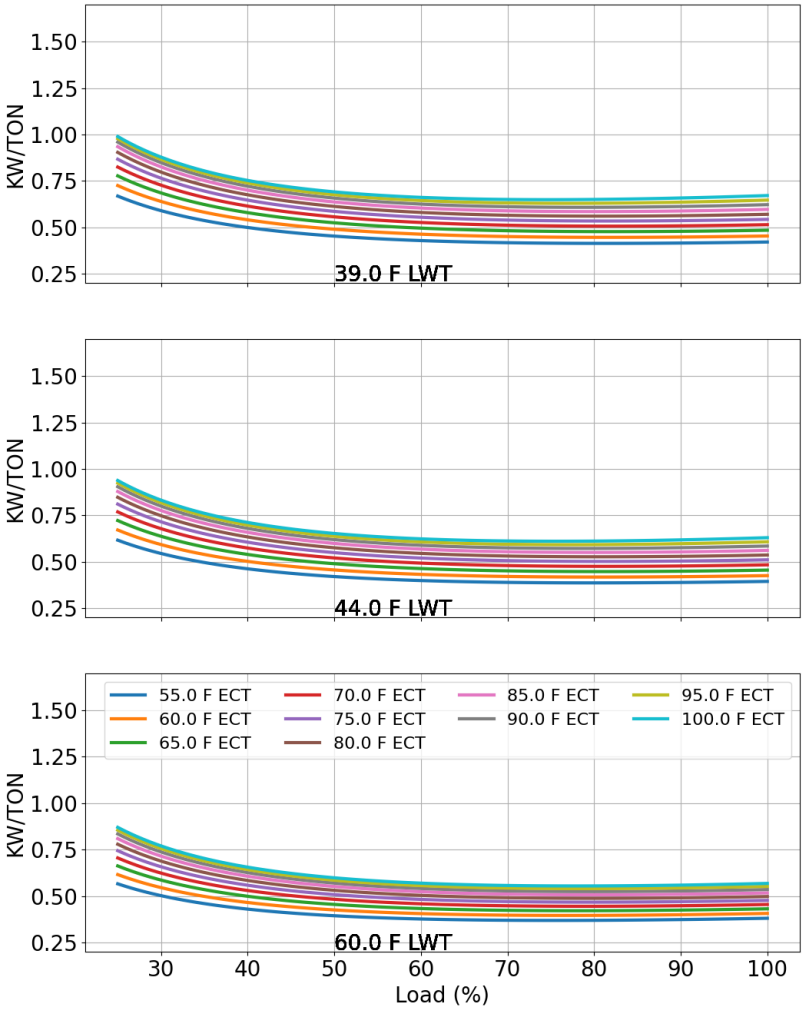
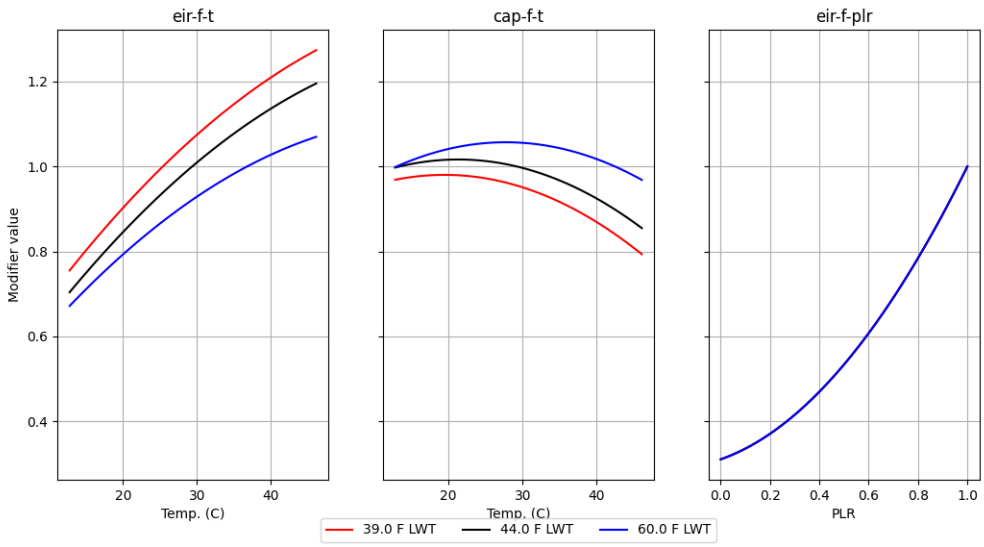
50
60
70
80
90
100
Load (%)

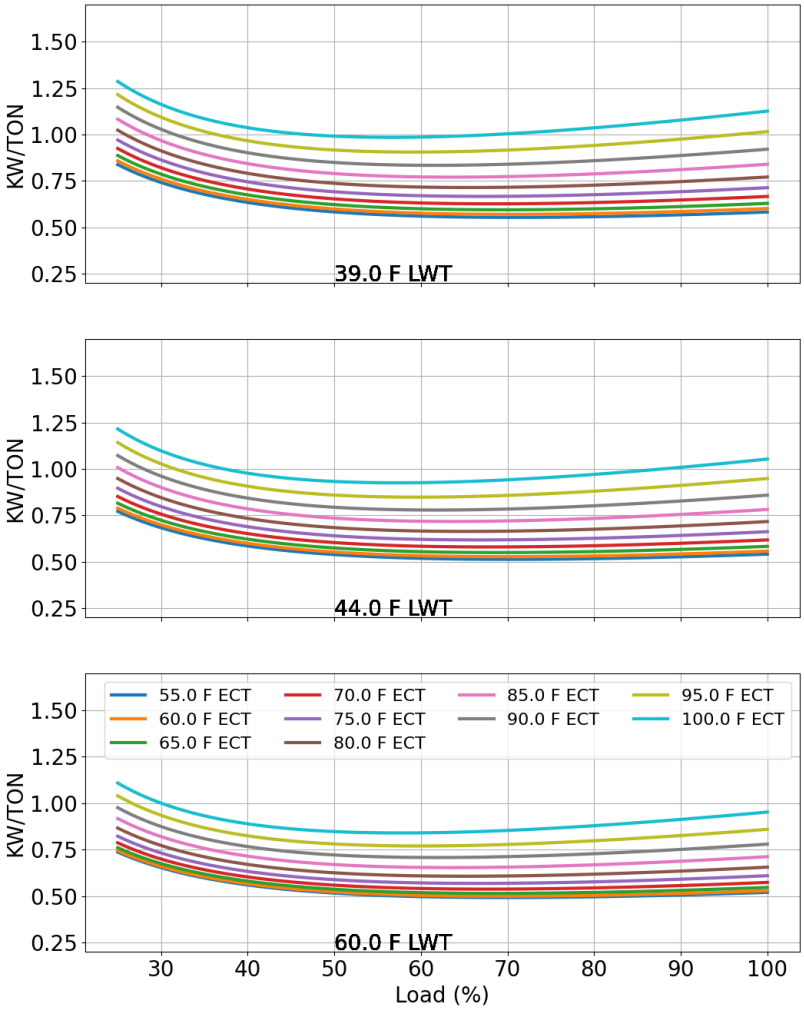

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

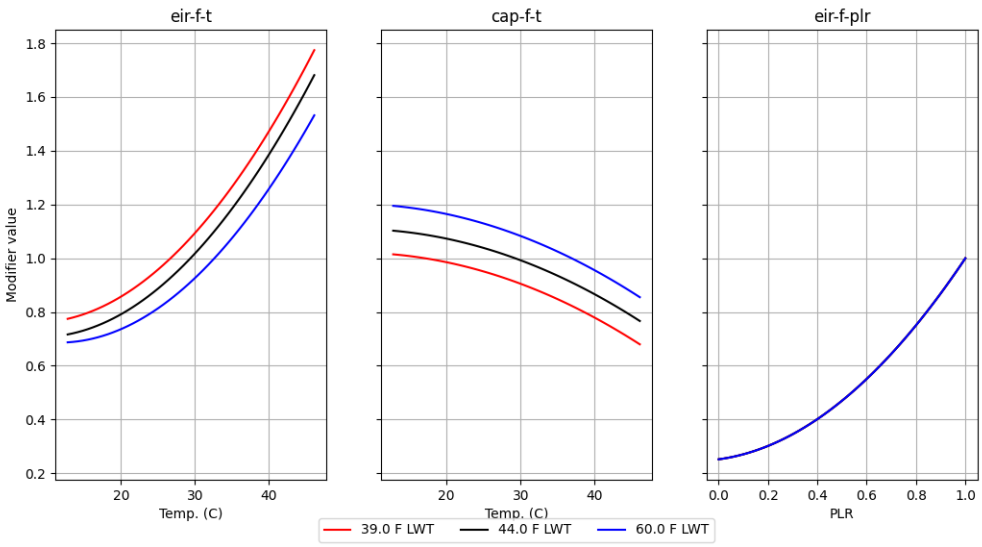
Curve: G


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

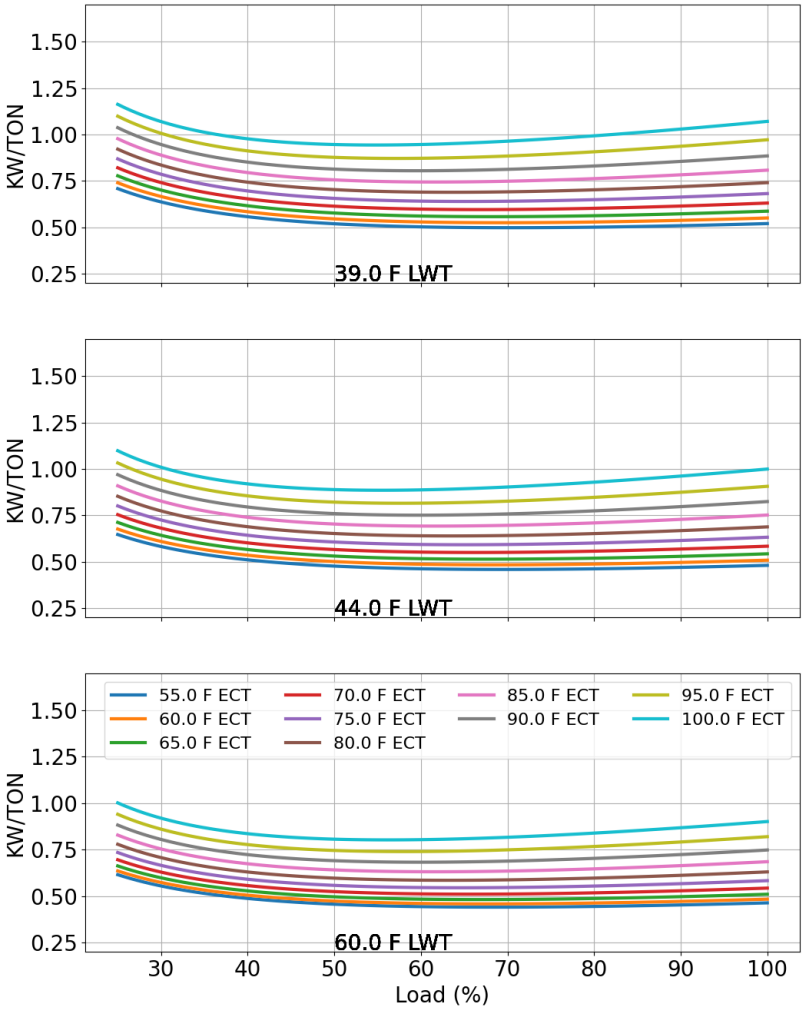

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

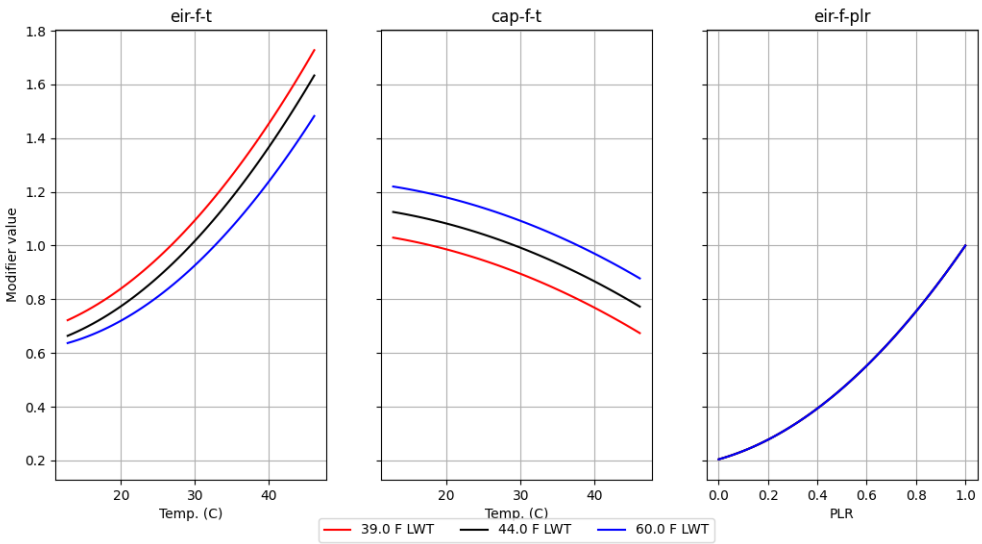
Curve: M


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

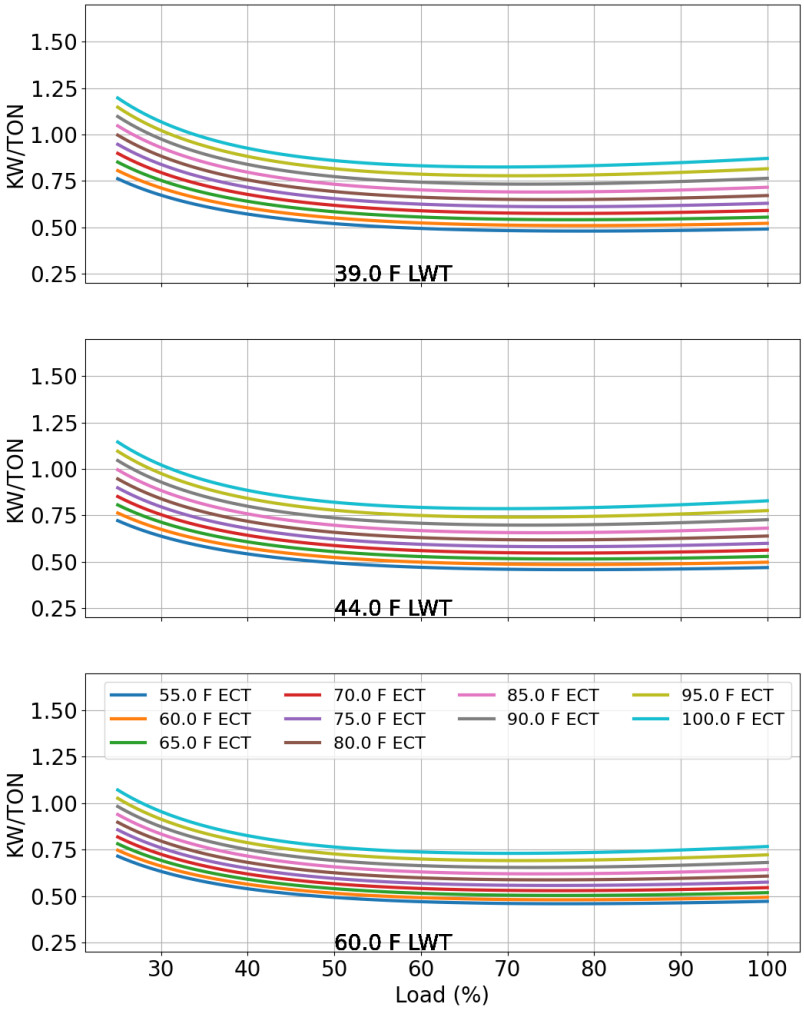

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

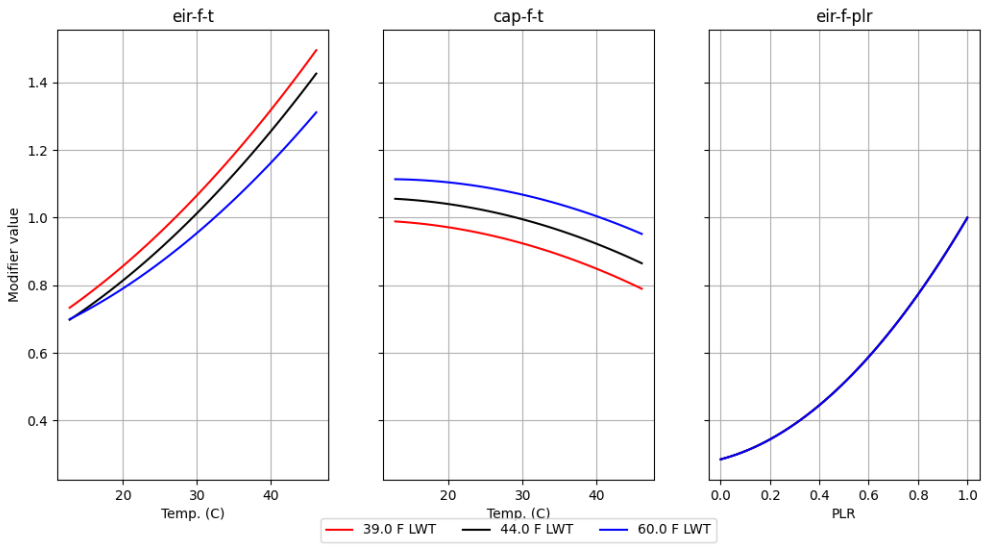
Curve: N


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

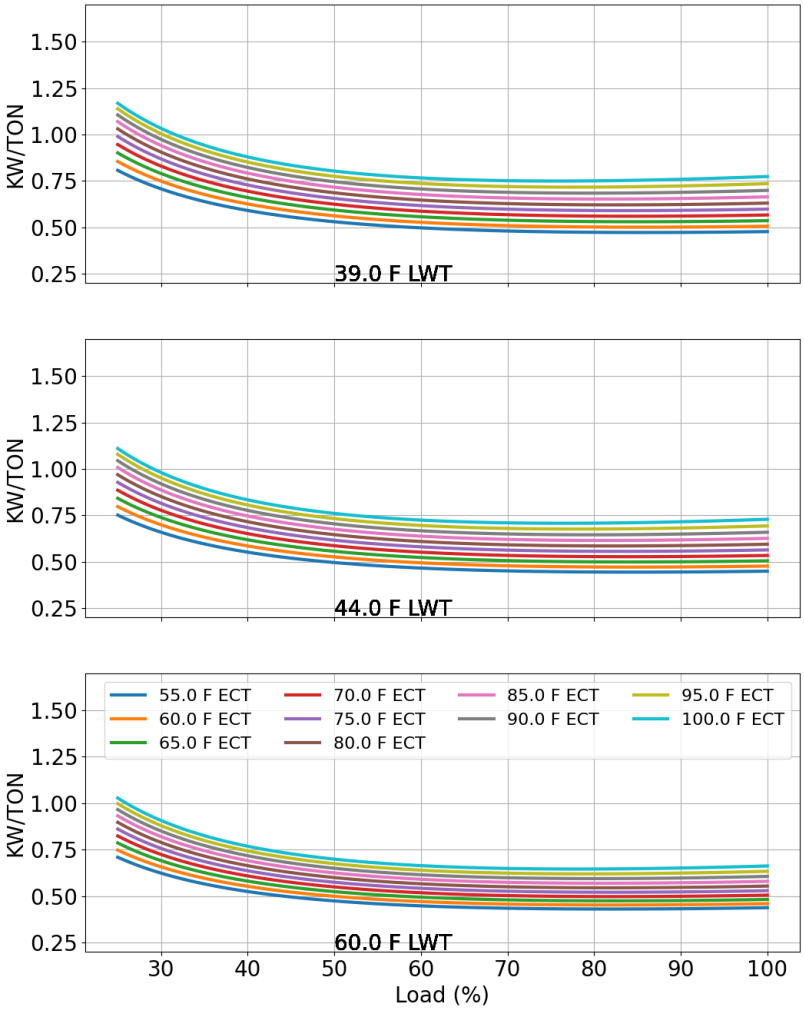

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

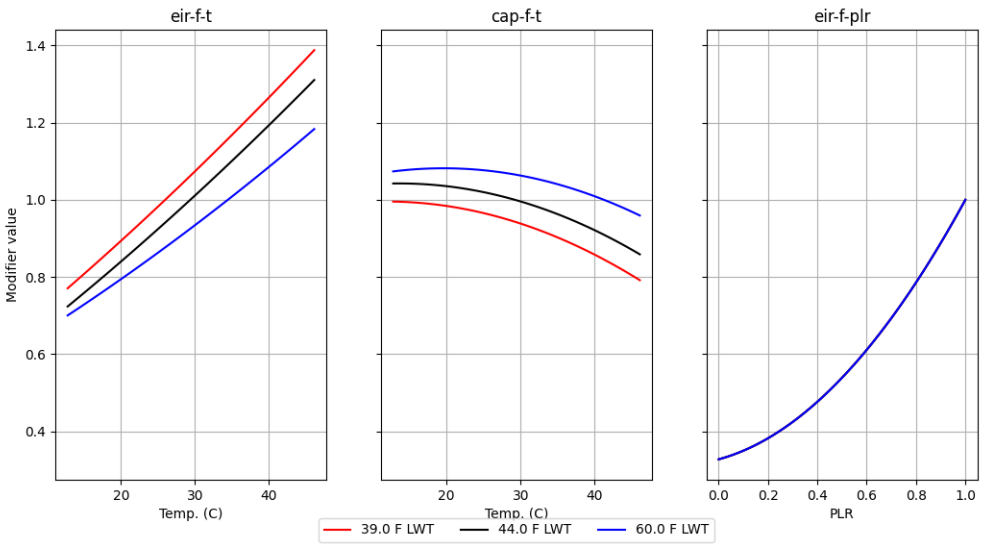
Curve: O


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

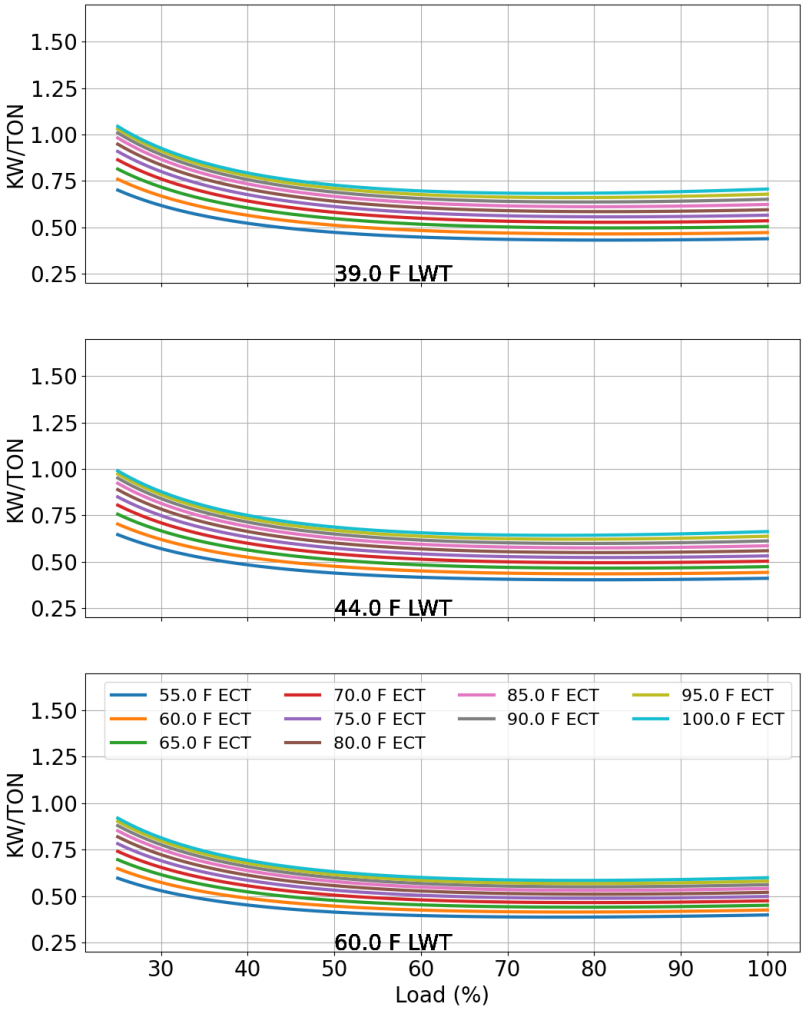

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

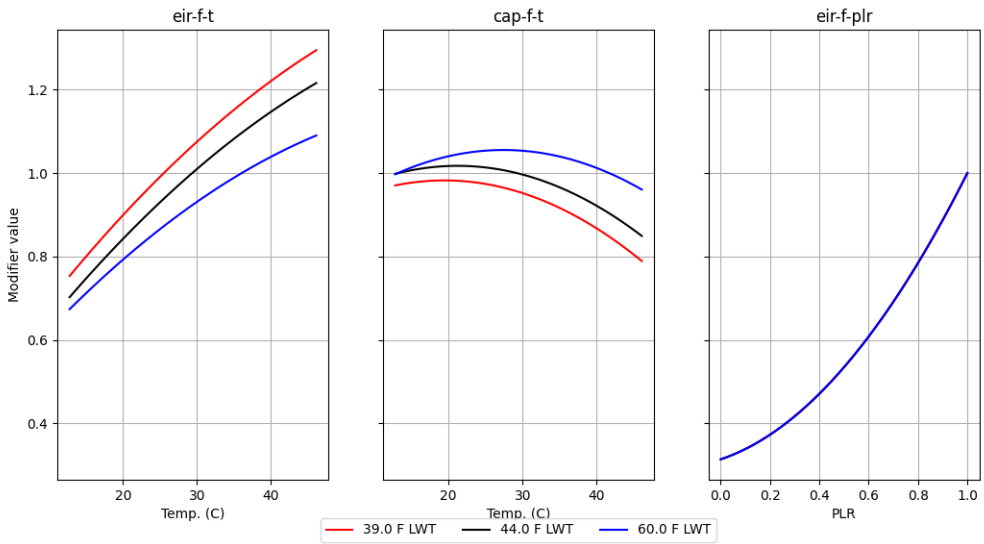
Curve: P


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

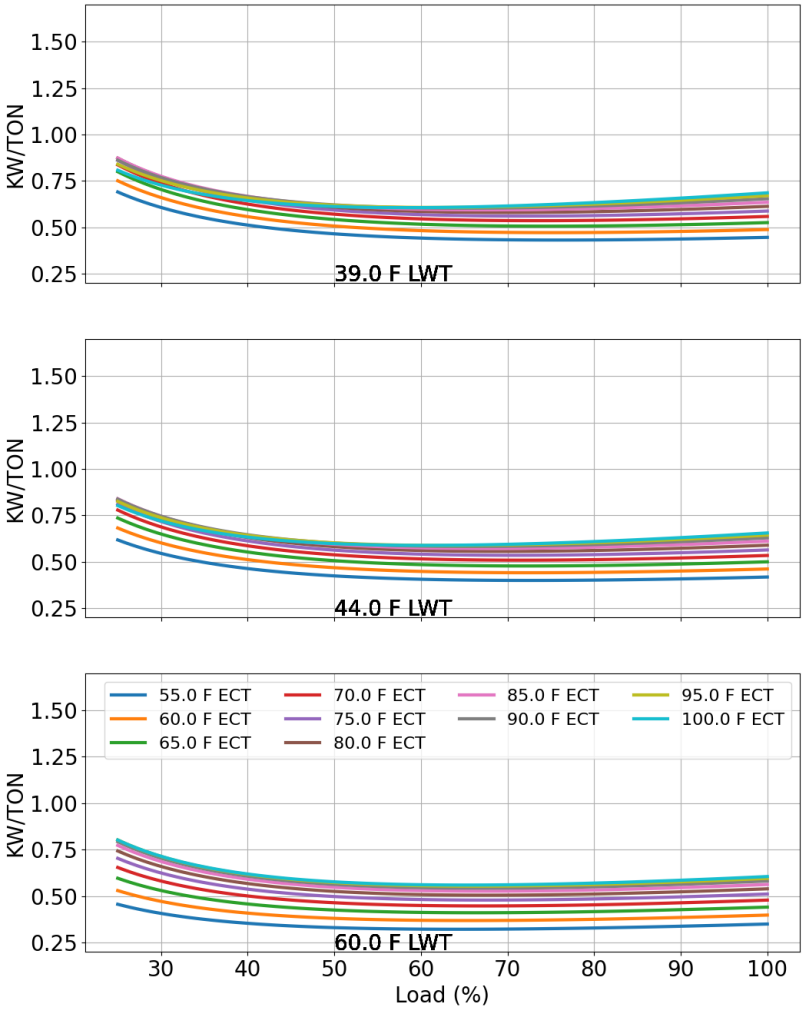

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

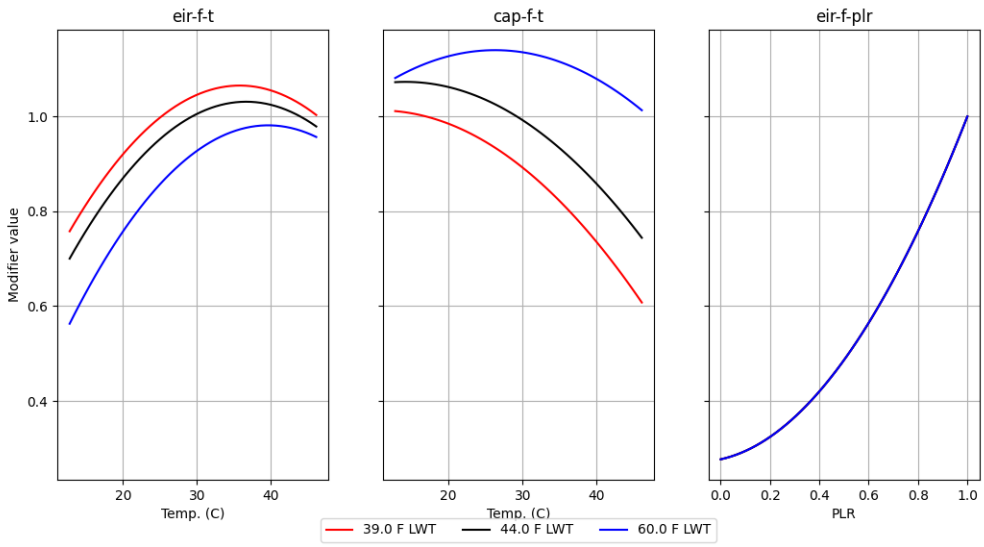
Curve: Q


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

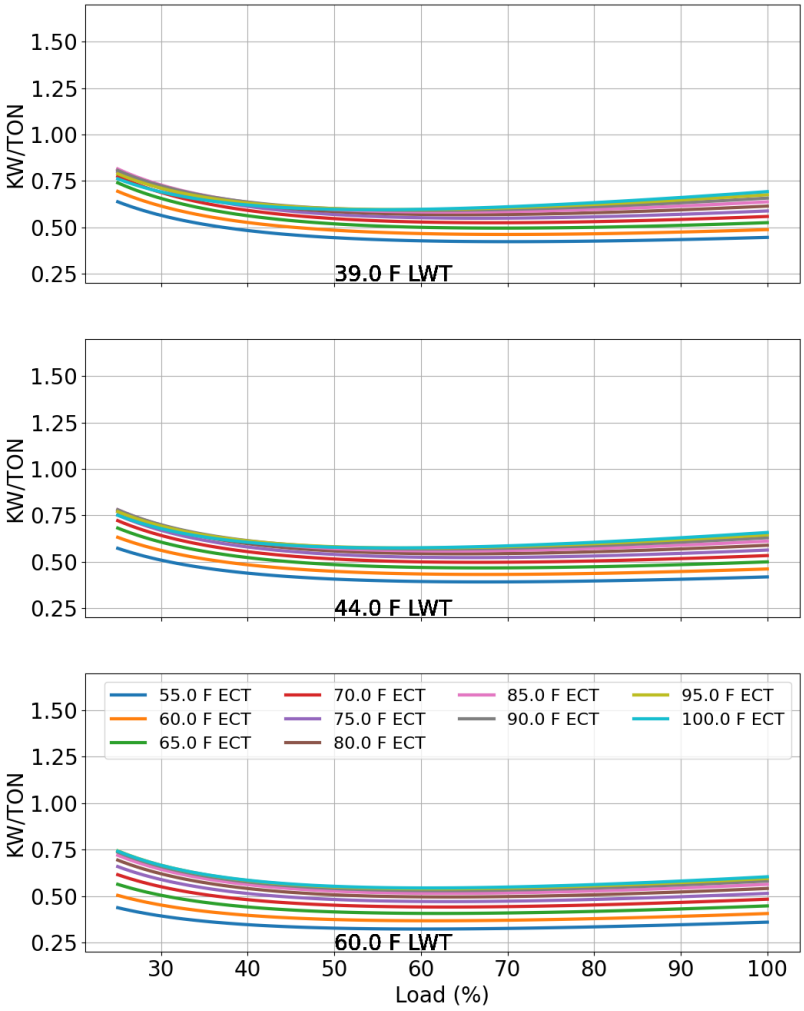

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: H


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: H


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
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100.0 F ECT
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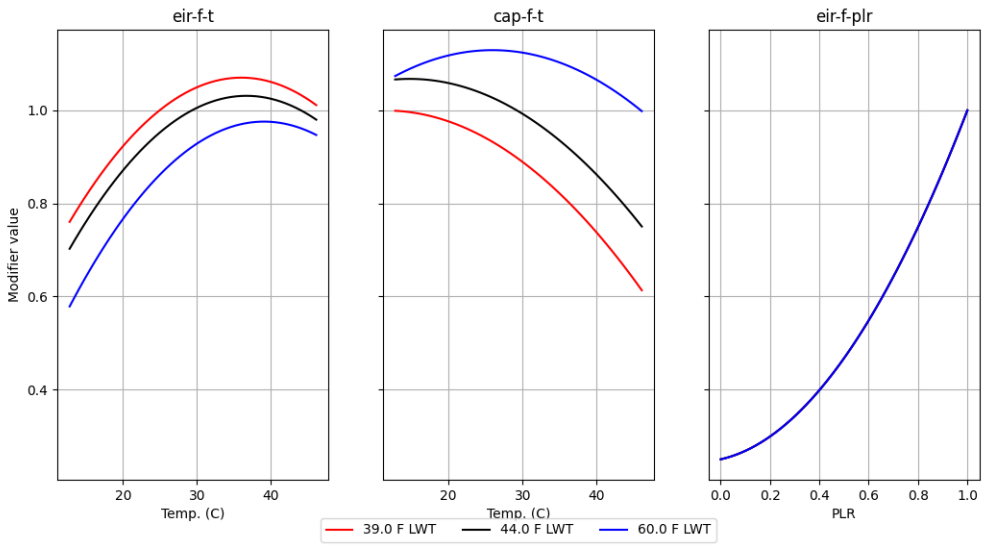
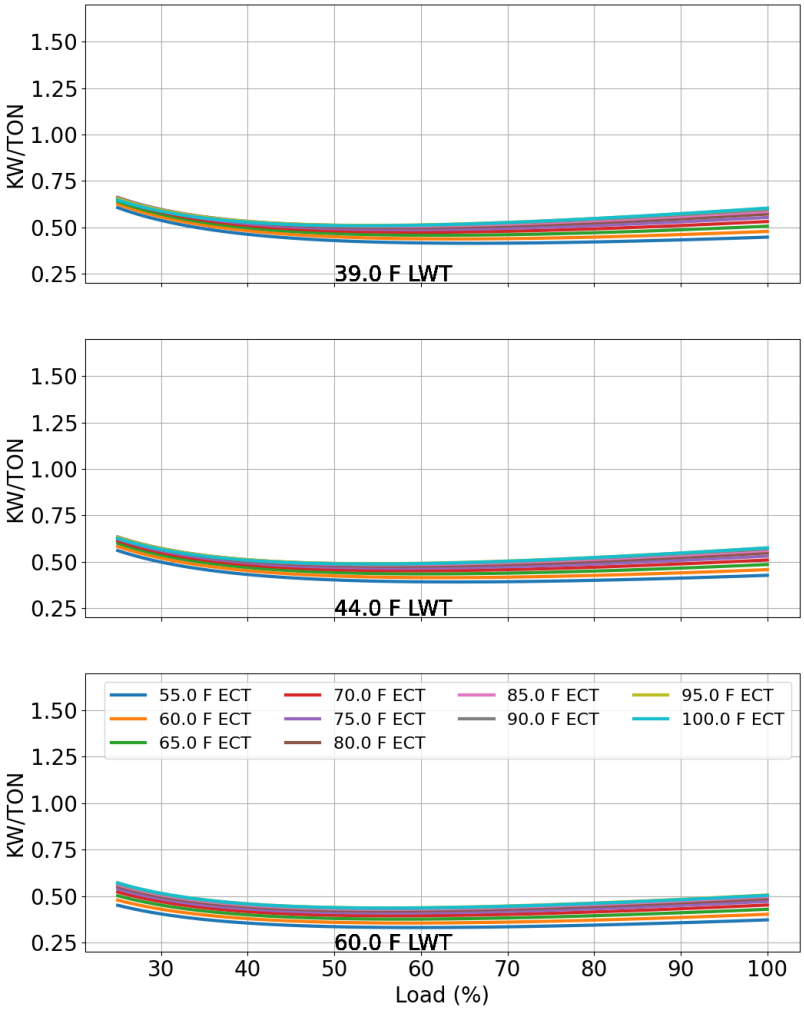
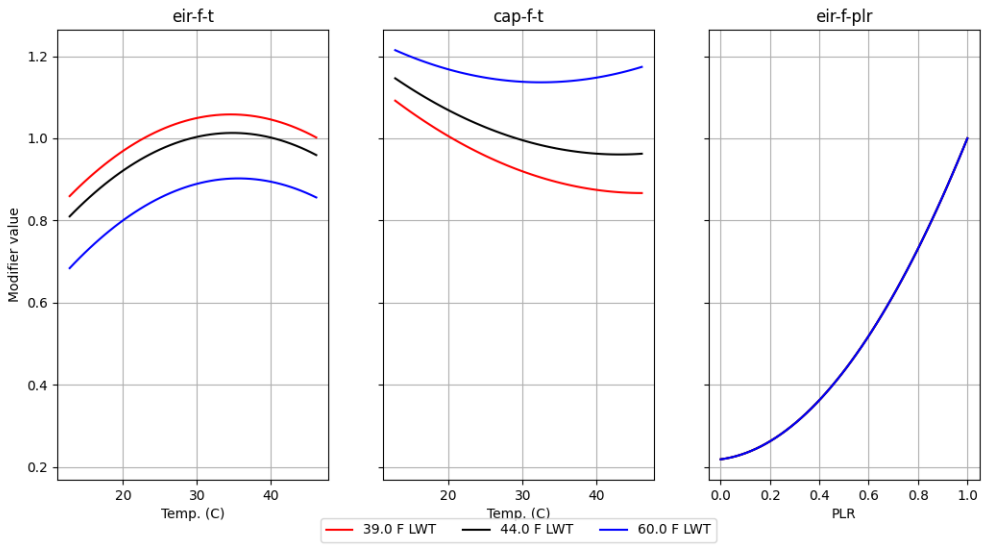
40
50
60
70
80
90
100
Load (%)

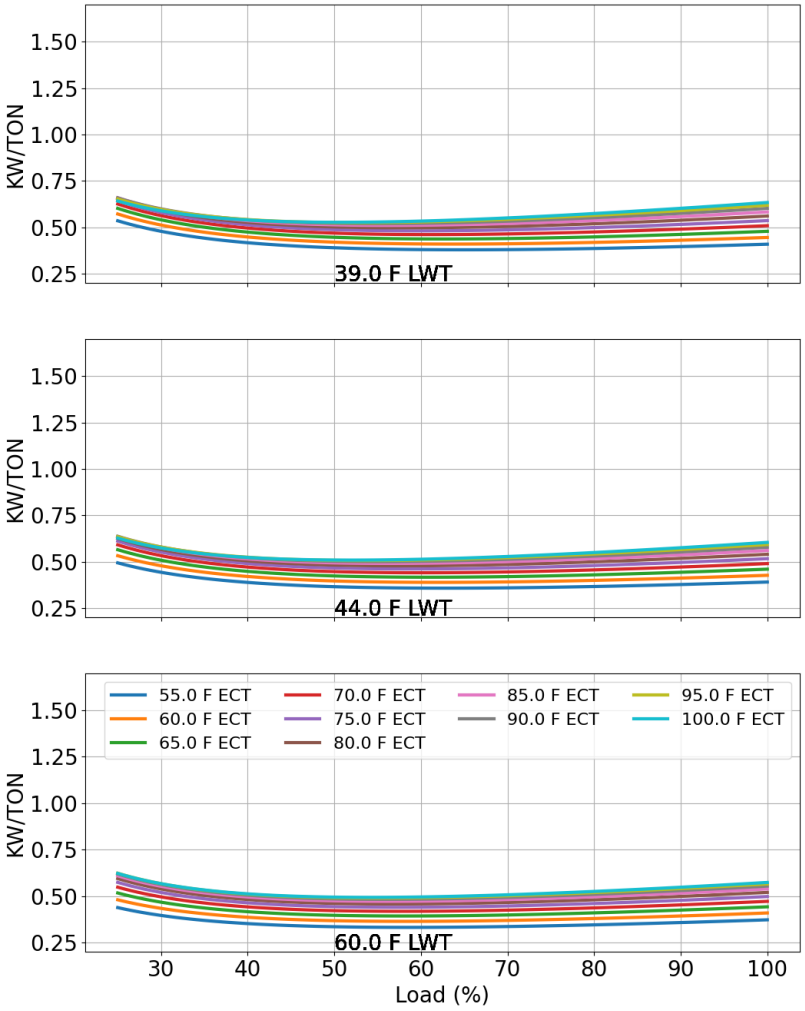

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

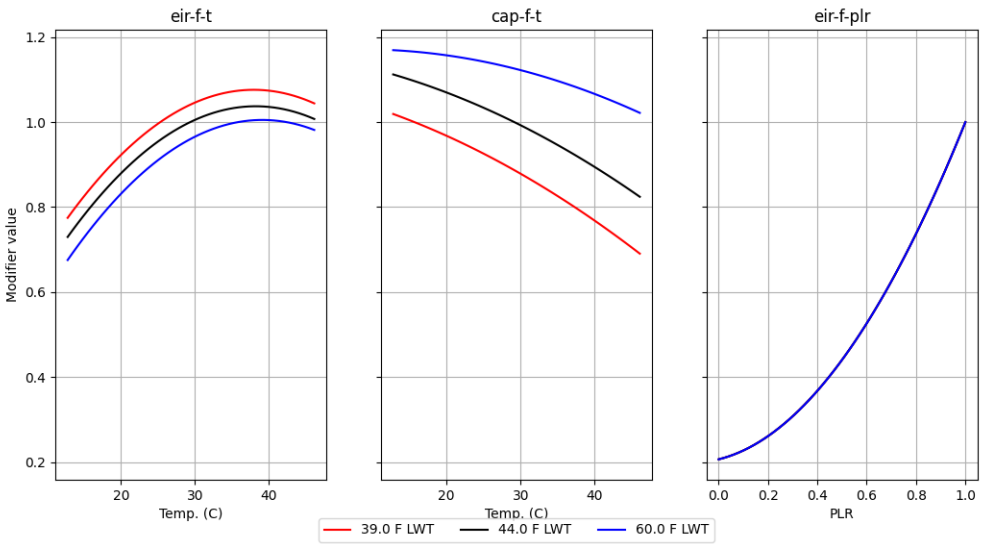
Curve: I


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

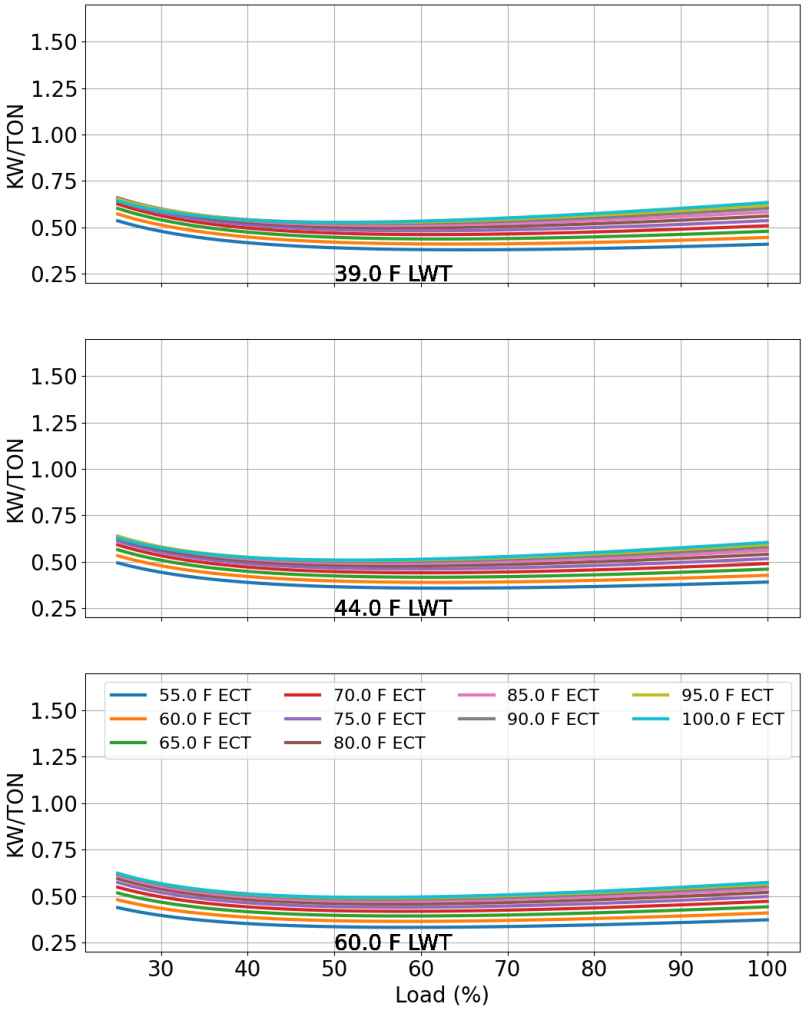

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

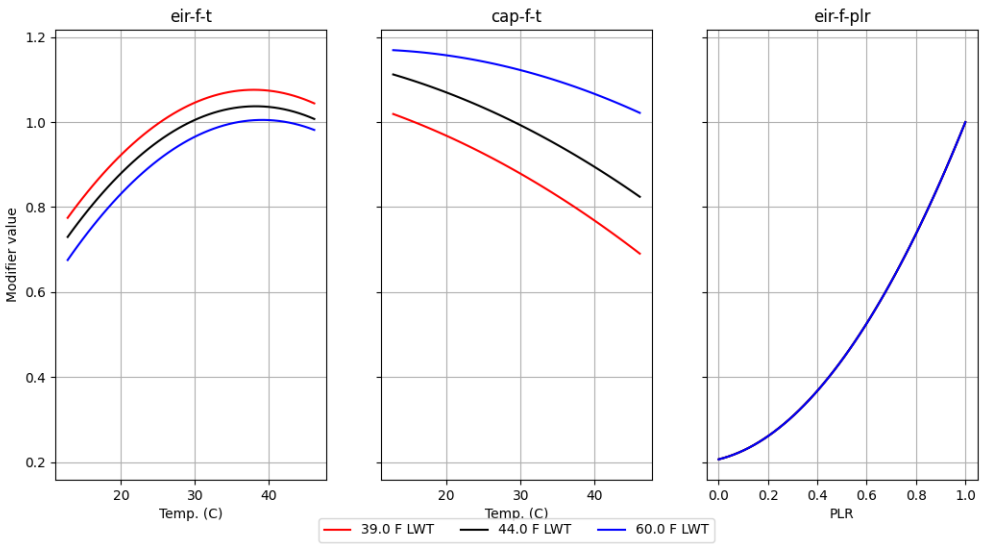
Curve: J


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

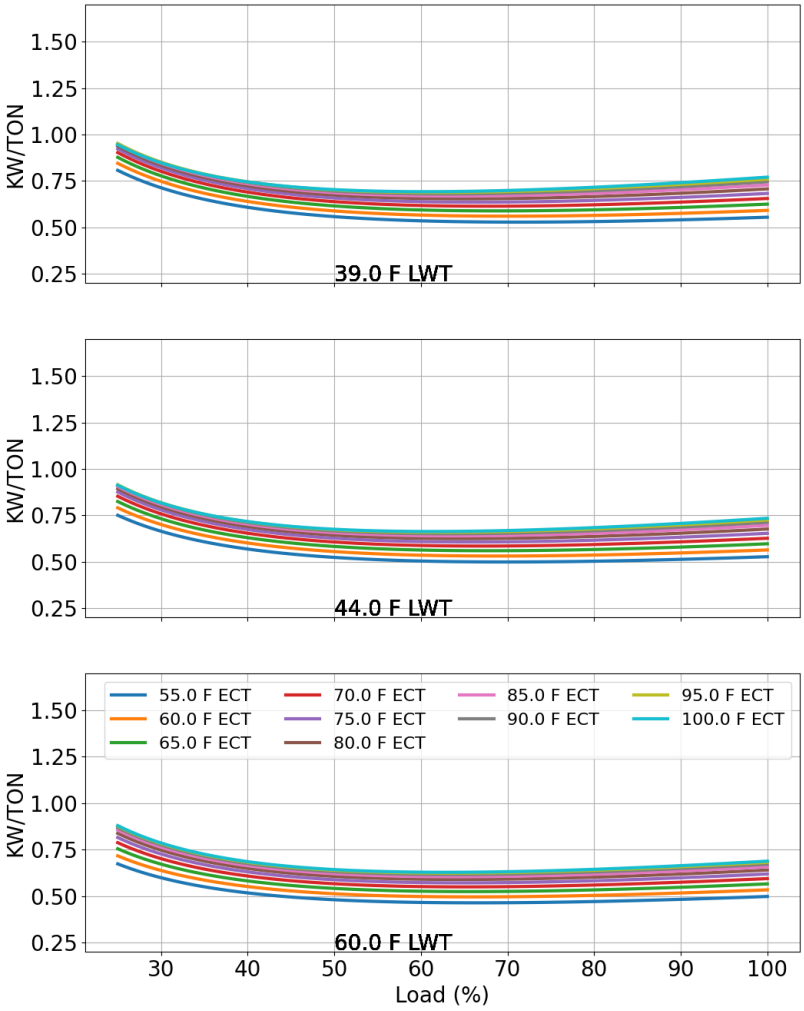

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

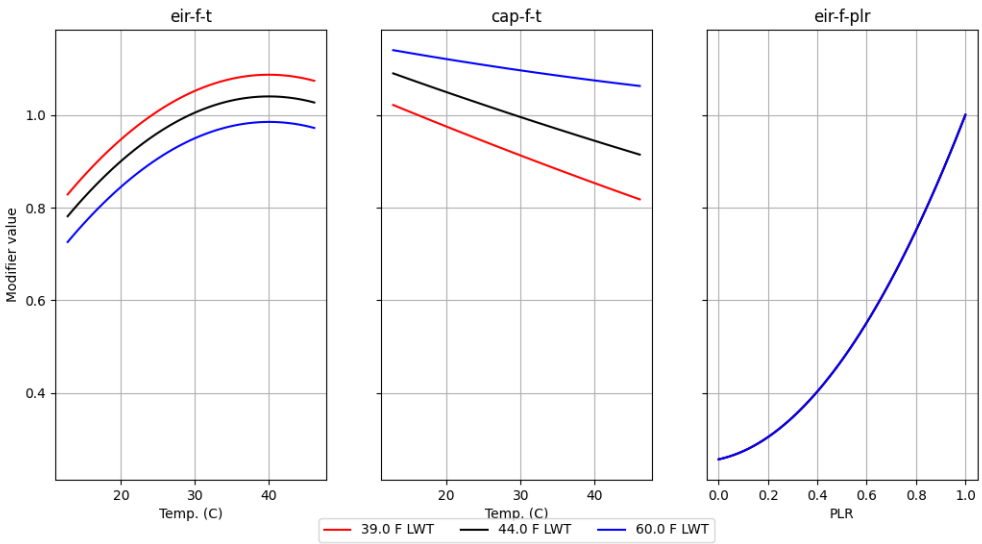
Curve: J


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

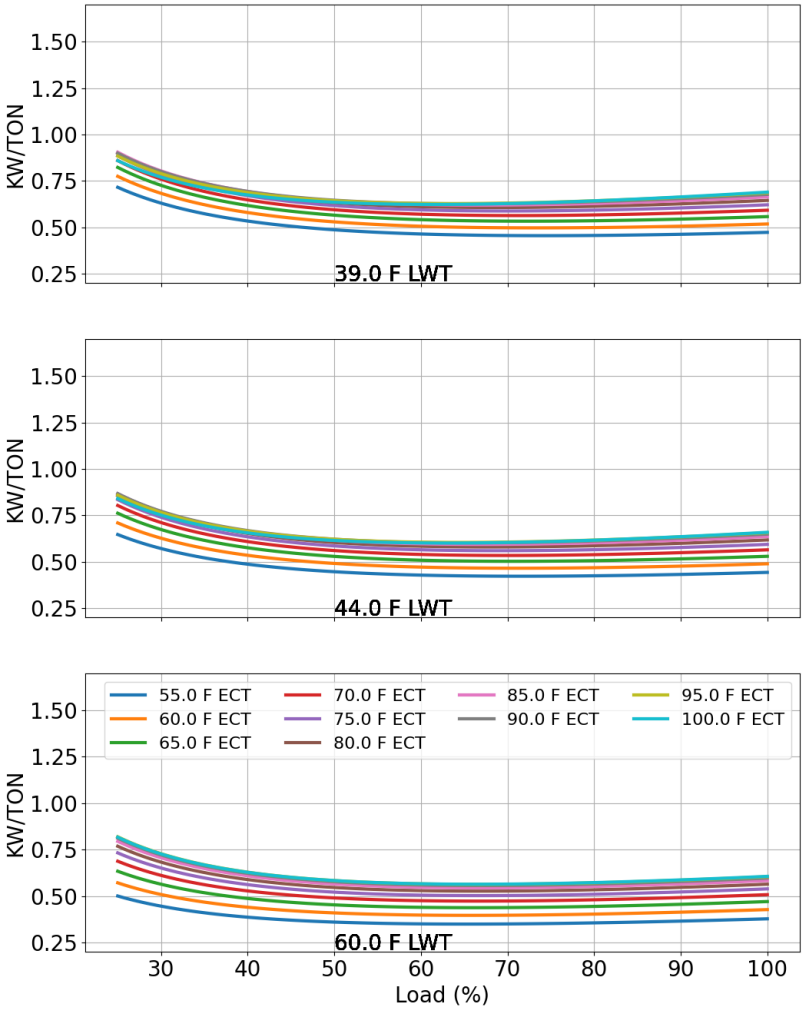

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

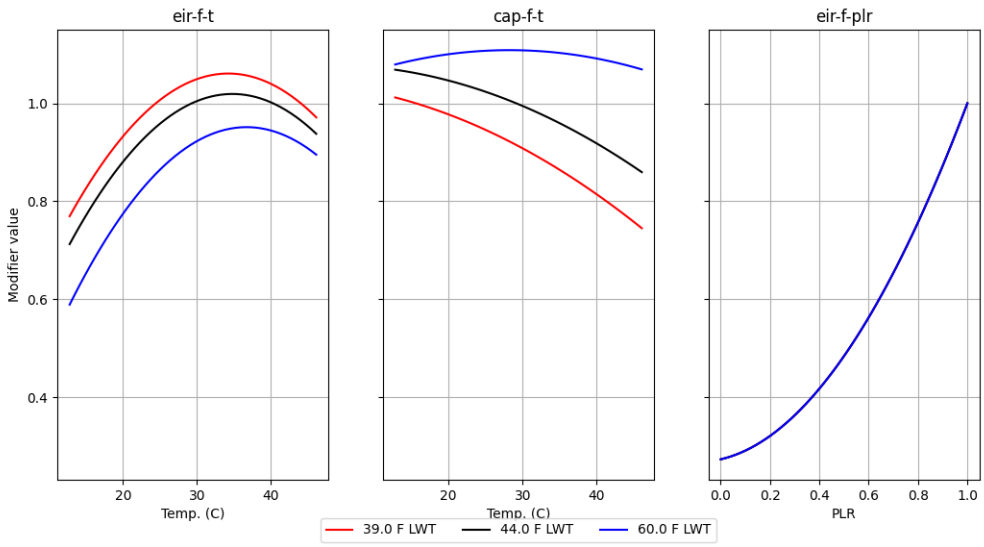
Curve: R


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

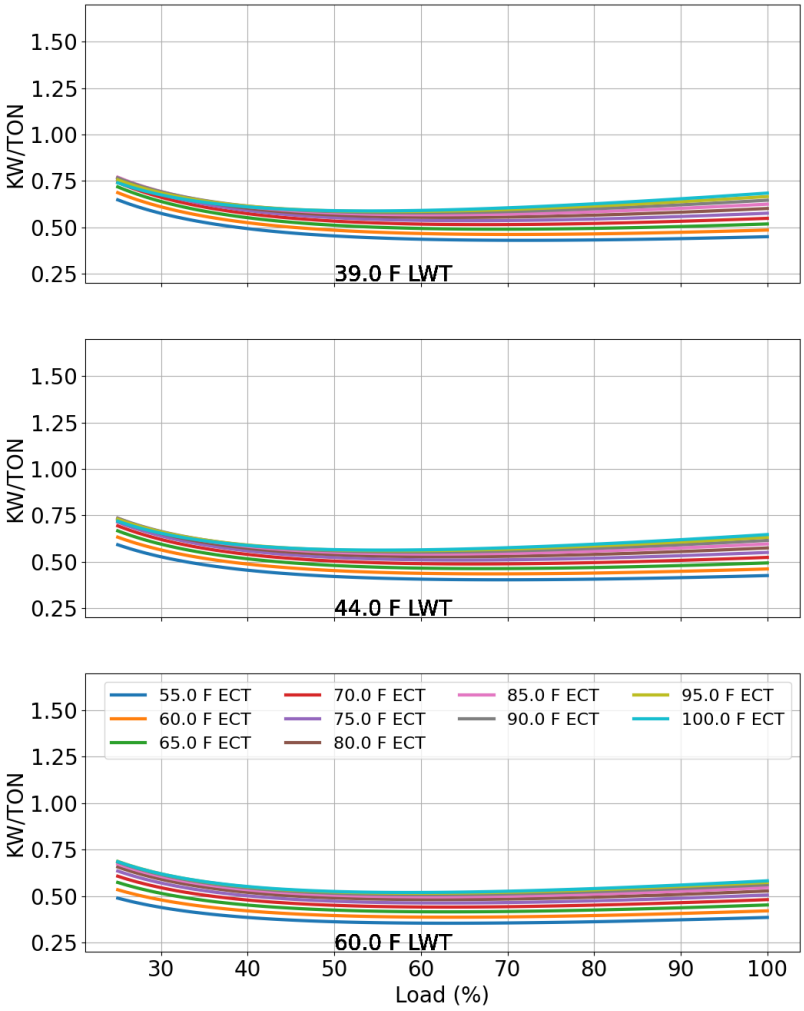

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

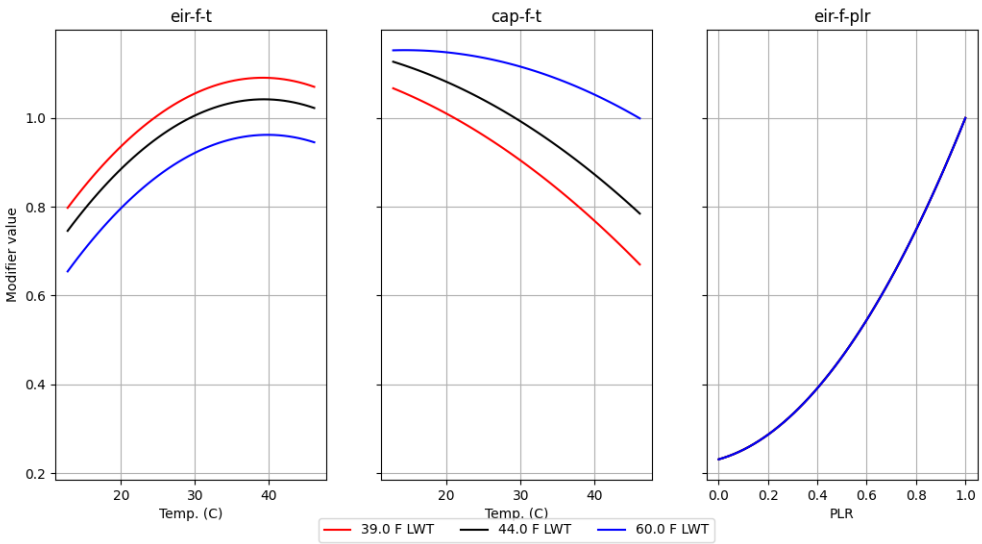
Curve: S


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

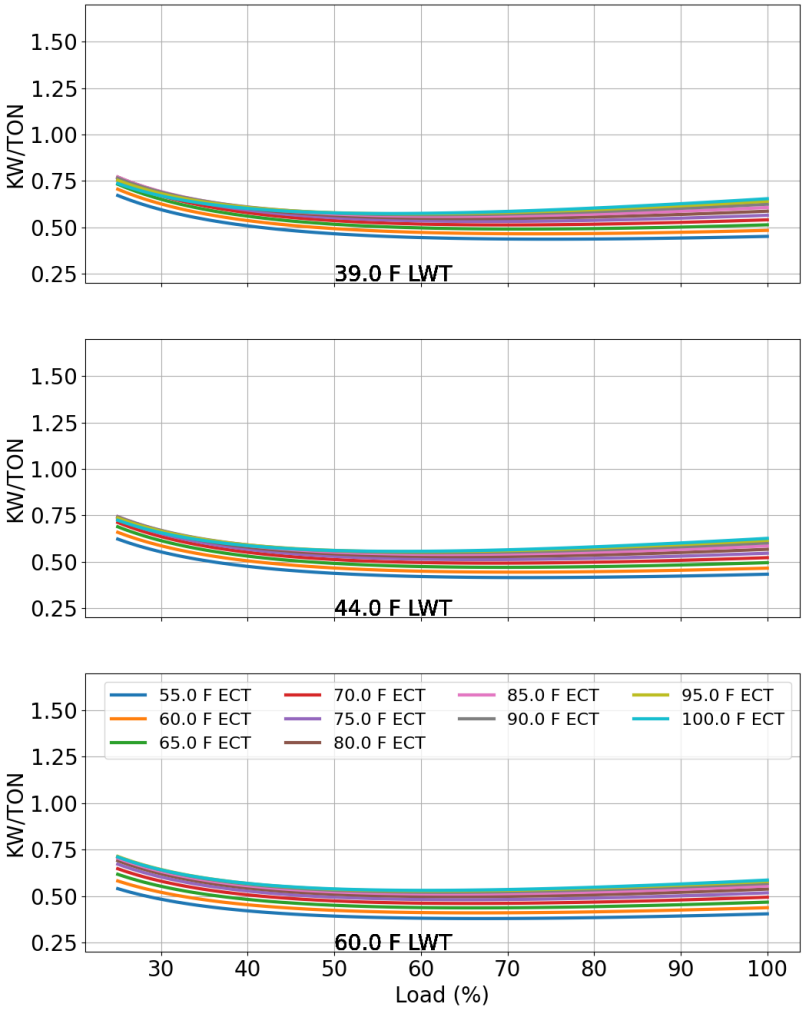

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

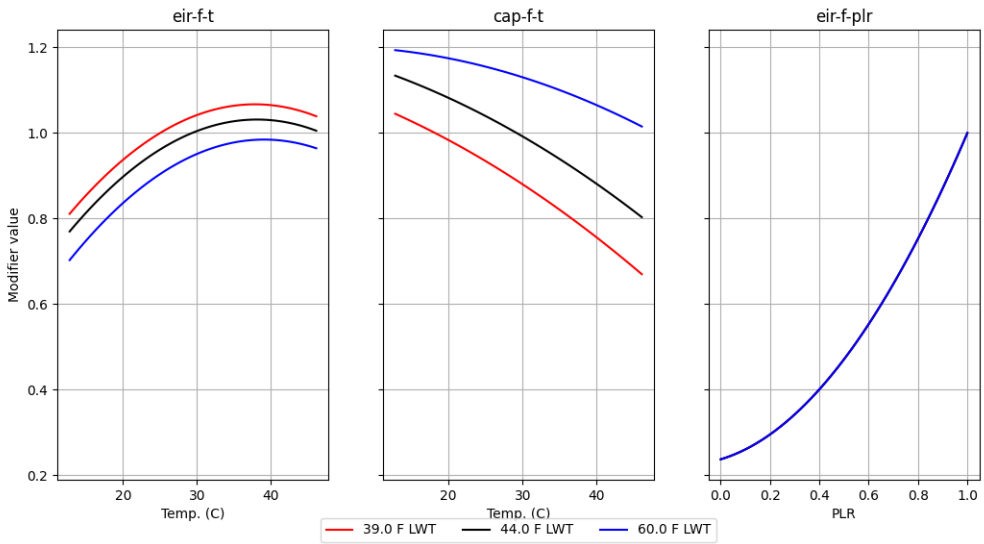
Curve: T


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

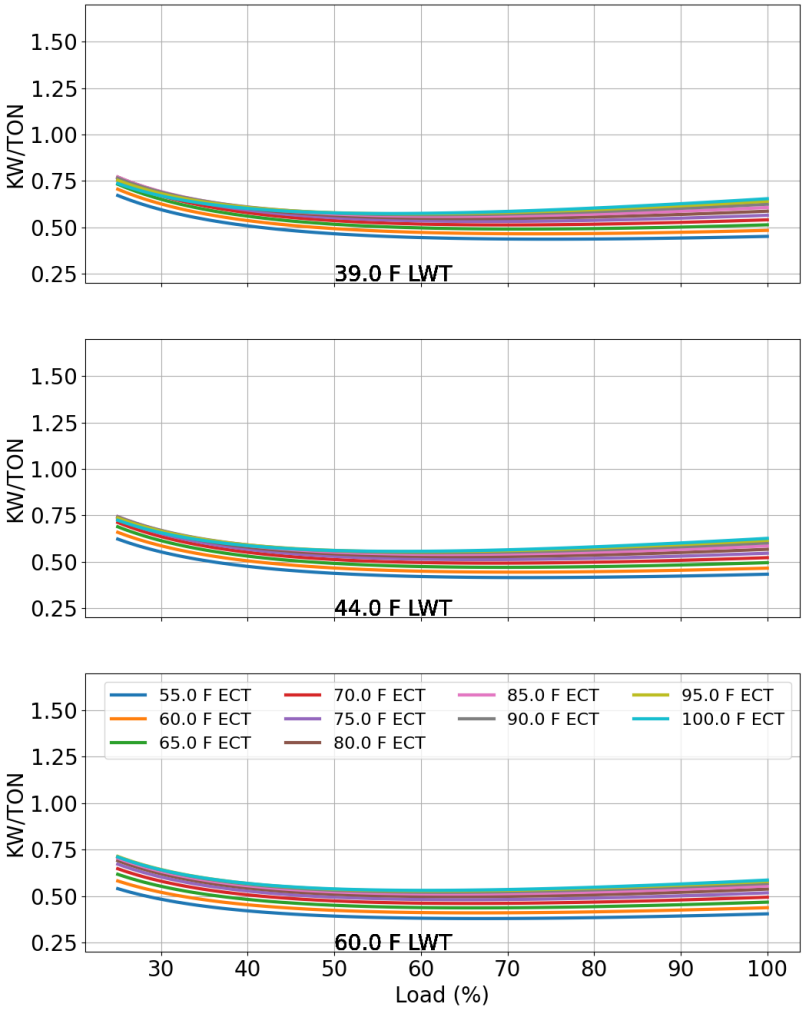

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

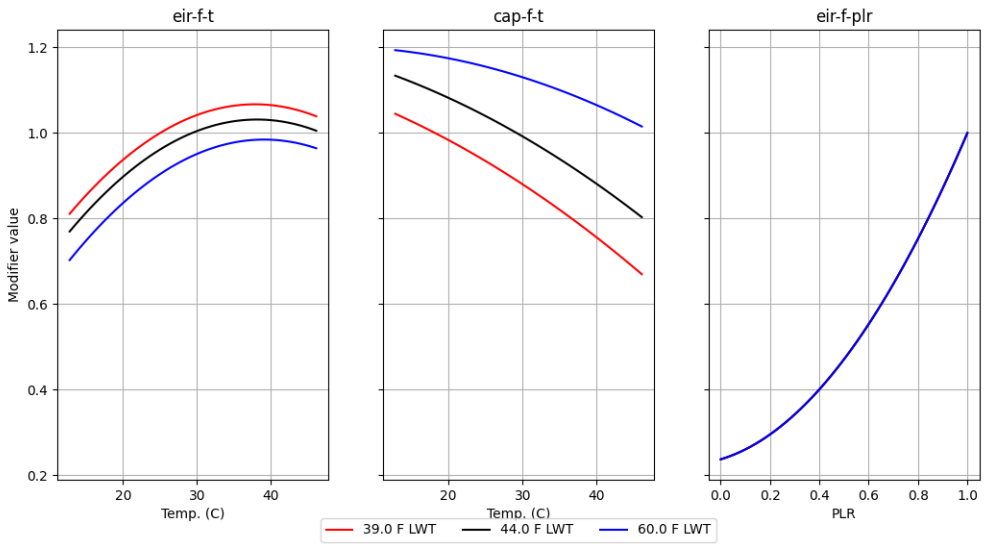
Curve: U


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

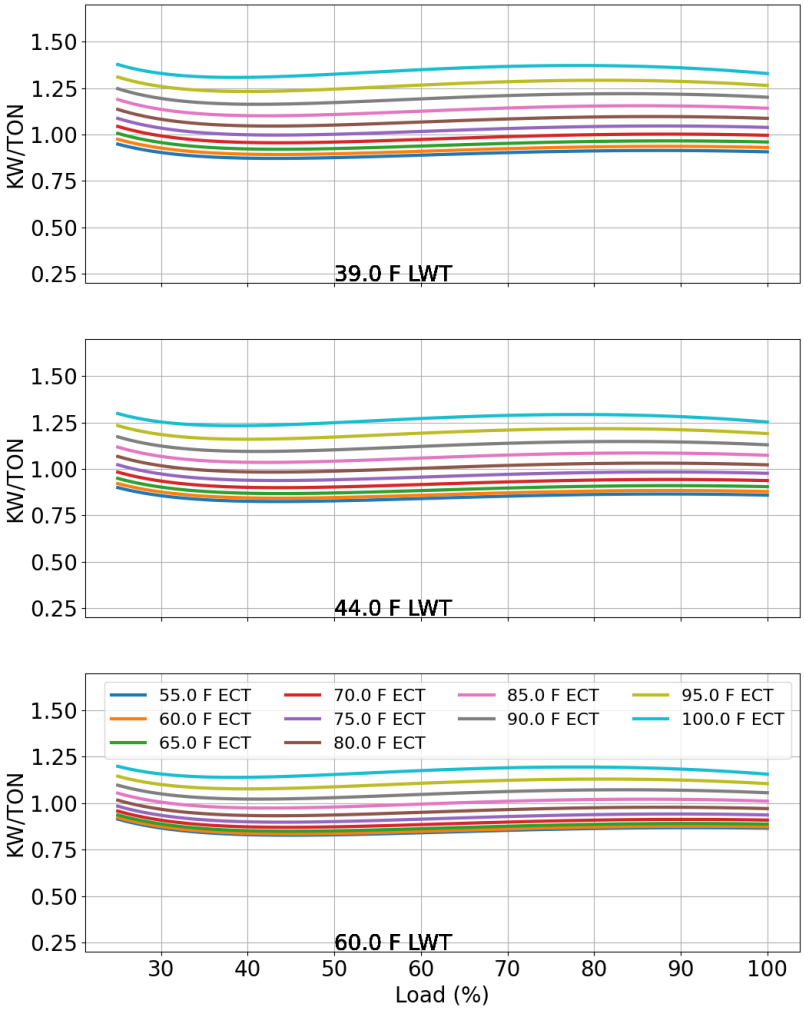

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

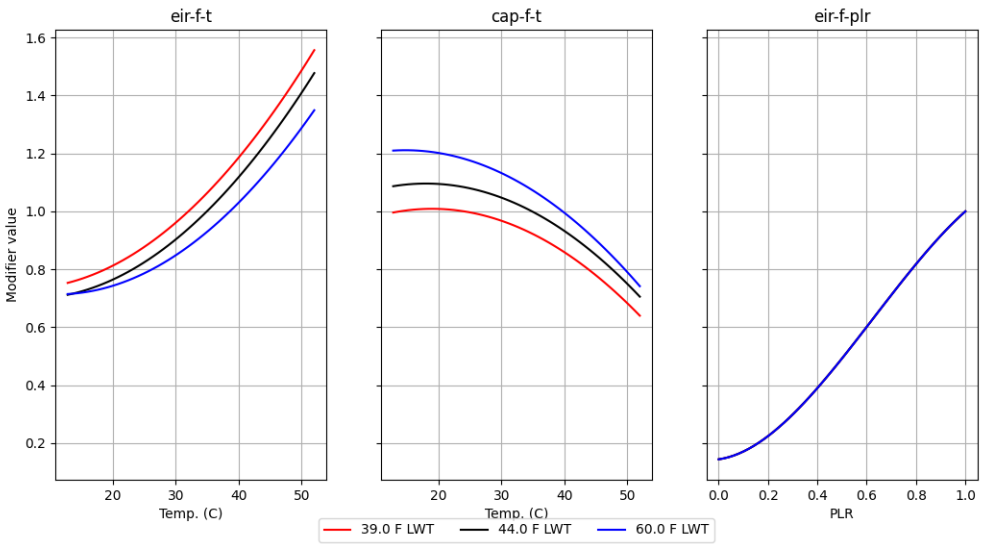
Curve: U


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

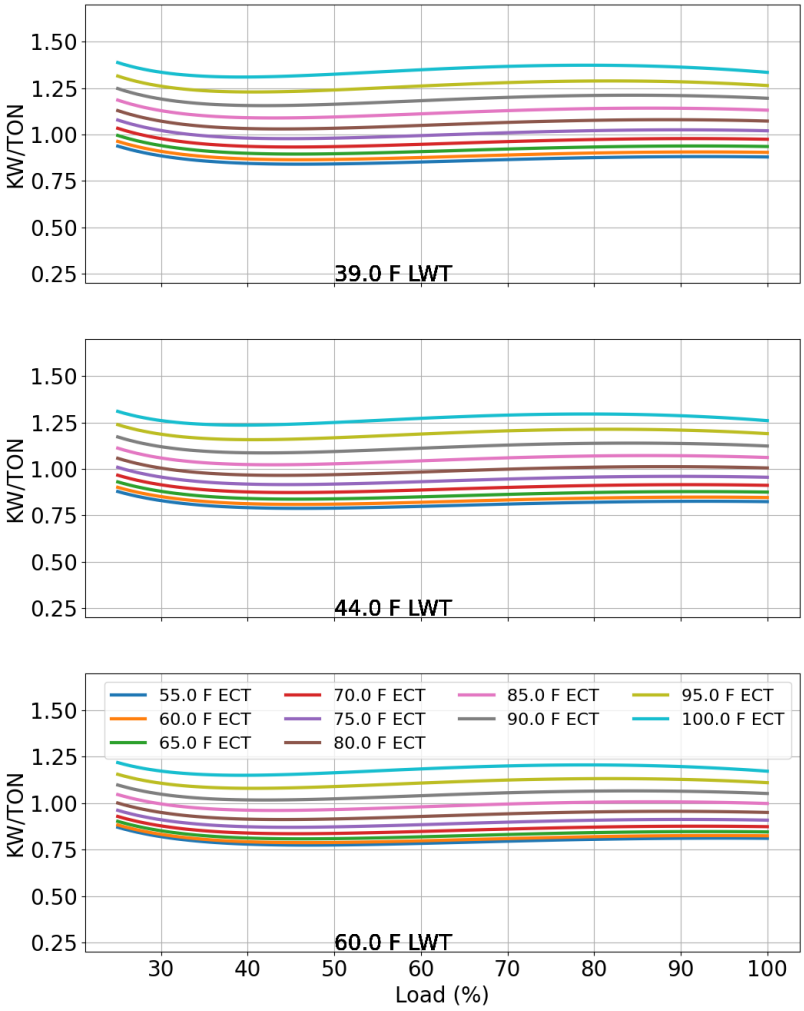

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

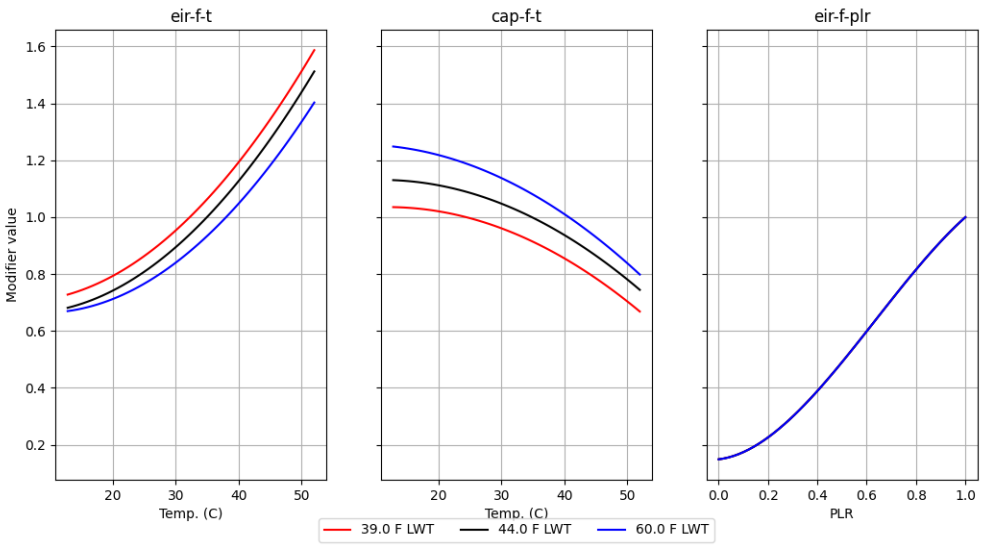
Curve: A


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

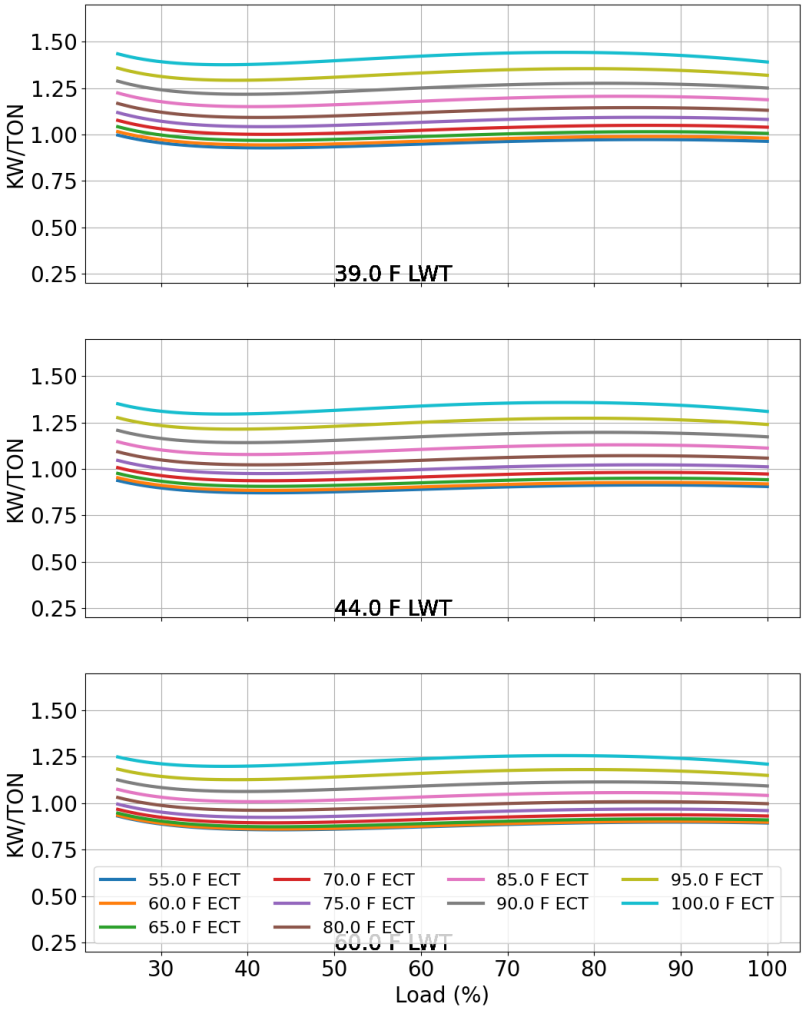

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

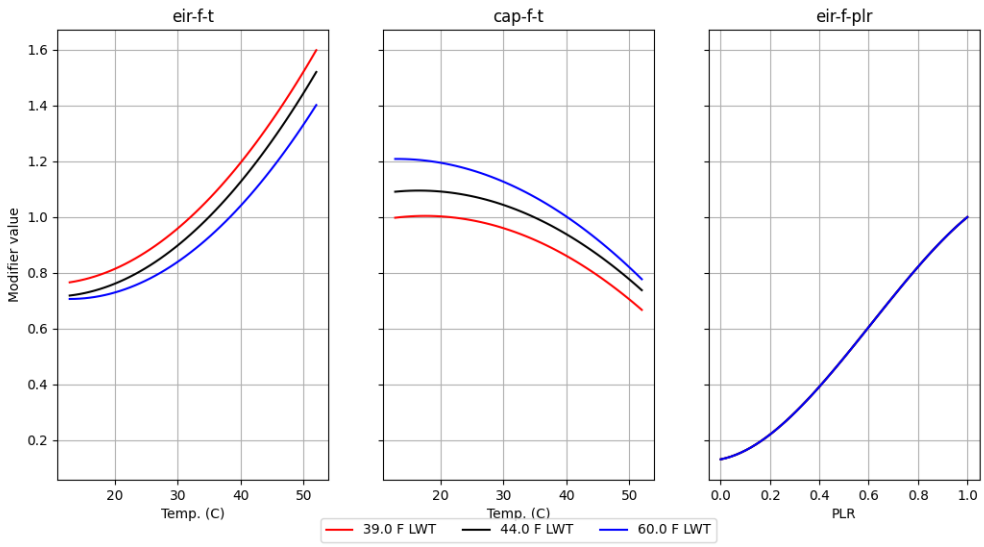
Curve: B


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

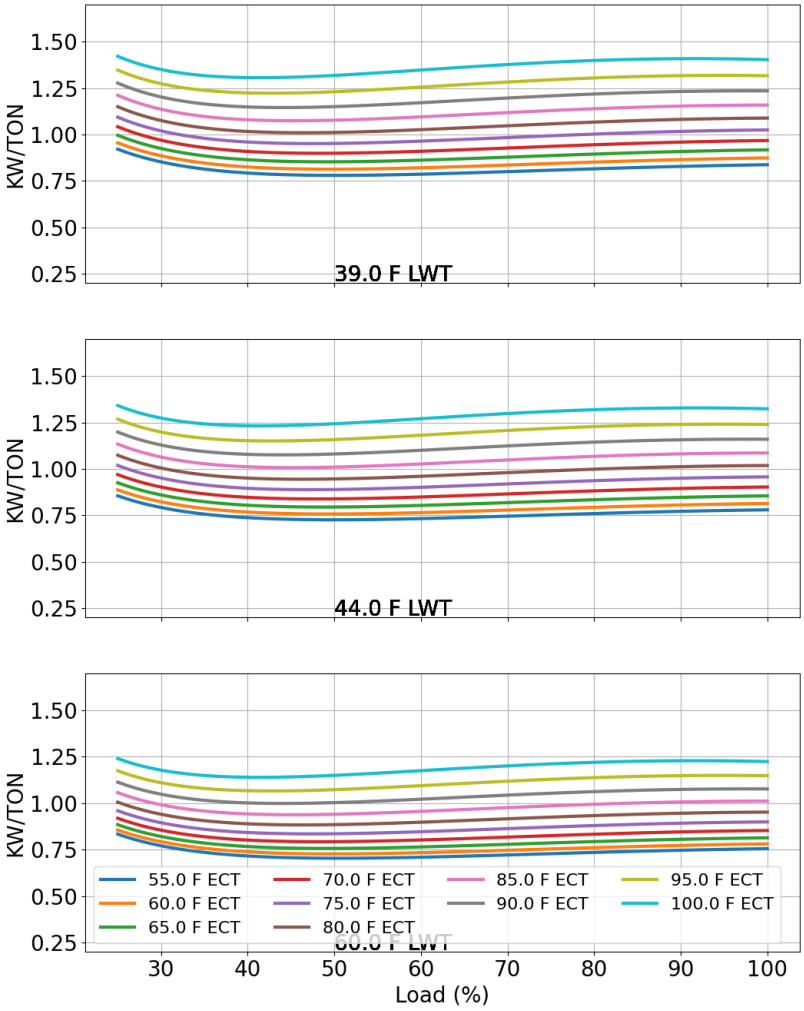

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

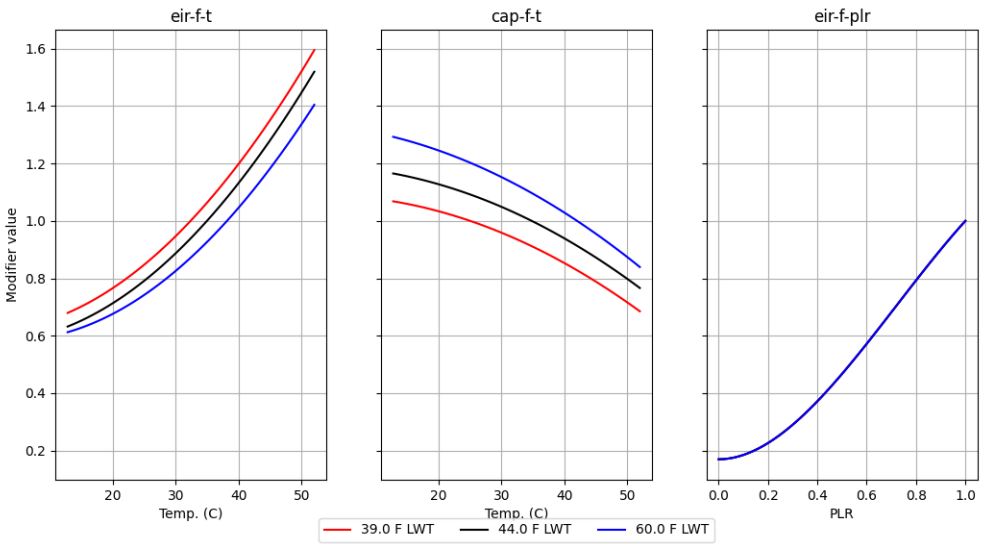
Curve: K


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

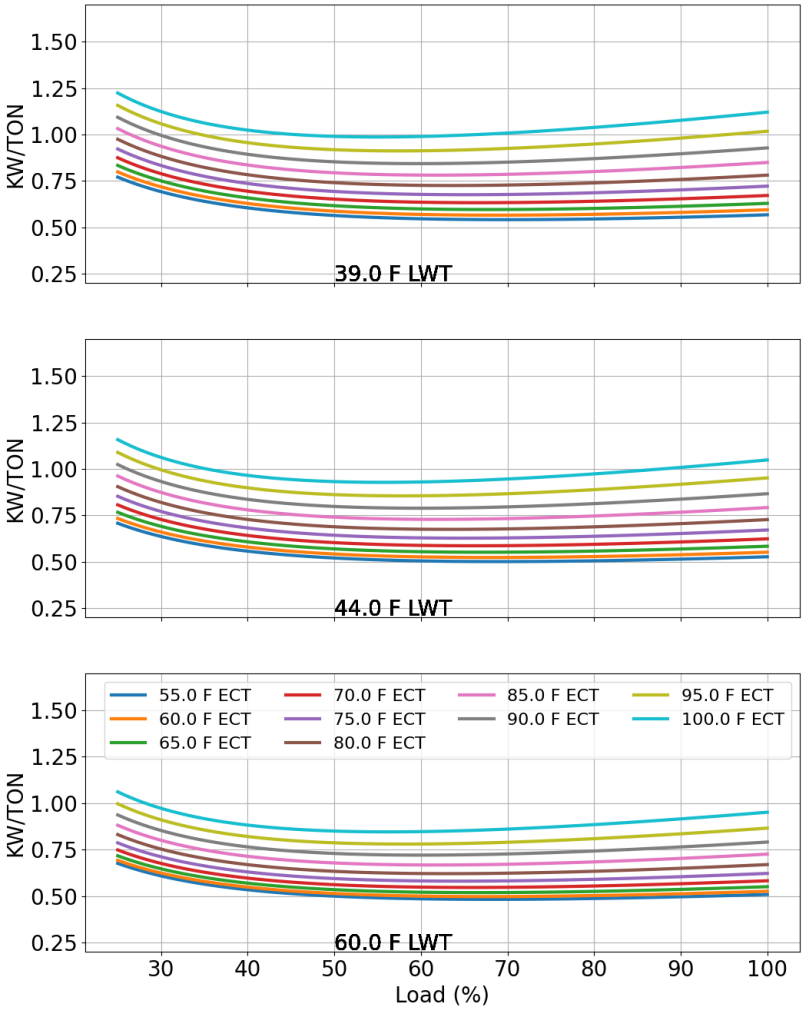

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

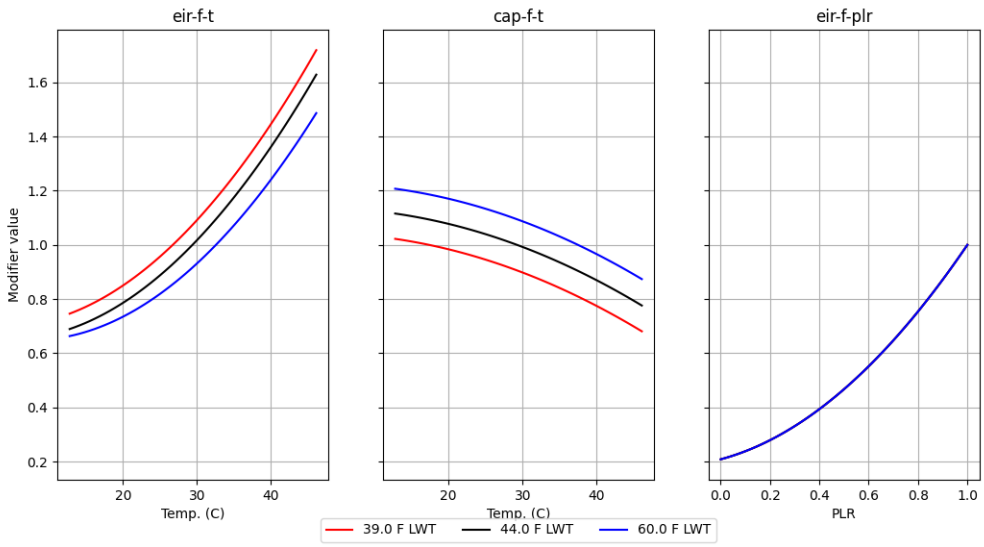
Curve: L


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

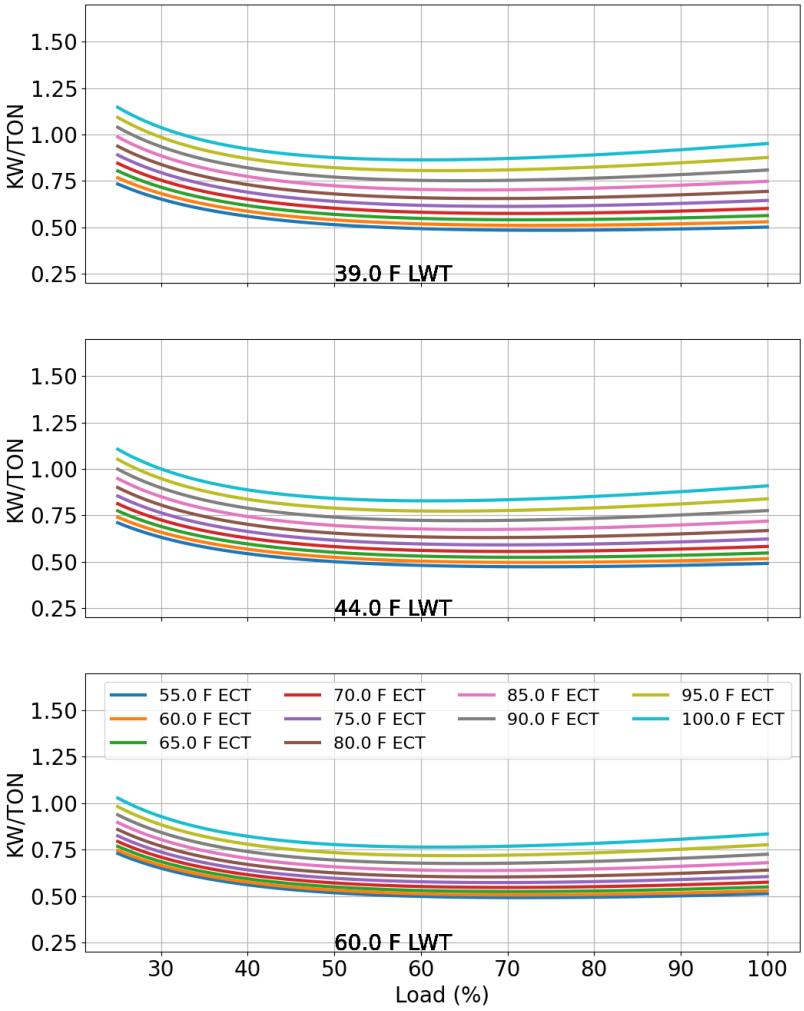

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

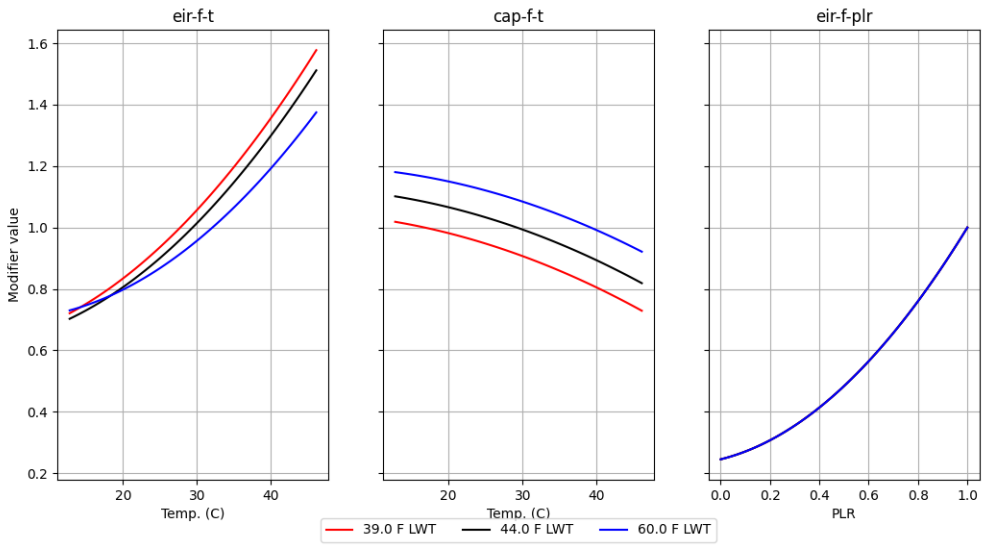
Curve: V


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

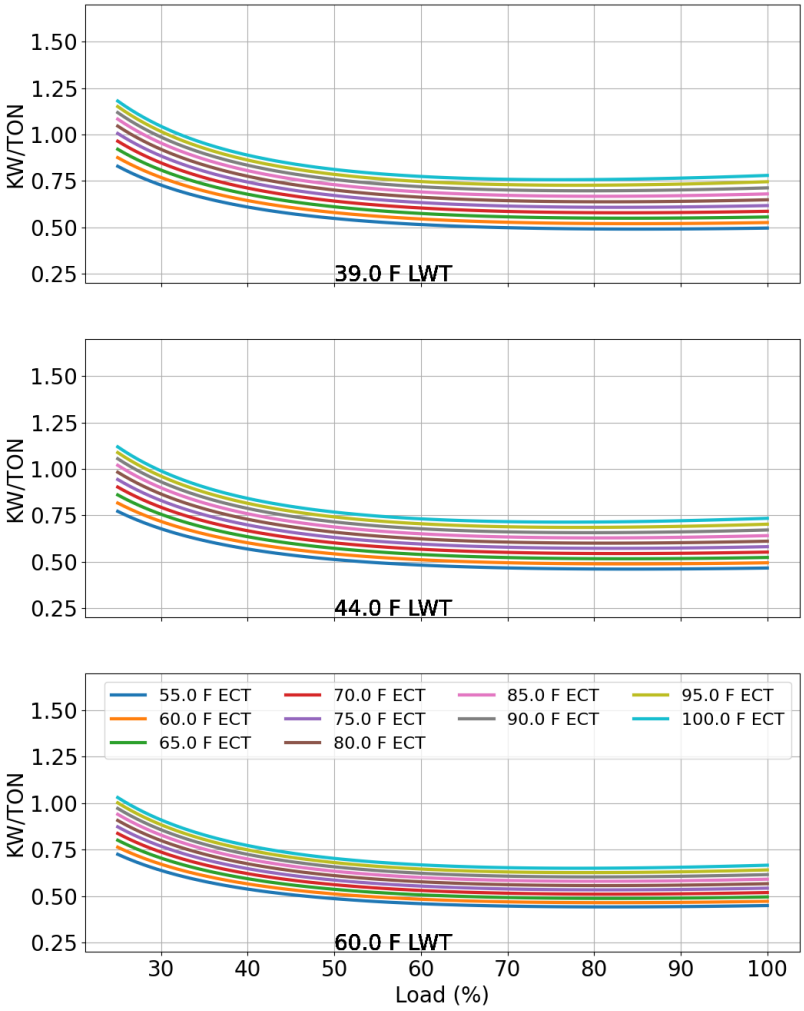

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

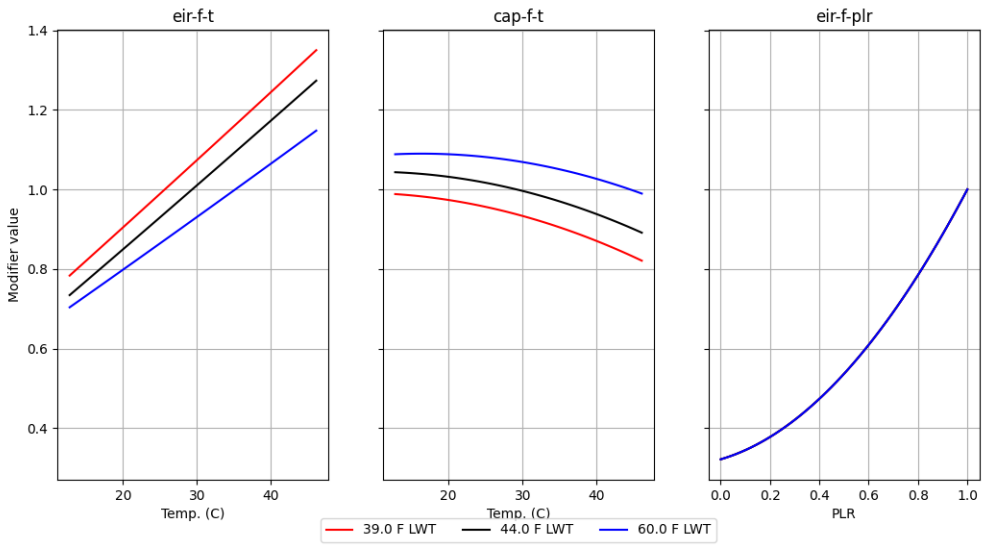
Curve: X


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

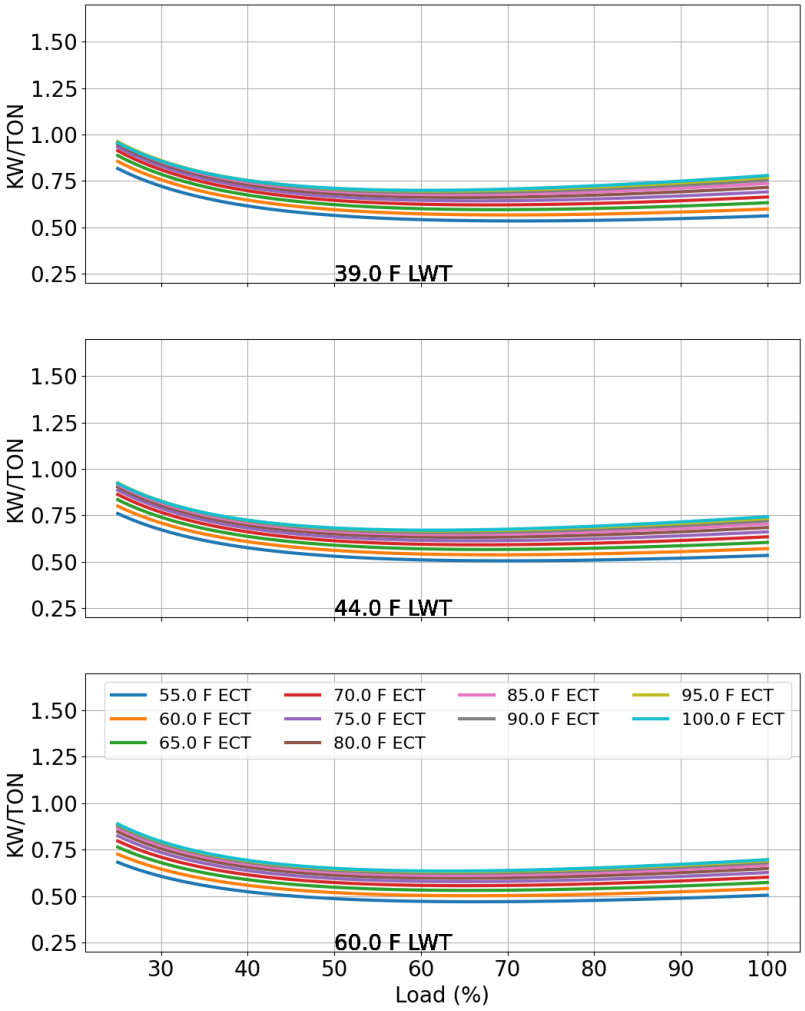

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

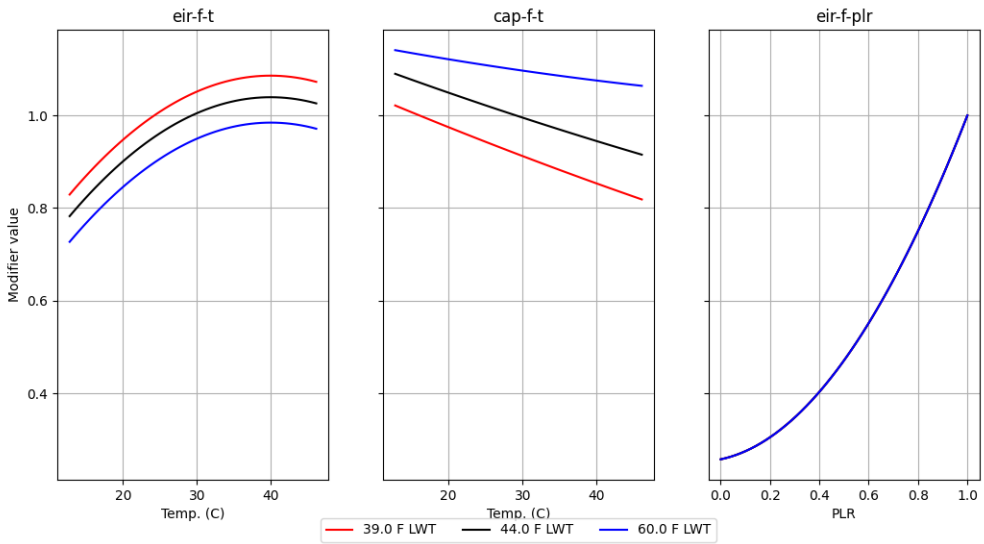
Curve: Y


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

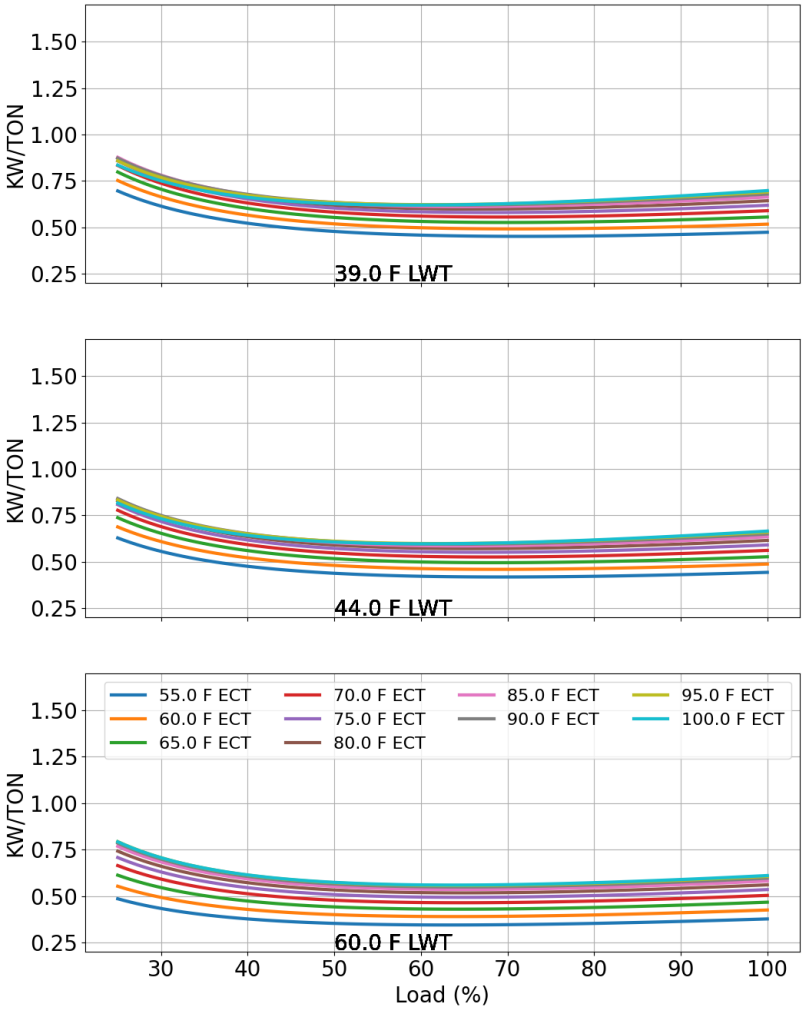

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

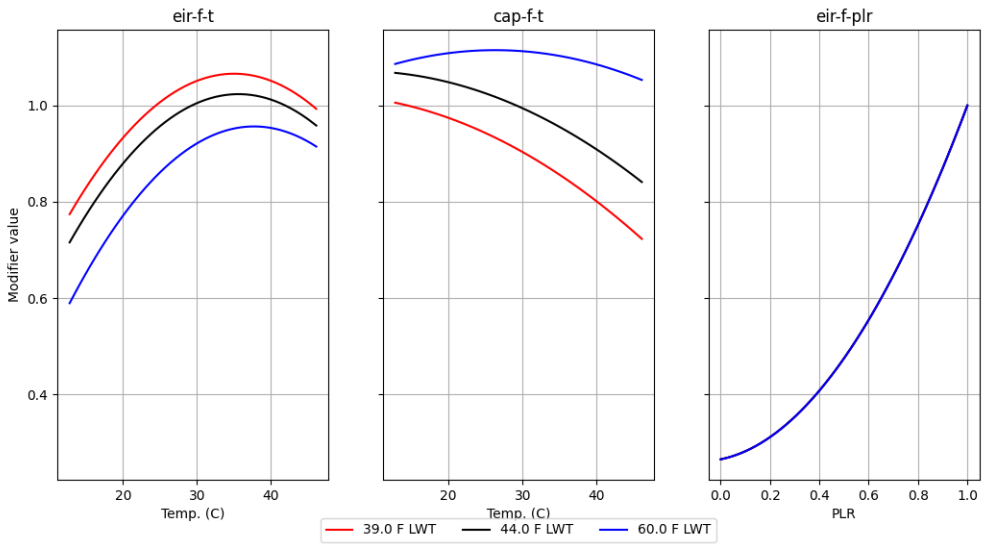
Curve: Z


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

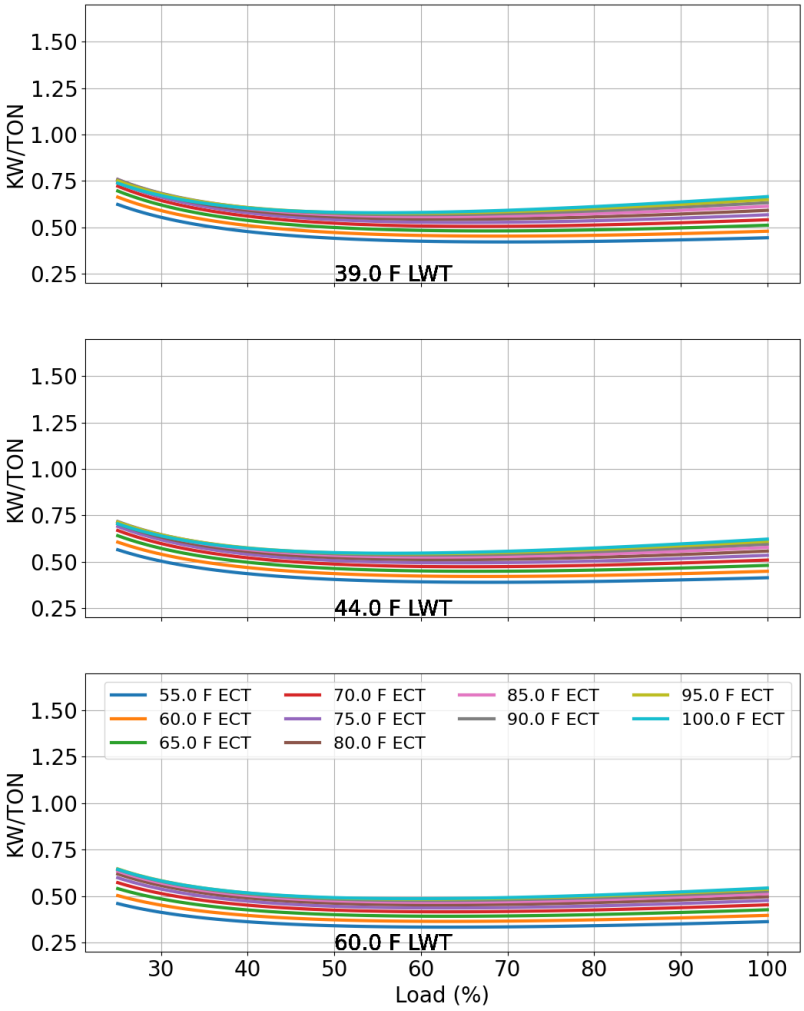

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

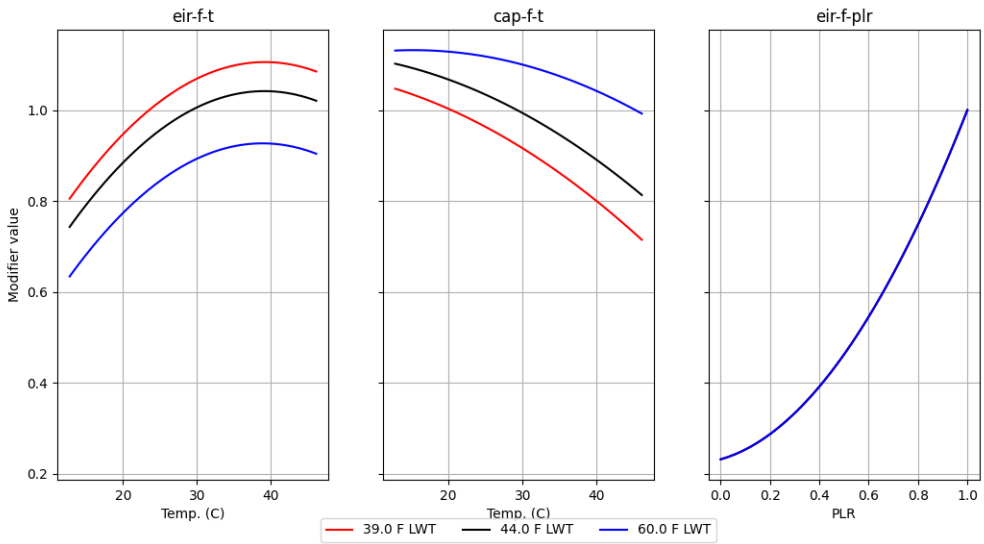
Curve: AA


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: AB


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

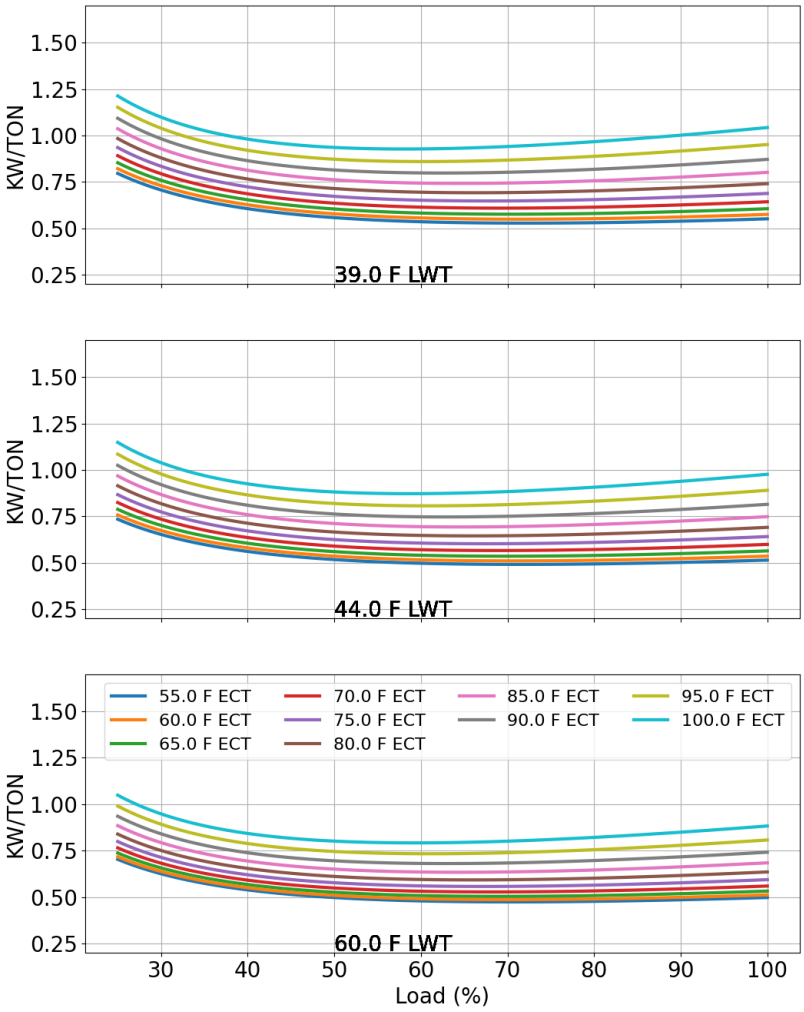
Graphical representation of the proposed performance curves

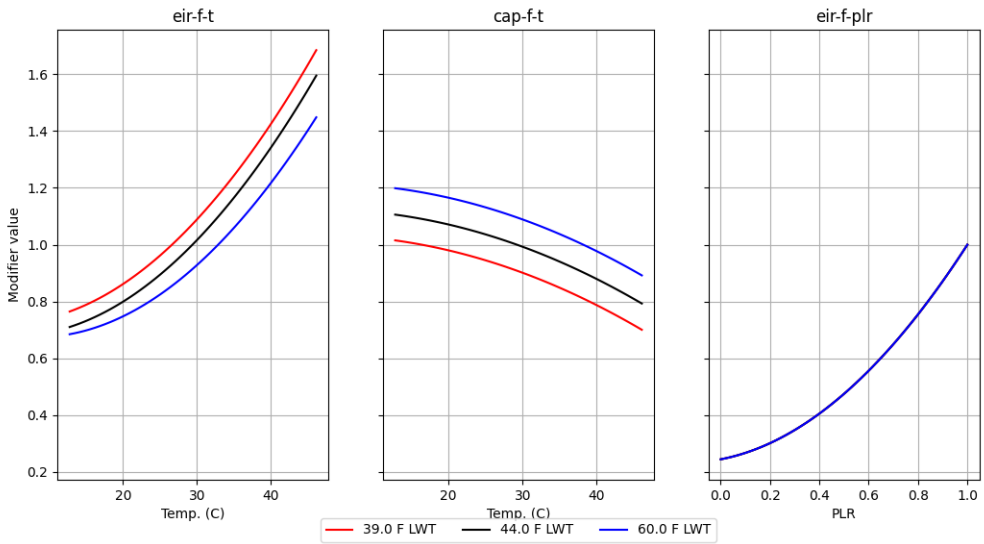
The next pages show graphical representations of the proposed sets of performance curves included in the addendum bd, which meet the minimum IPLV requirements in ASHRAE Standard 90.1. Two graphical representation are presented: the first one shows how the chiller efficiency varies with load for different entering condenser temperature (ECT) and different leaving chiller water temperature (LWT), the second one shows the how the individual performance curves vary with different ECT and LCT as well as part load ratio (PLR).

Addendum BD Curves: KW/ton vs. Load(%)

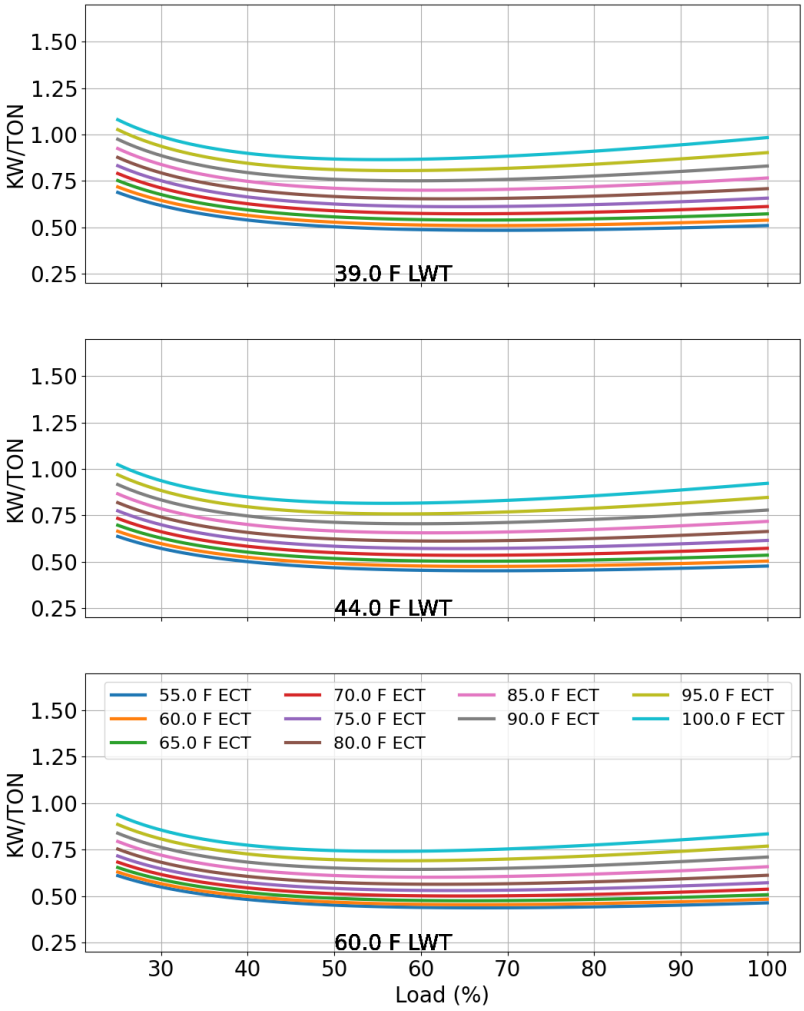
ECT: Entering Condenser Temperature
LWT: Leaving (Evaporator) Water Temperature

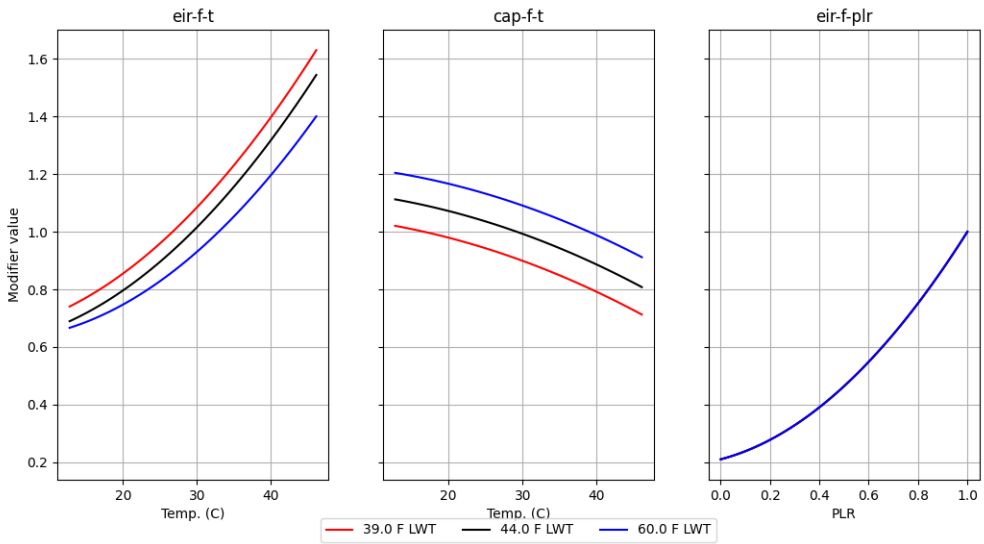
Curve: C



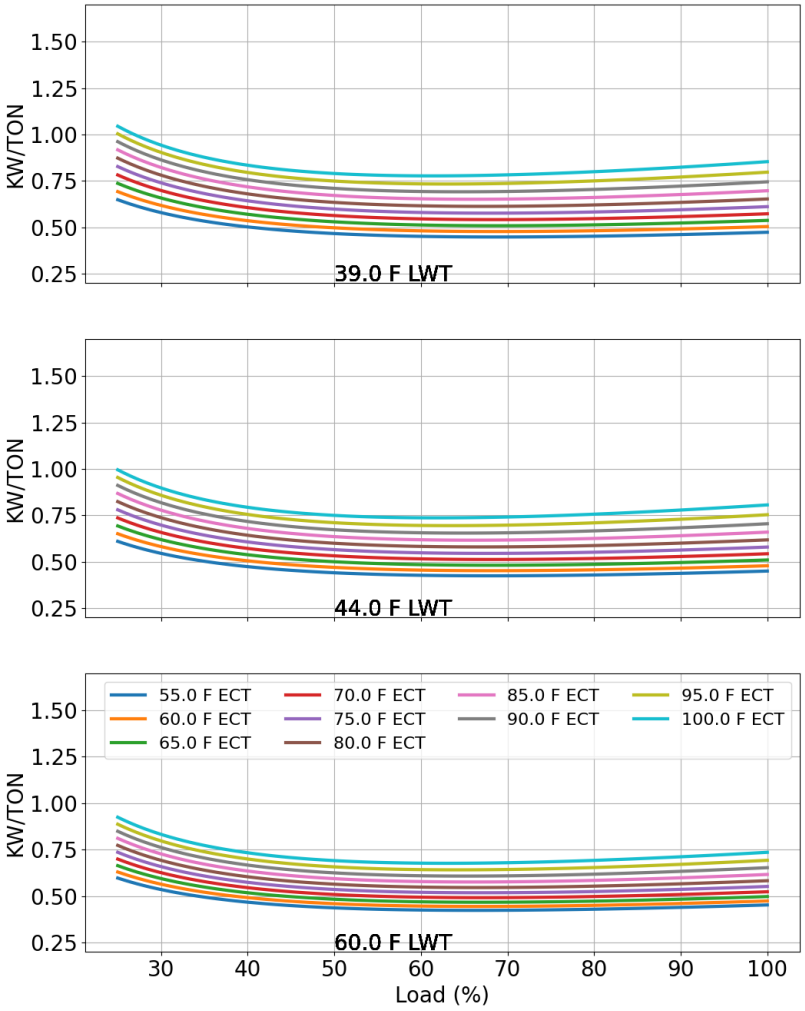


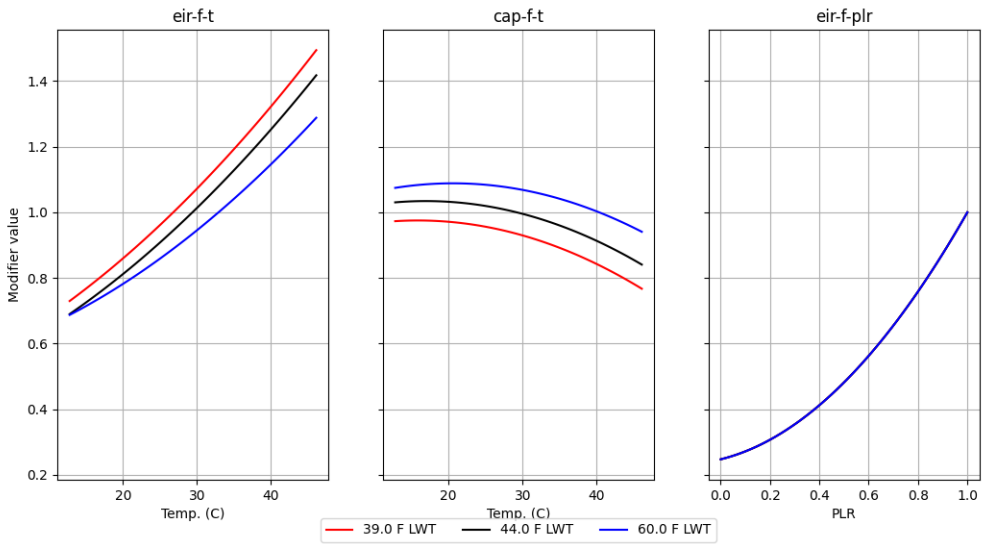
Curve: D


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

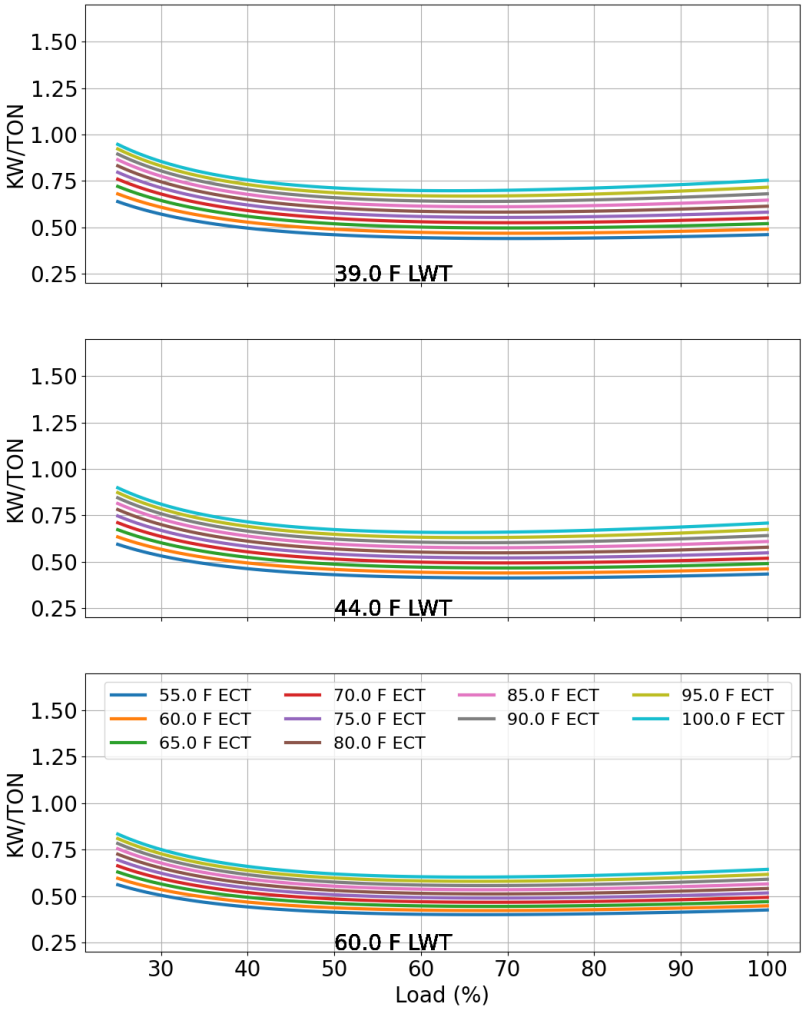

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

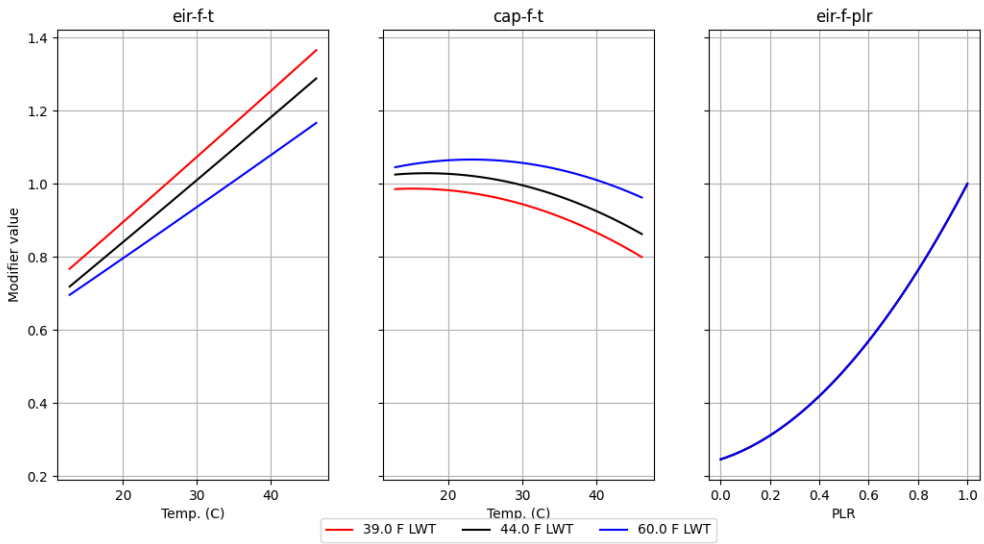
Curve: E


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

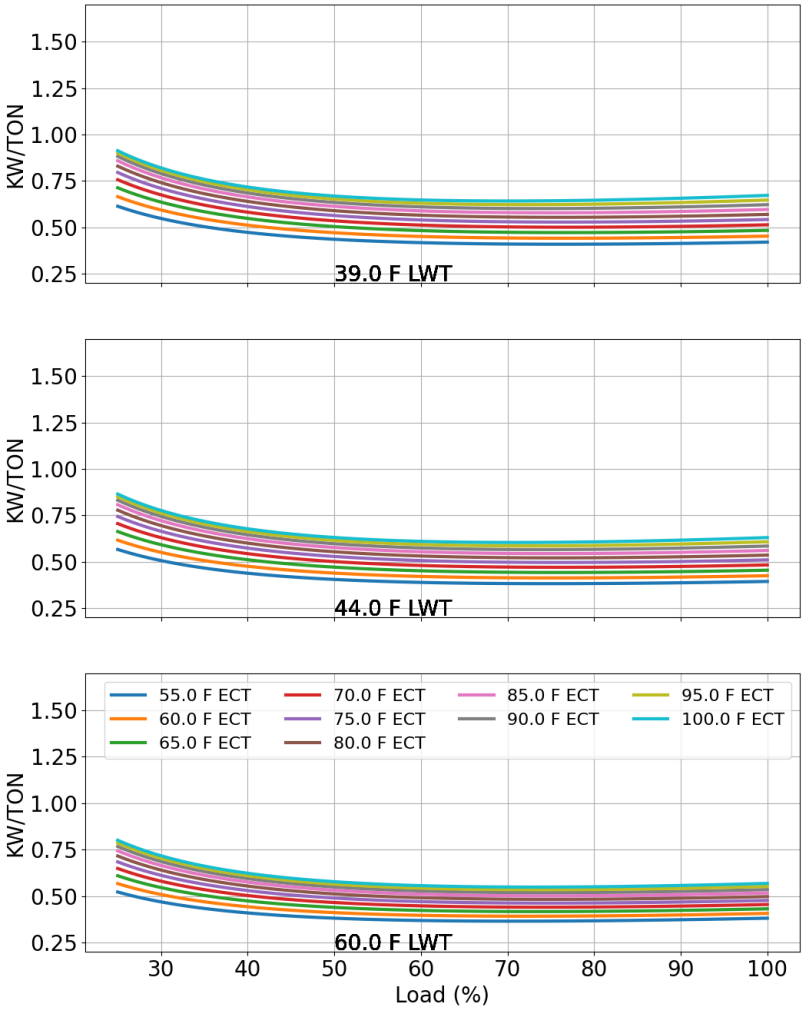

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

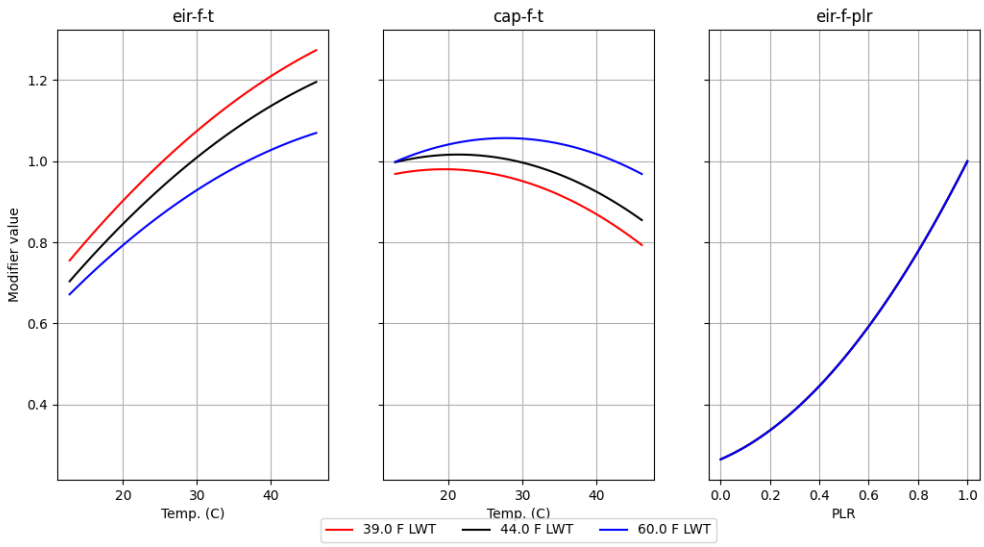
Curve: F


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

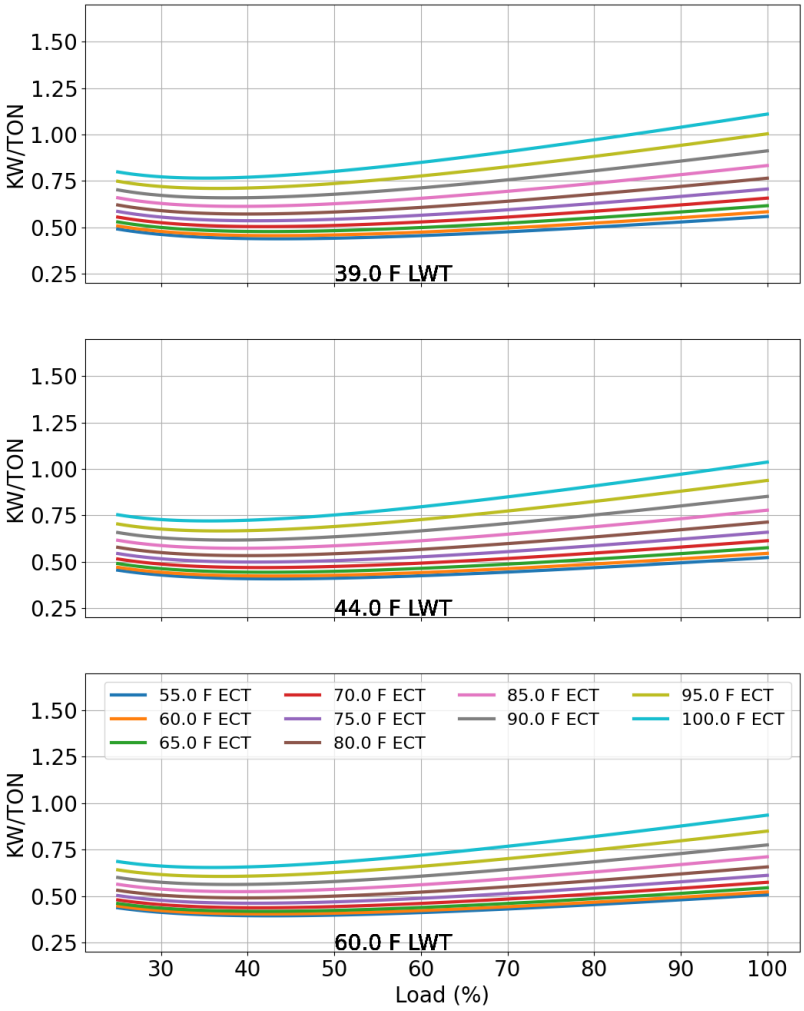

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

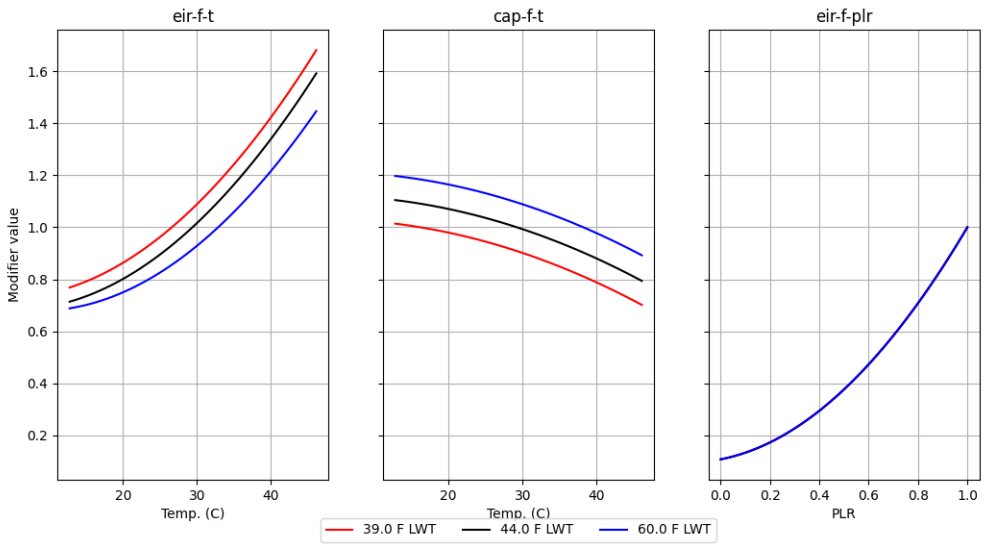
Curve: G


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

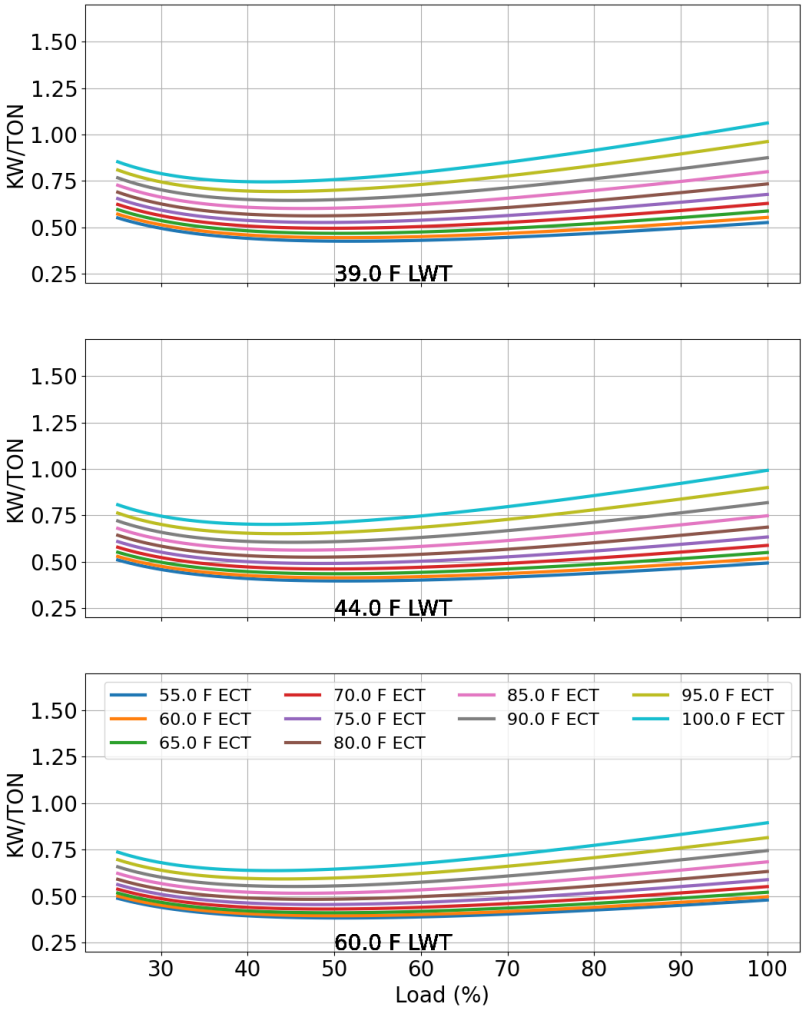

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

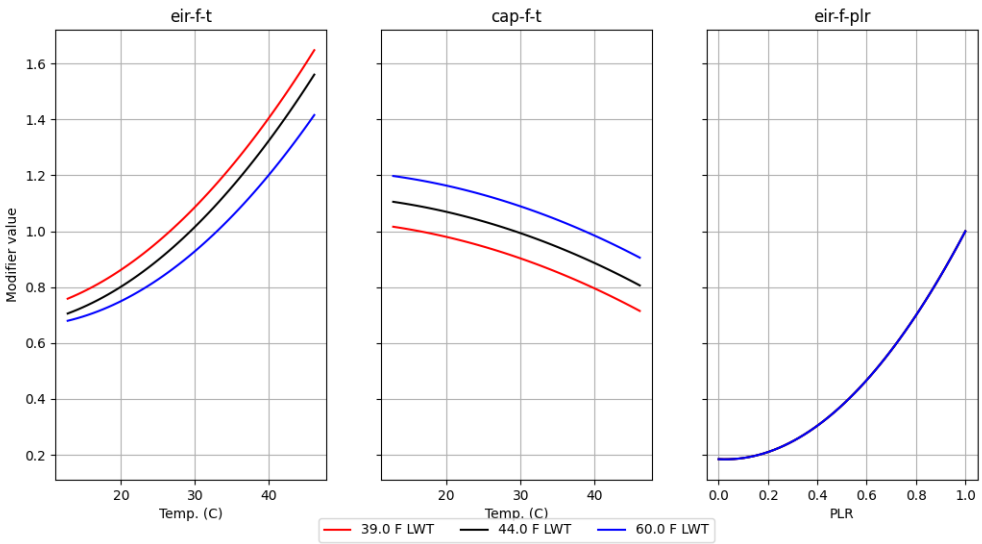
Curve: M


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

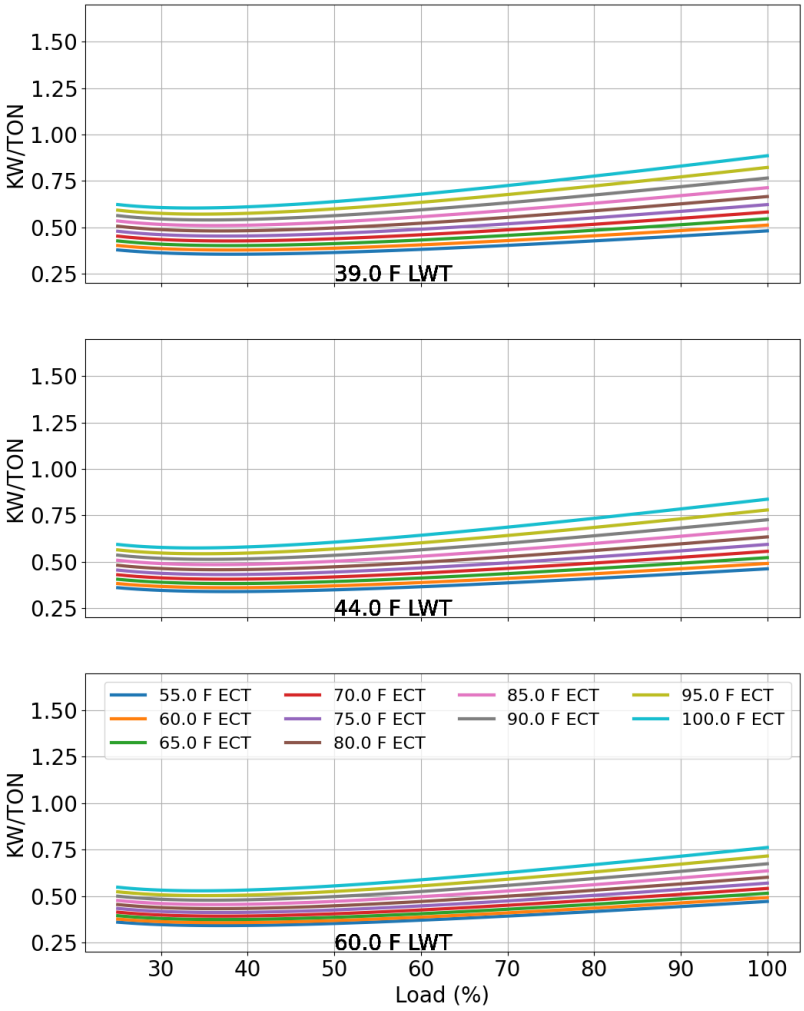

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

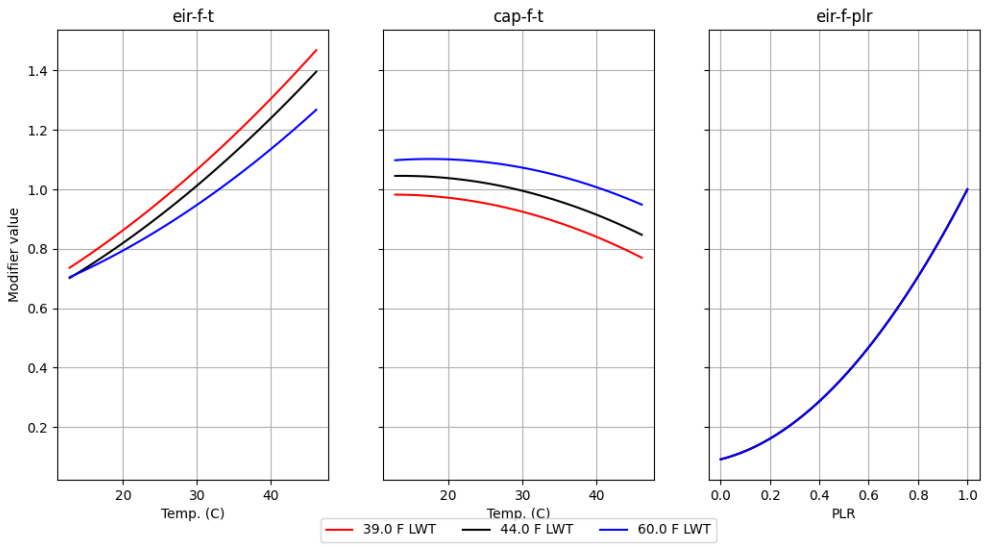
Curve: N


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

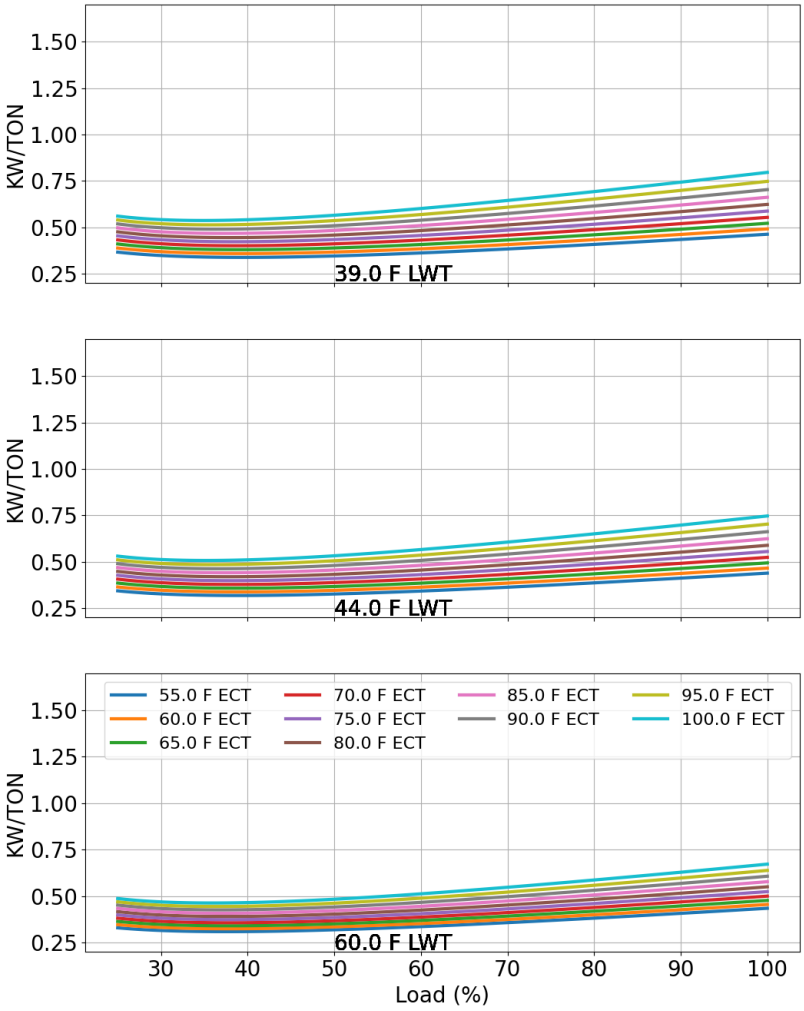

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

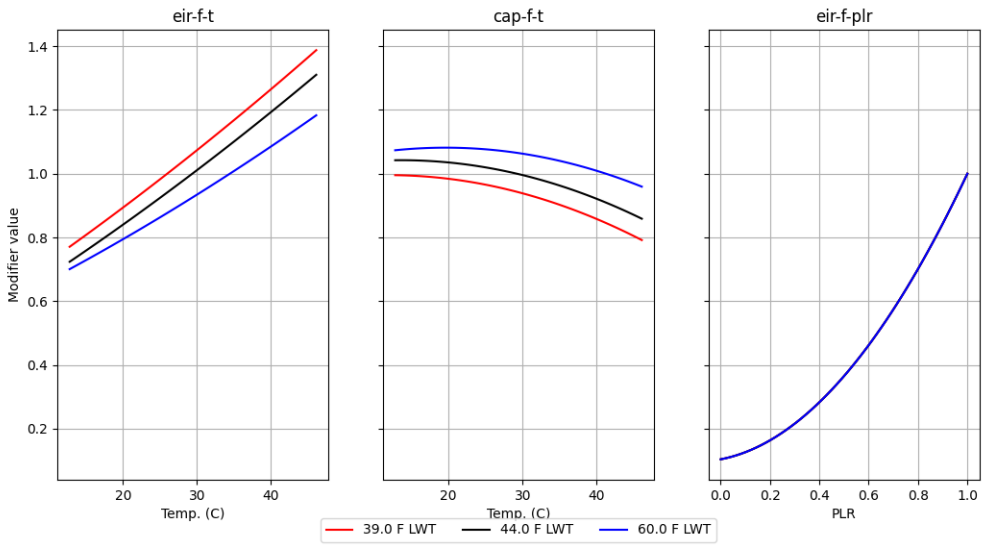
Curve: O


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

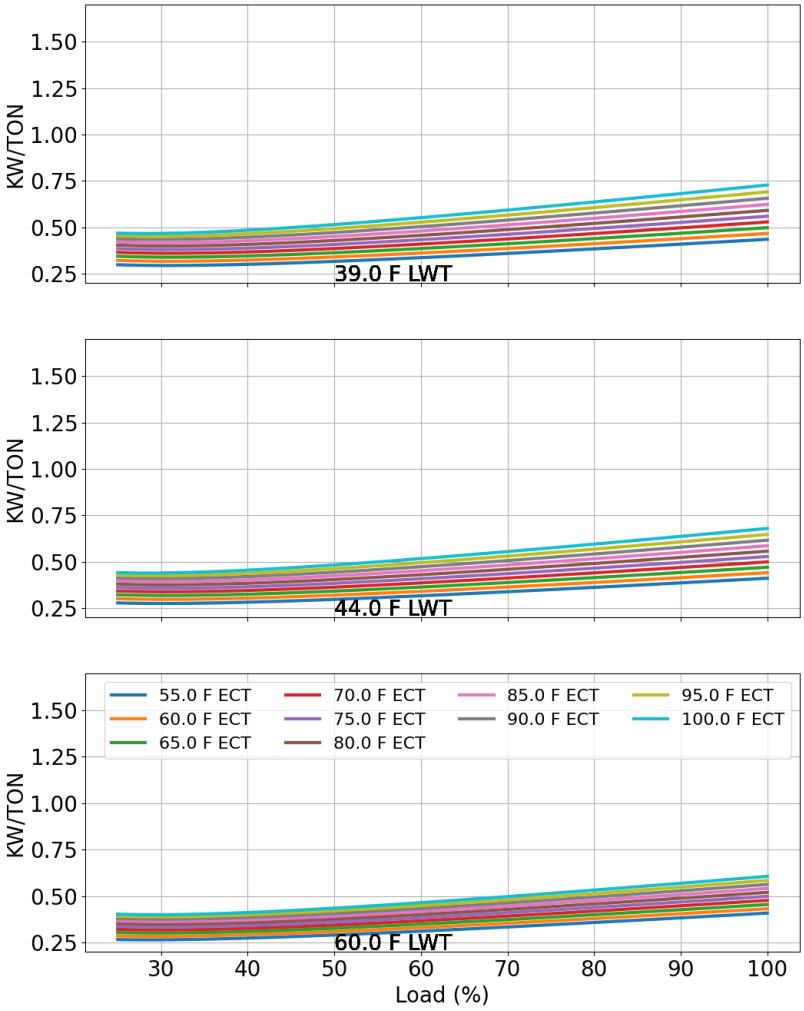

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

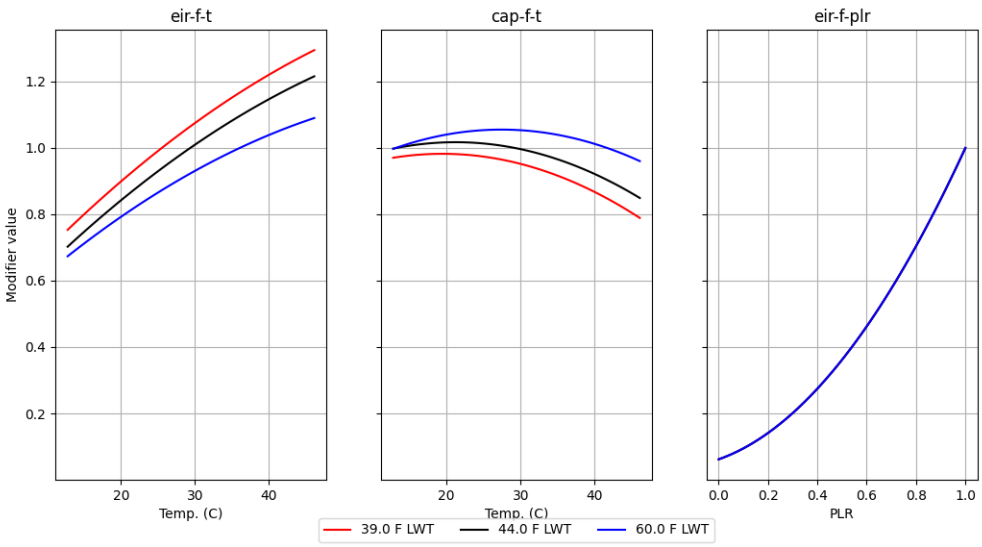
Curve: P


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

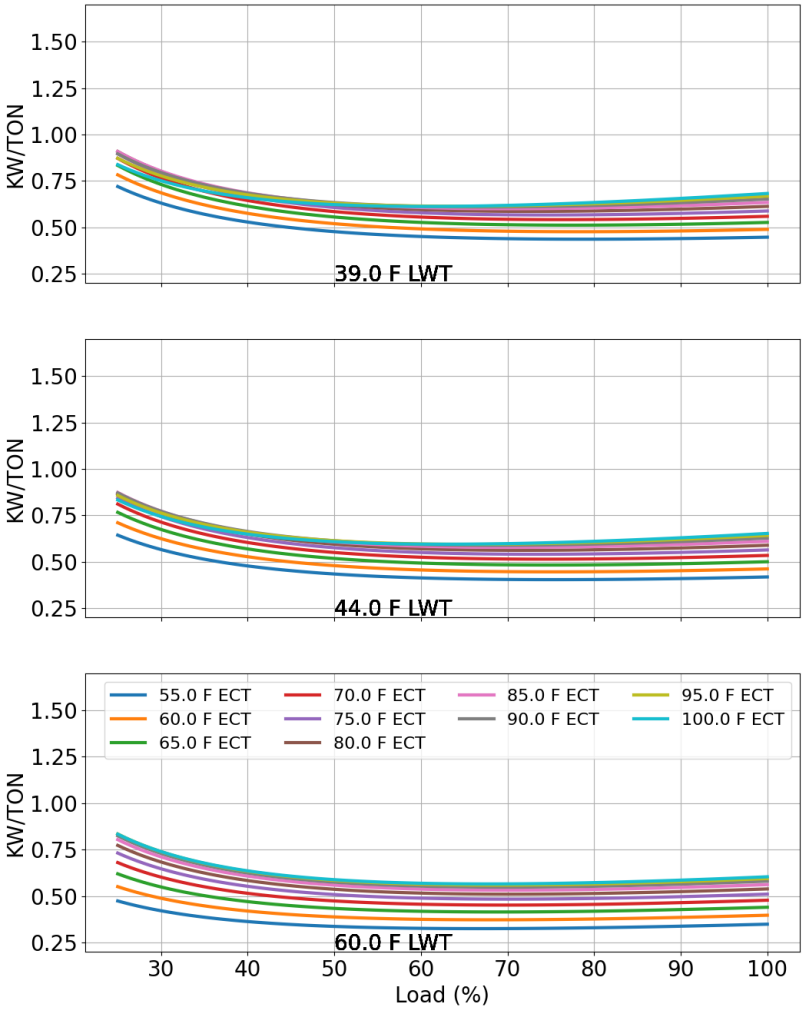

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

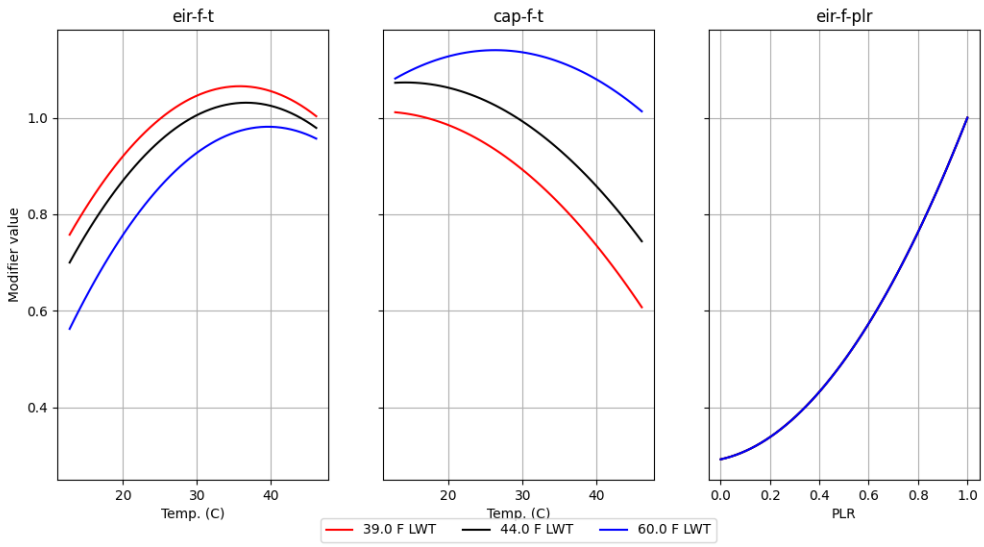
Curve: Q


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

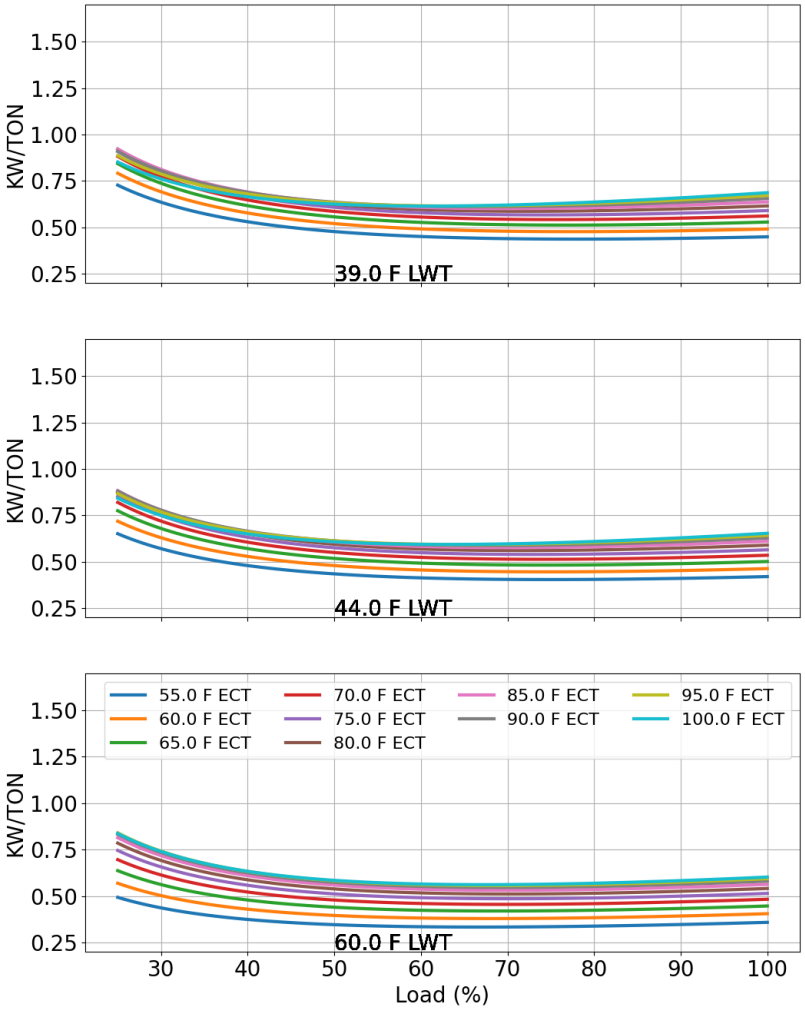

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

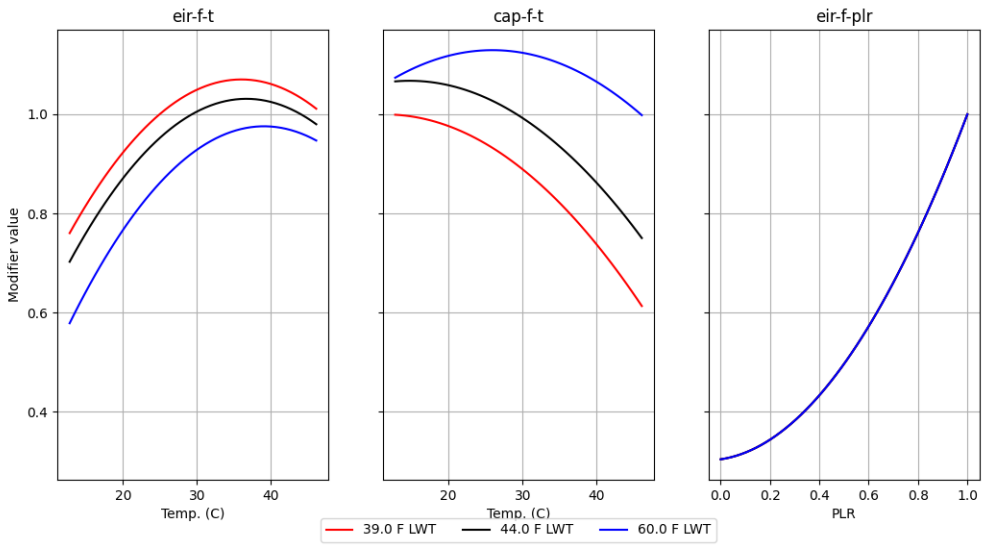
Curve: H


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

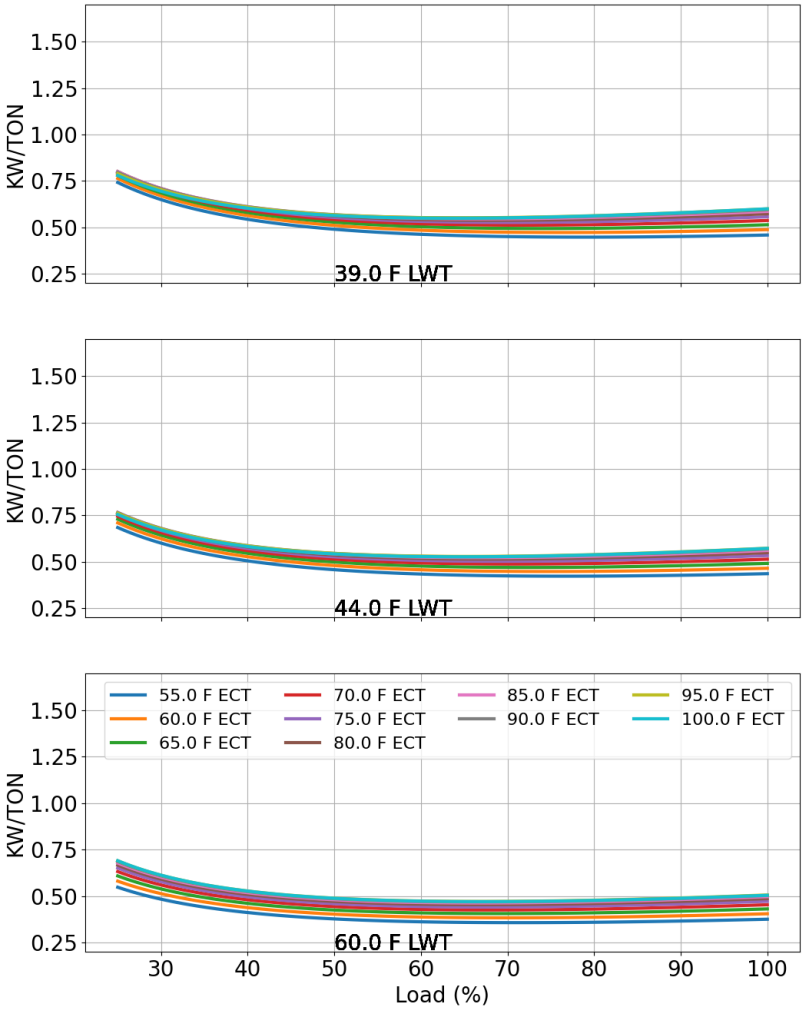

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

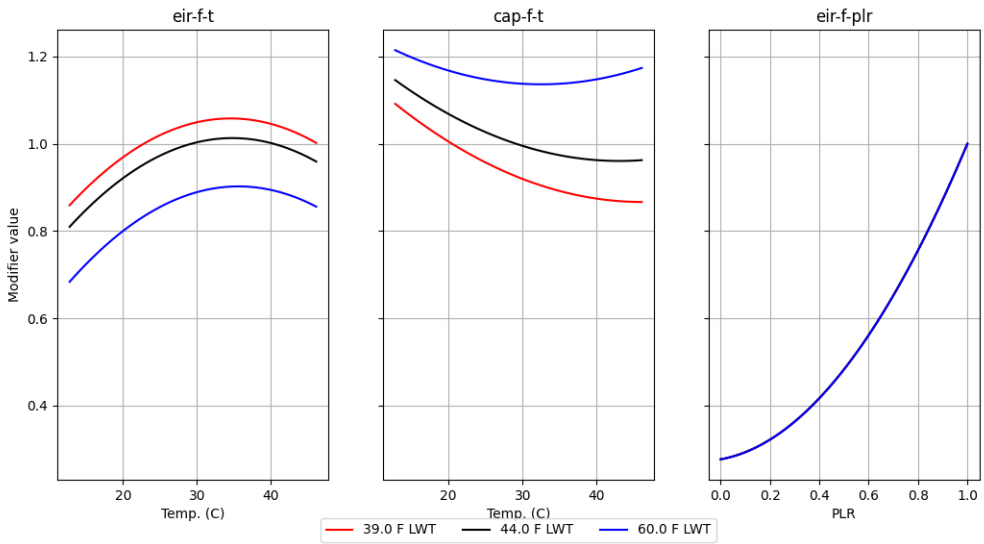
Curve: H


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

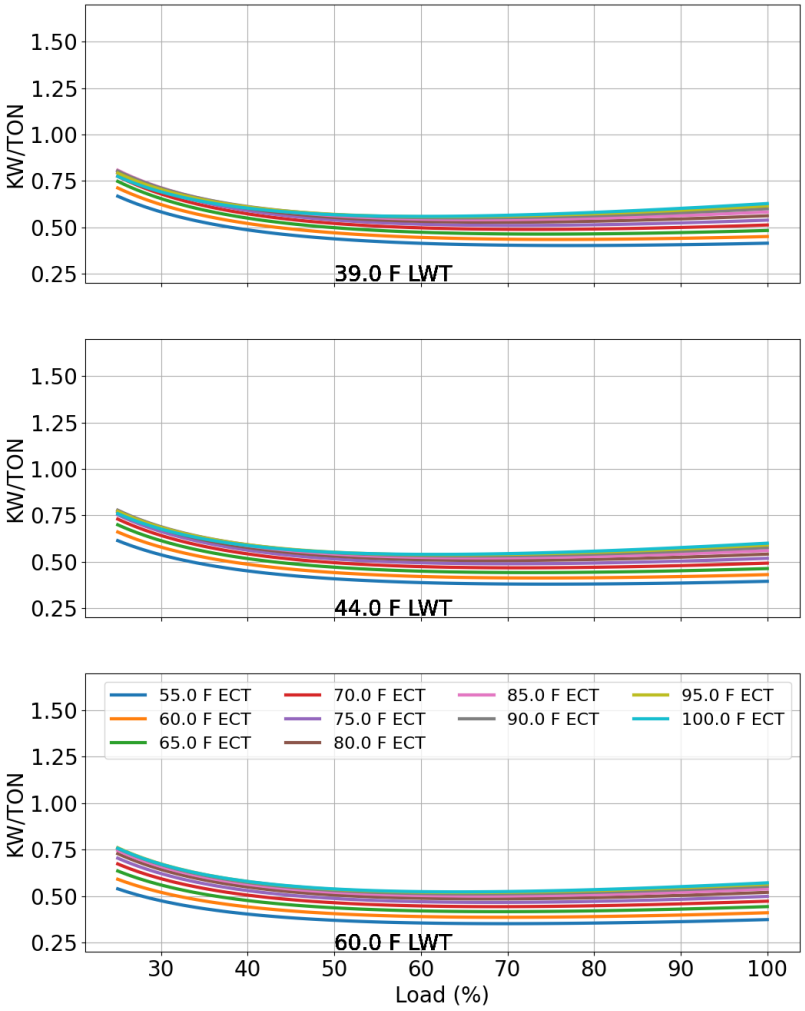

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

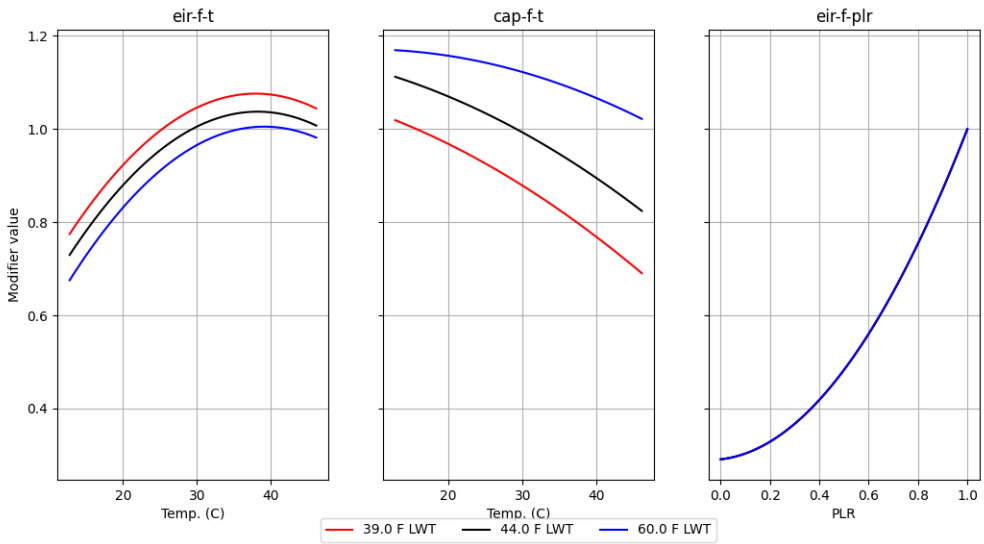
Curve: I


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

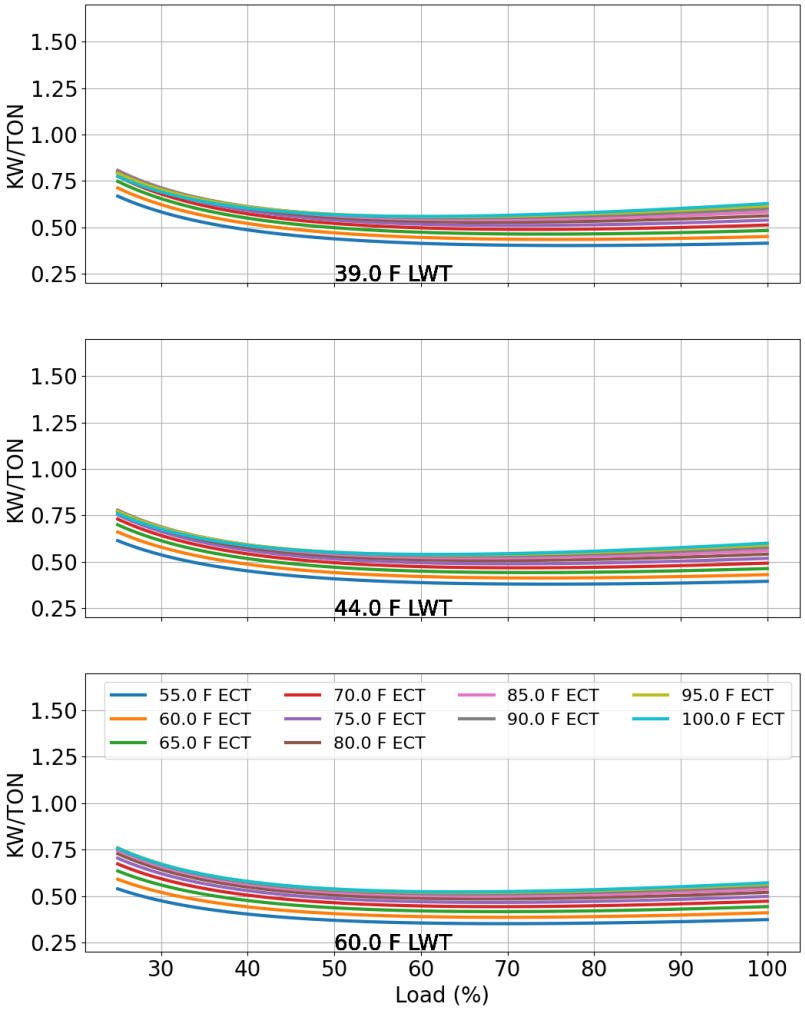

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

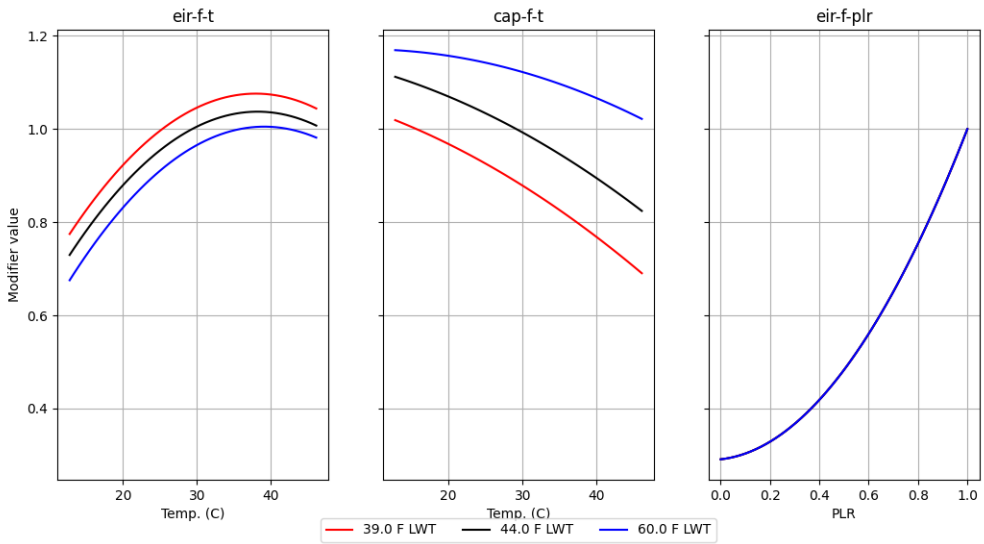
Curve: J


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

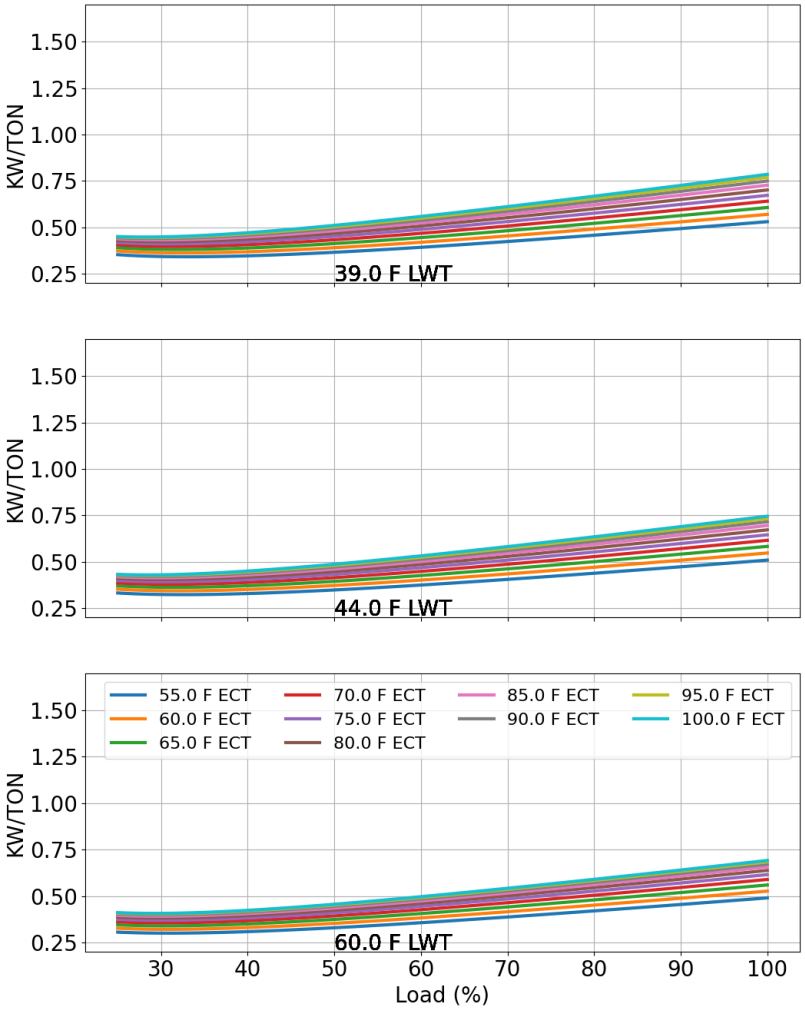

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

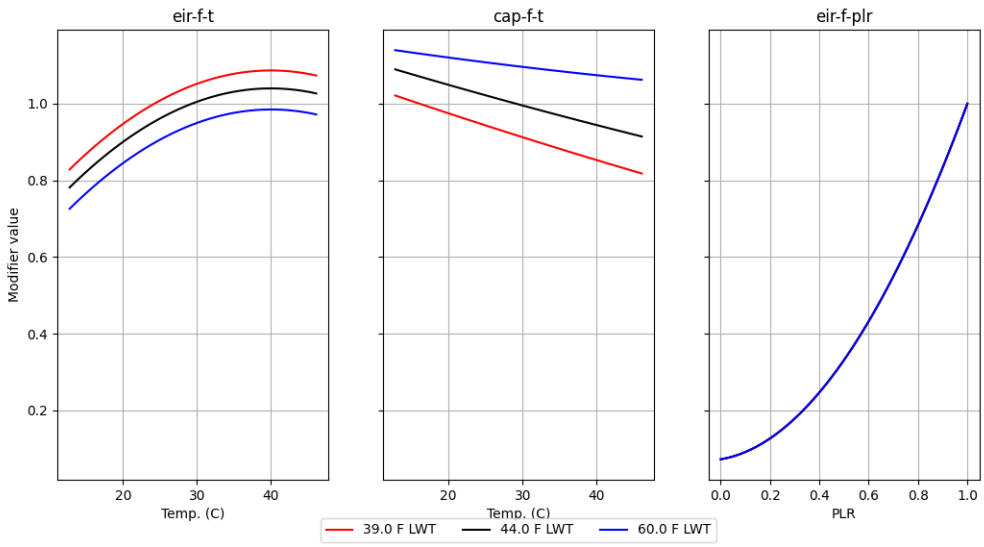
Curve: J


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

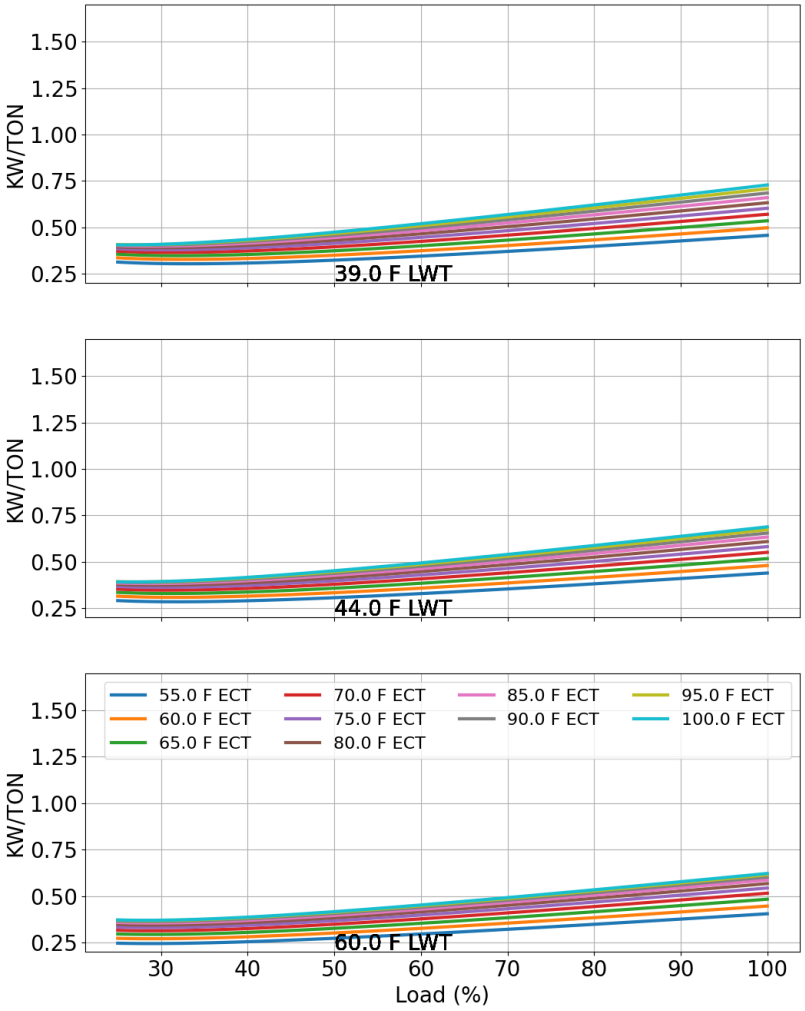

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

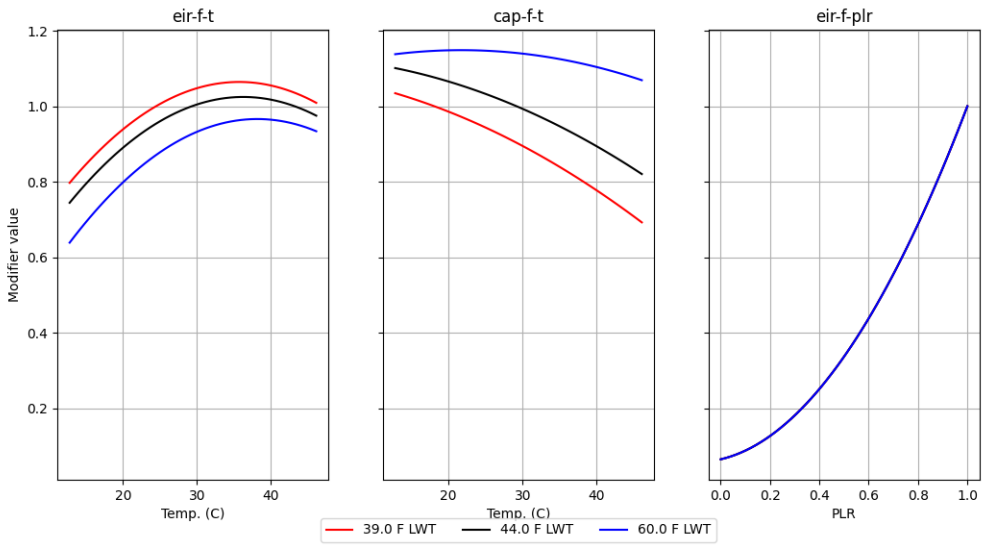
Curve: R


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

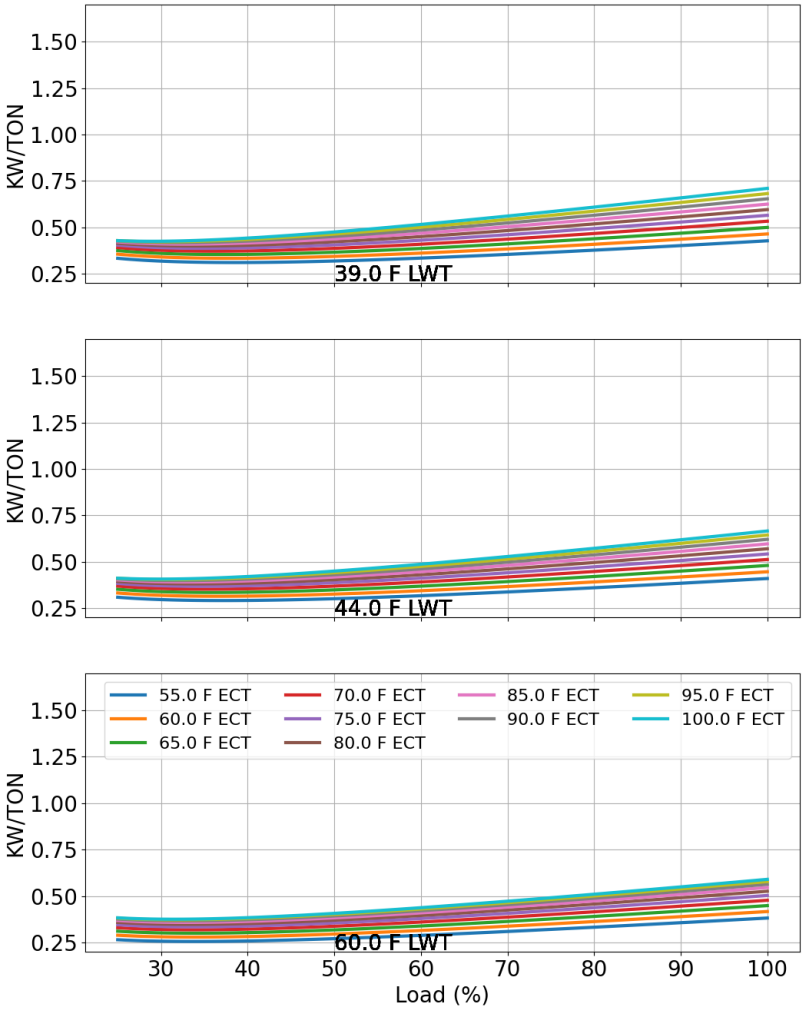

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

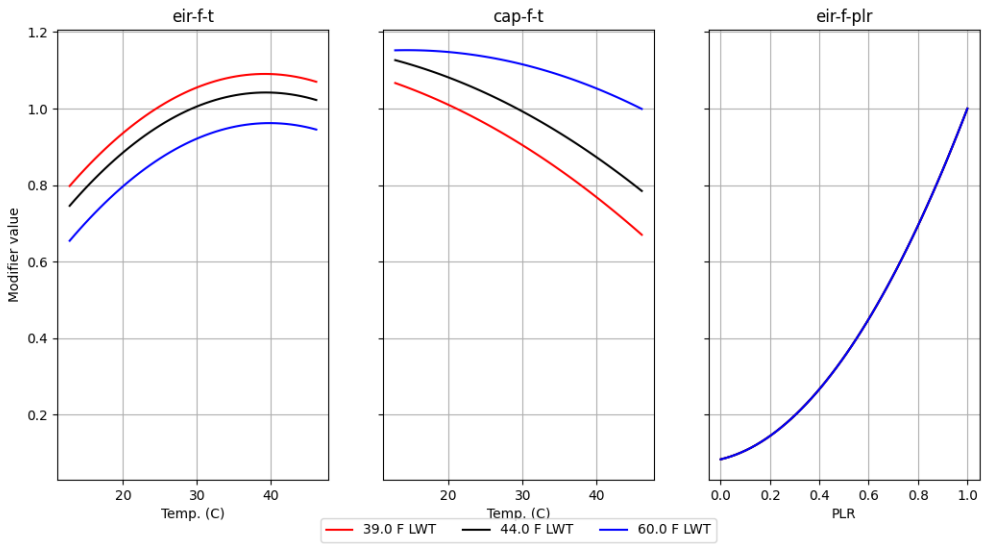
Curve: S


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

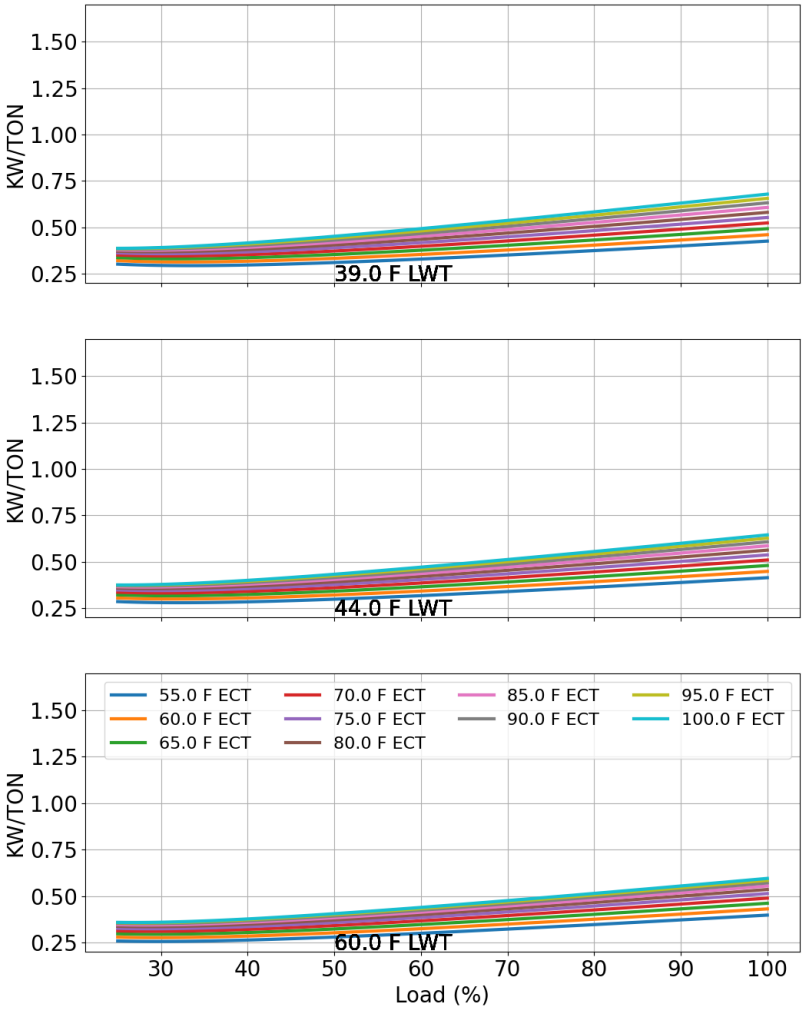

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

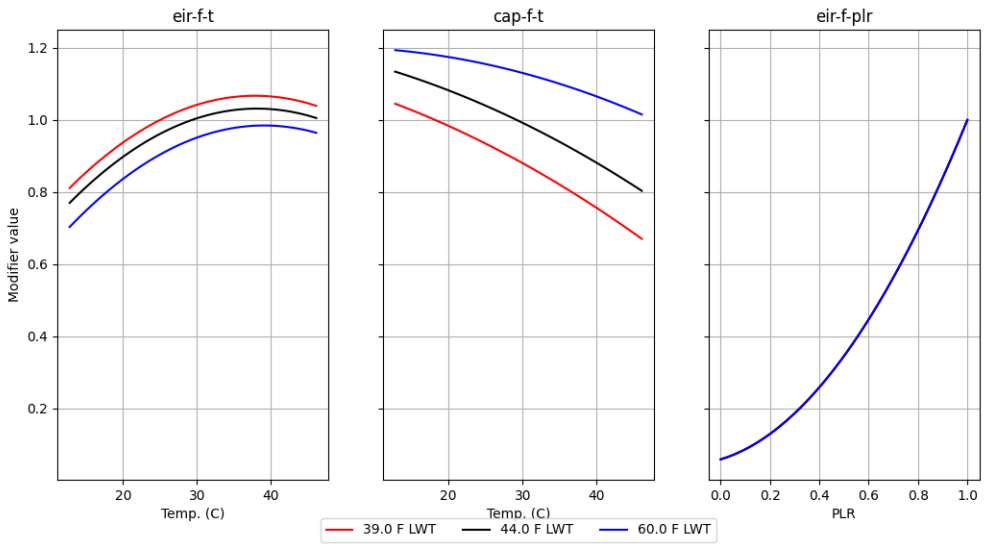
Curve: T


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

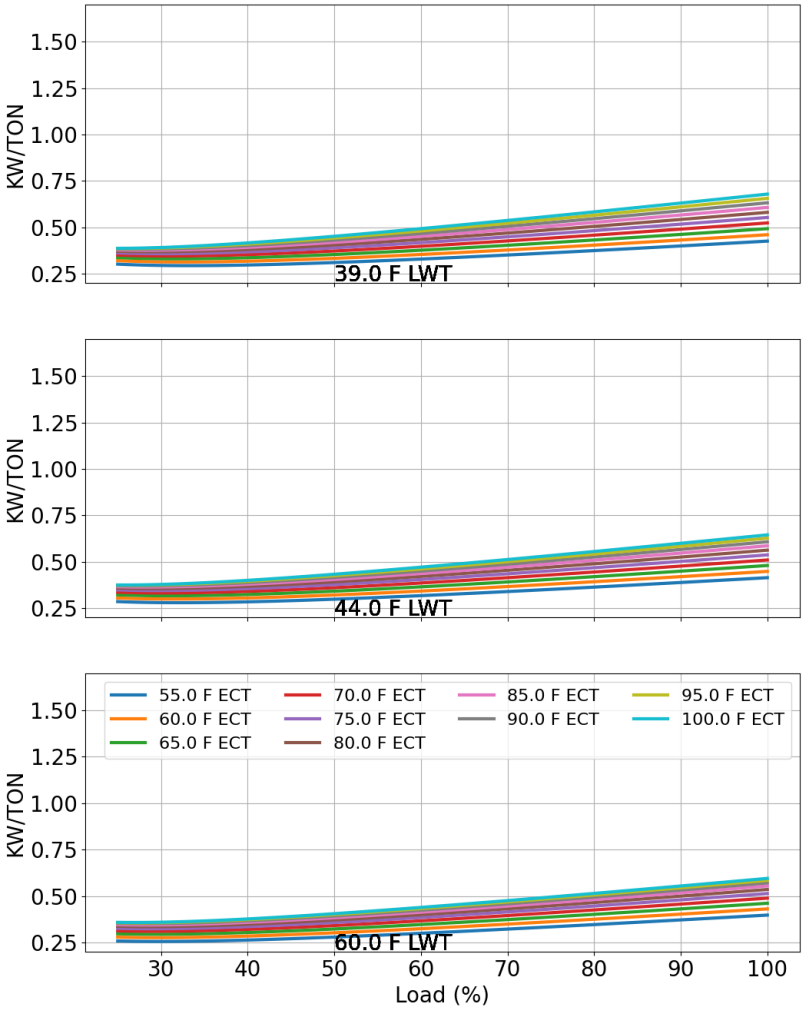

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

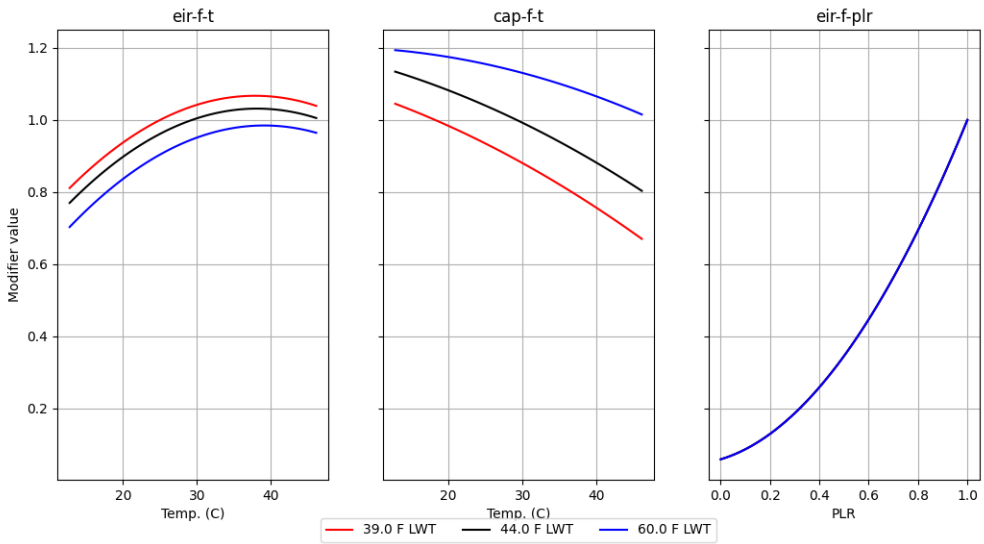
Curve: U


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

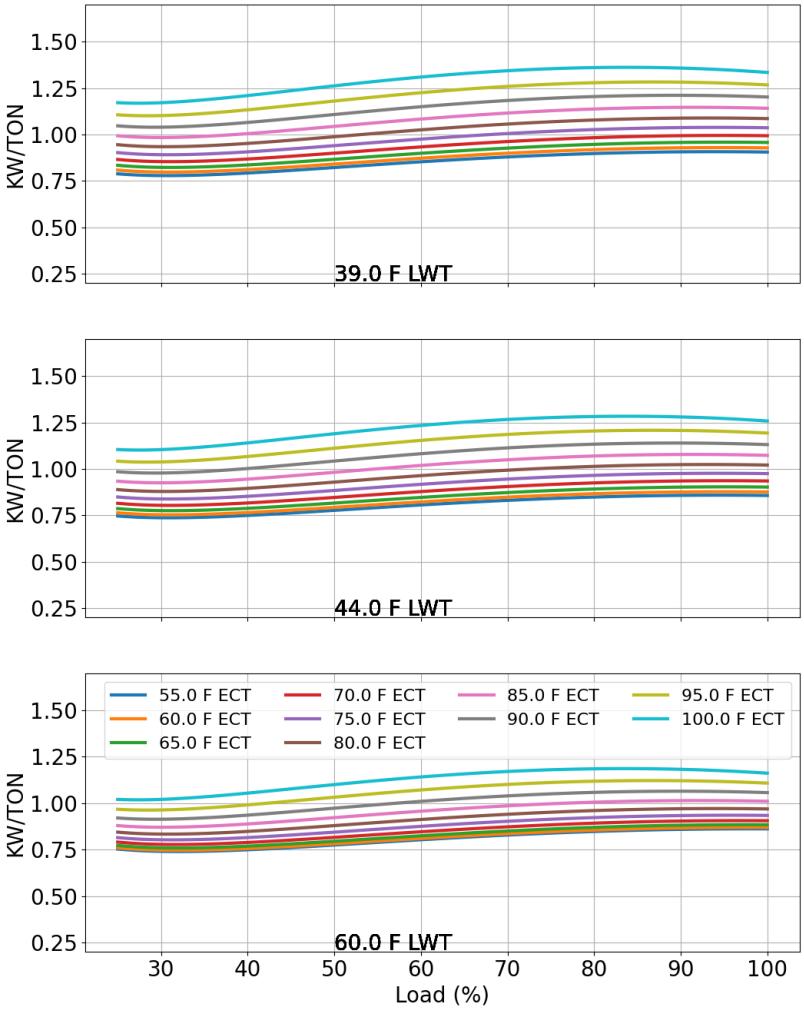

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

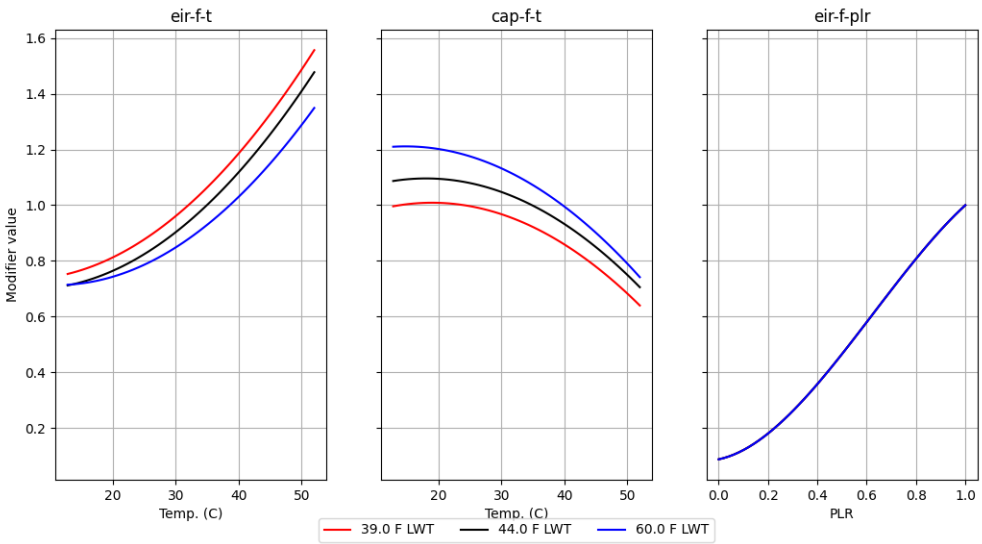
Curve: U


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

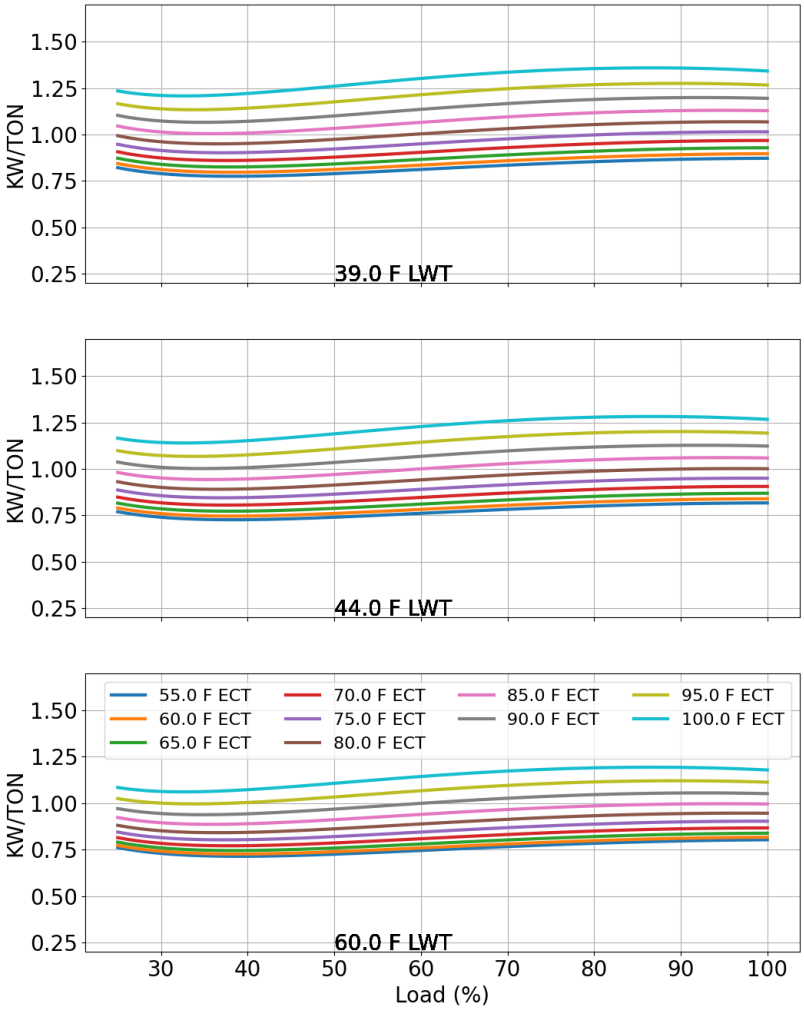

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

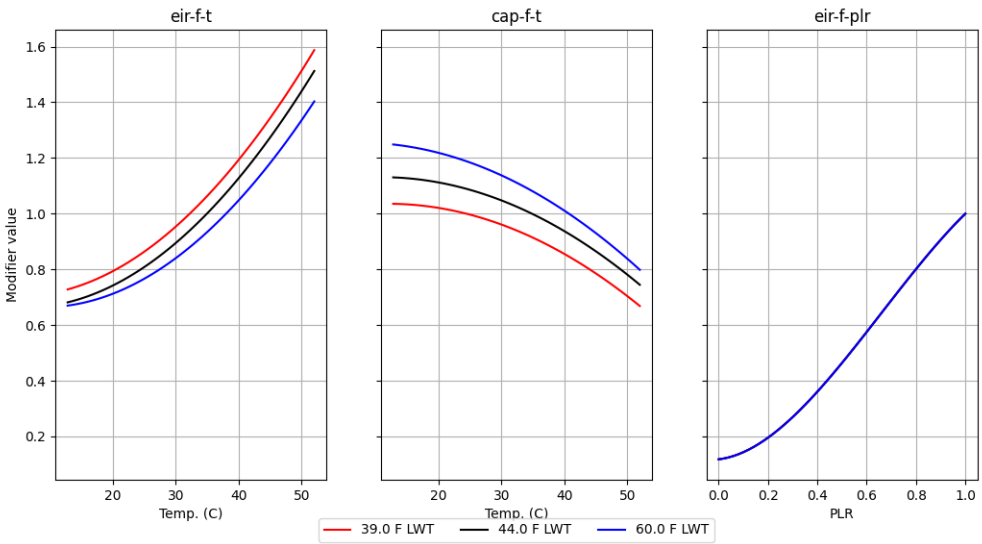
Curve: A


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

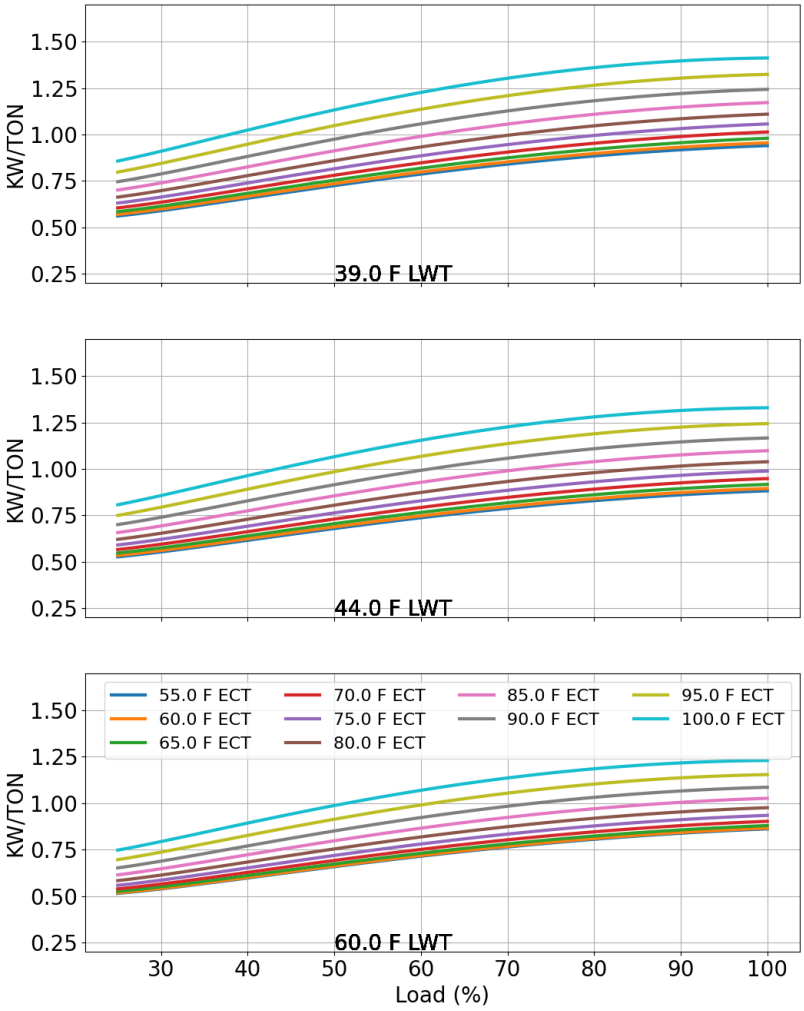

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

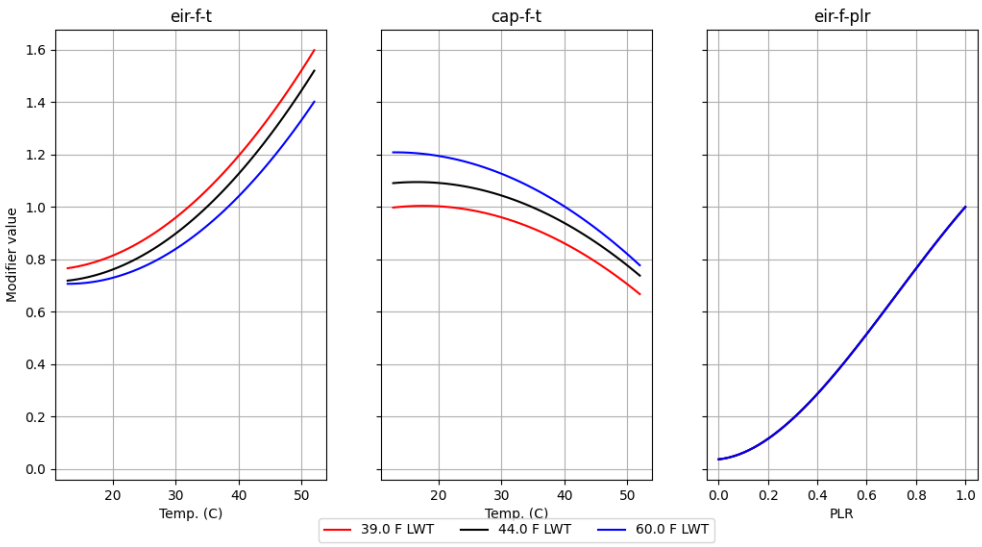
Curve: B


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

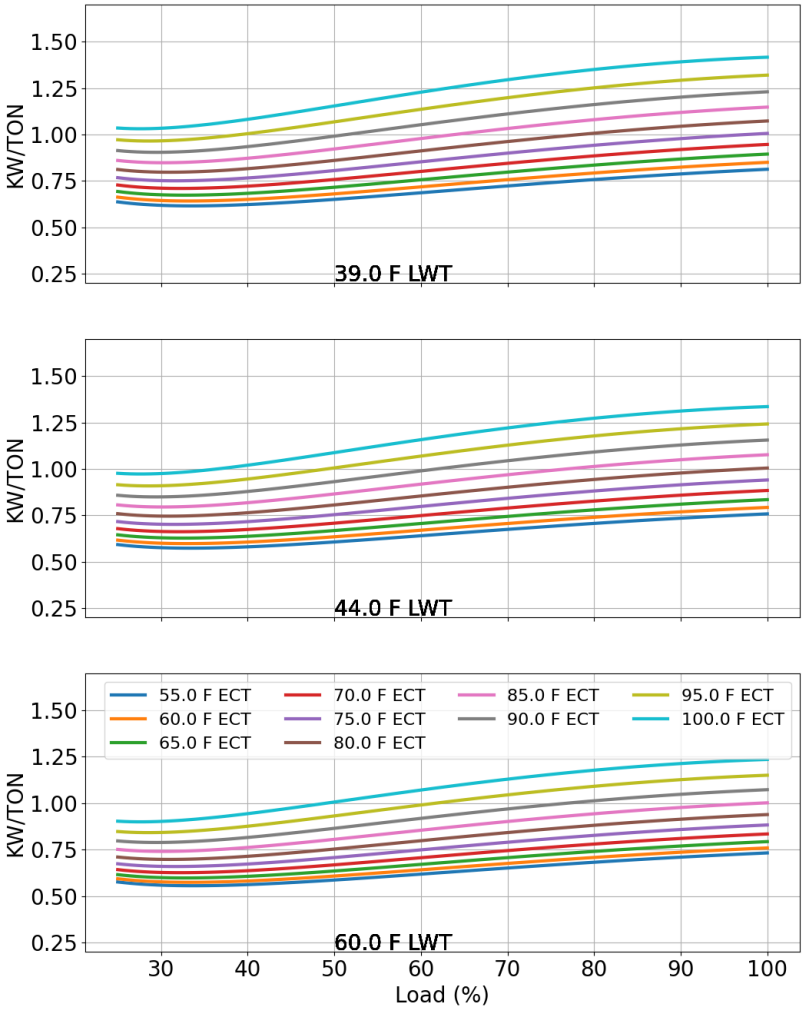

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

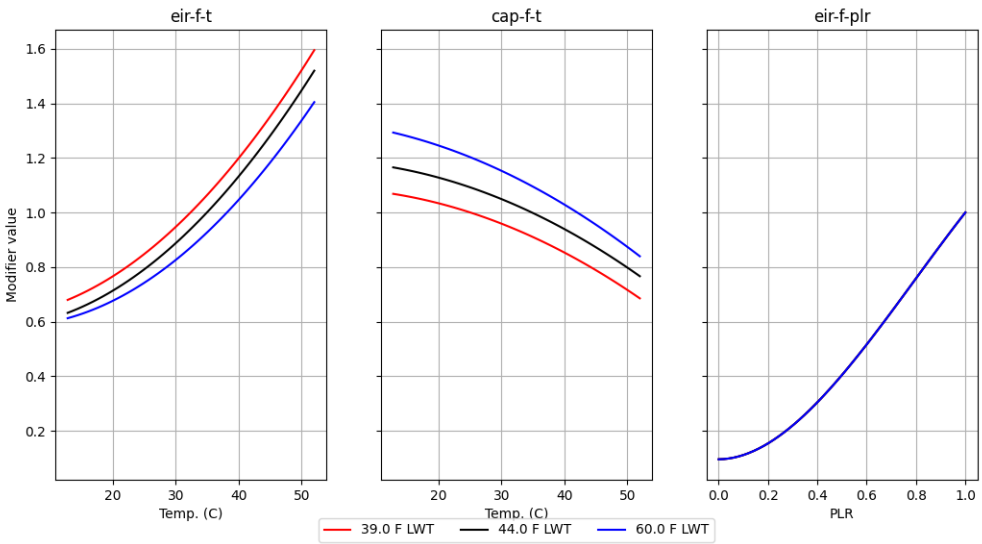
Curve: K


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

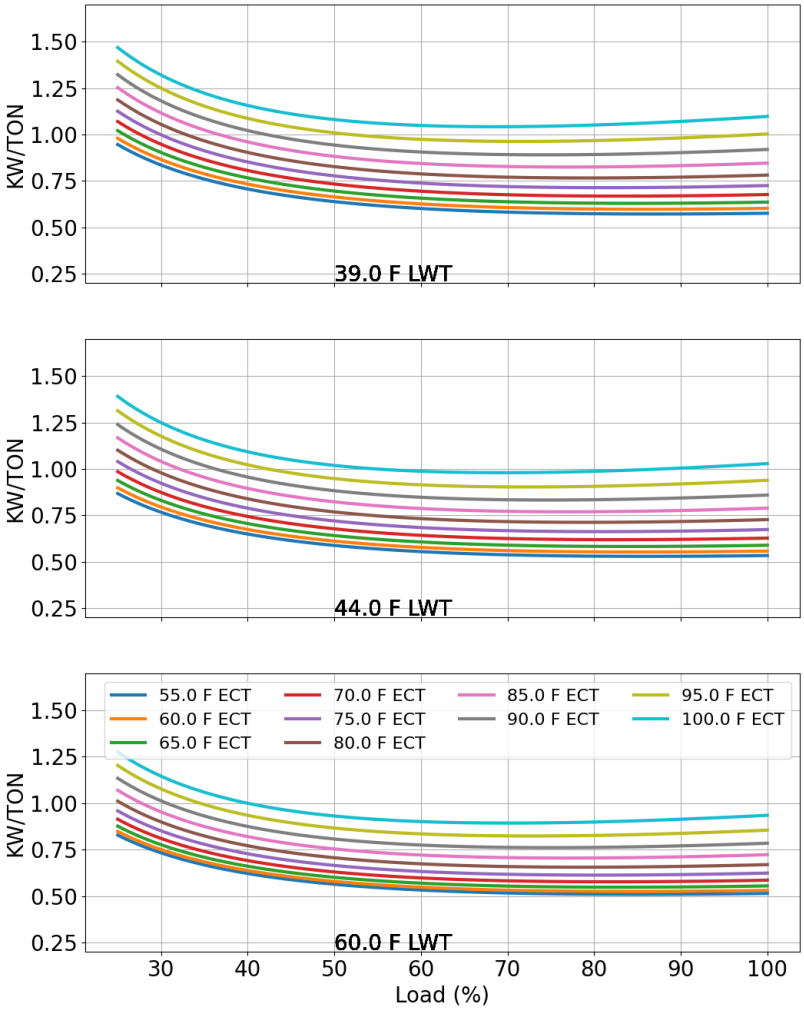

eir-f-t
cap-f-t
eir-f-plr
Modifier value
Temp. (C)
Temp. (C)
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

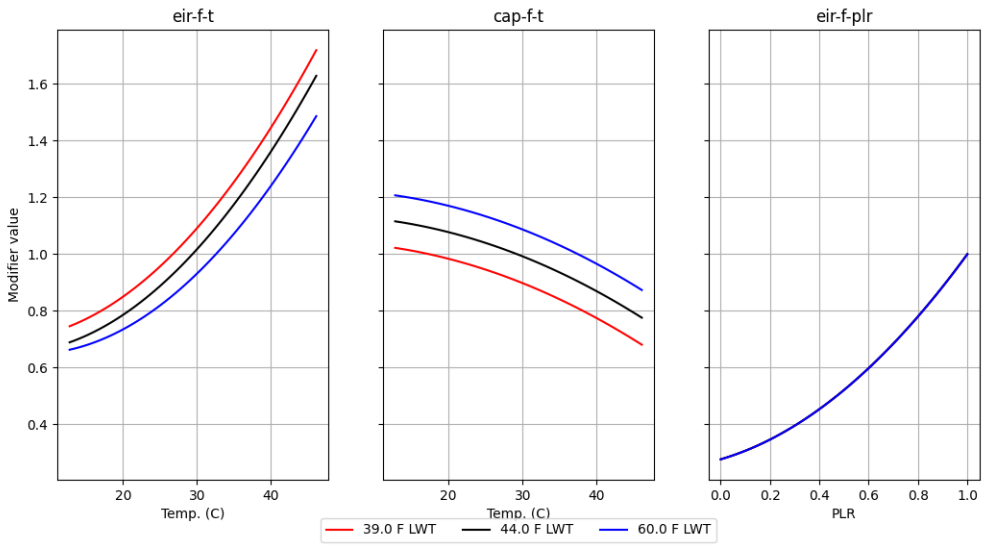
Curve: L


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

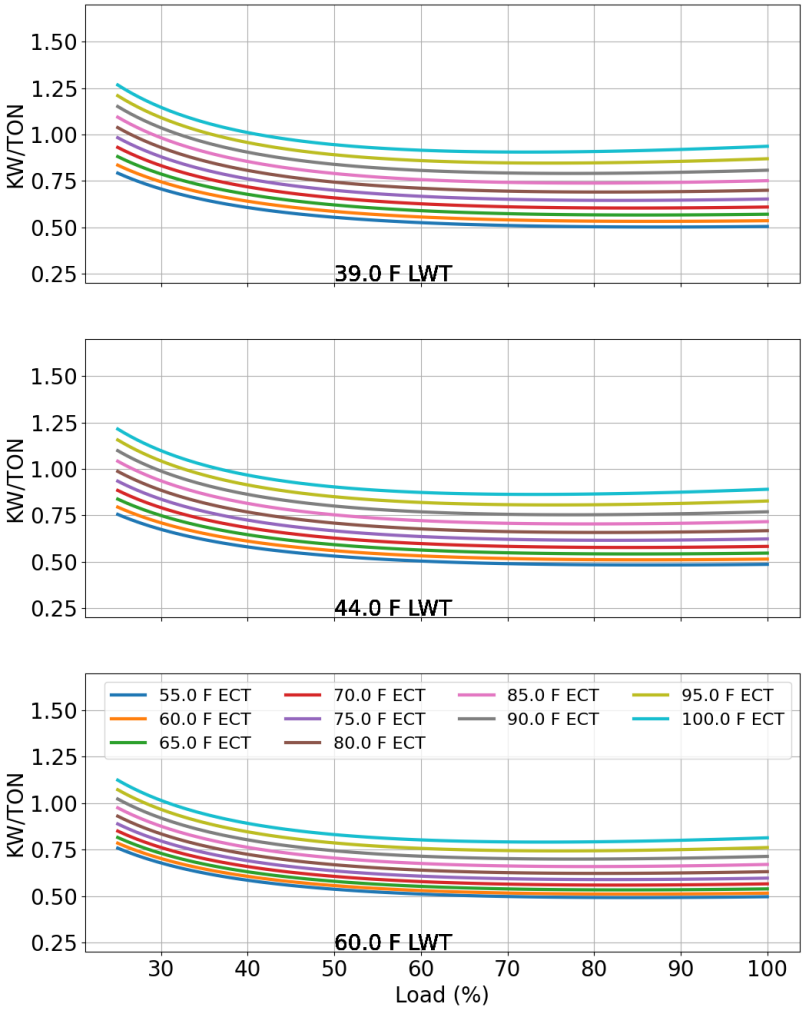

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
50
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

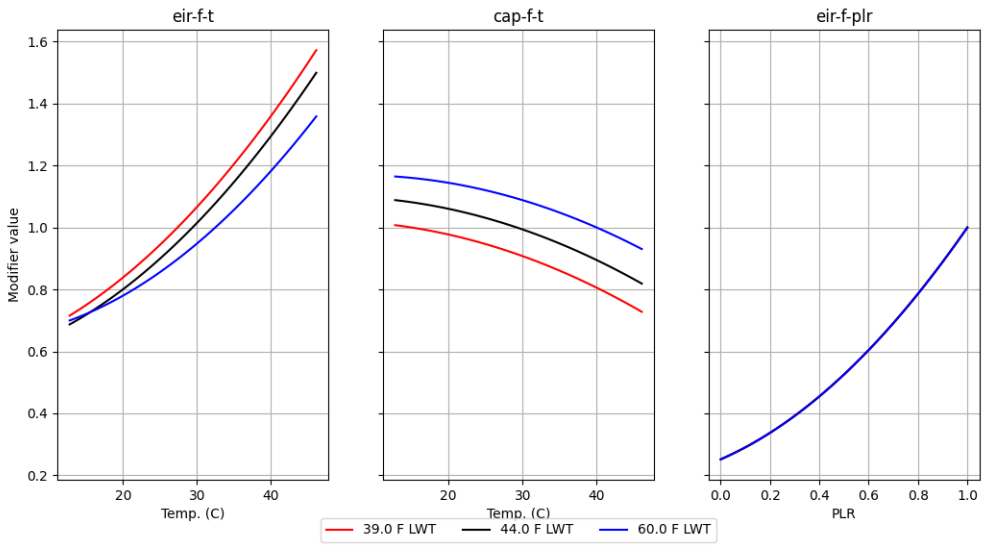
Curve: V


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

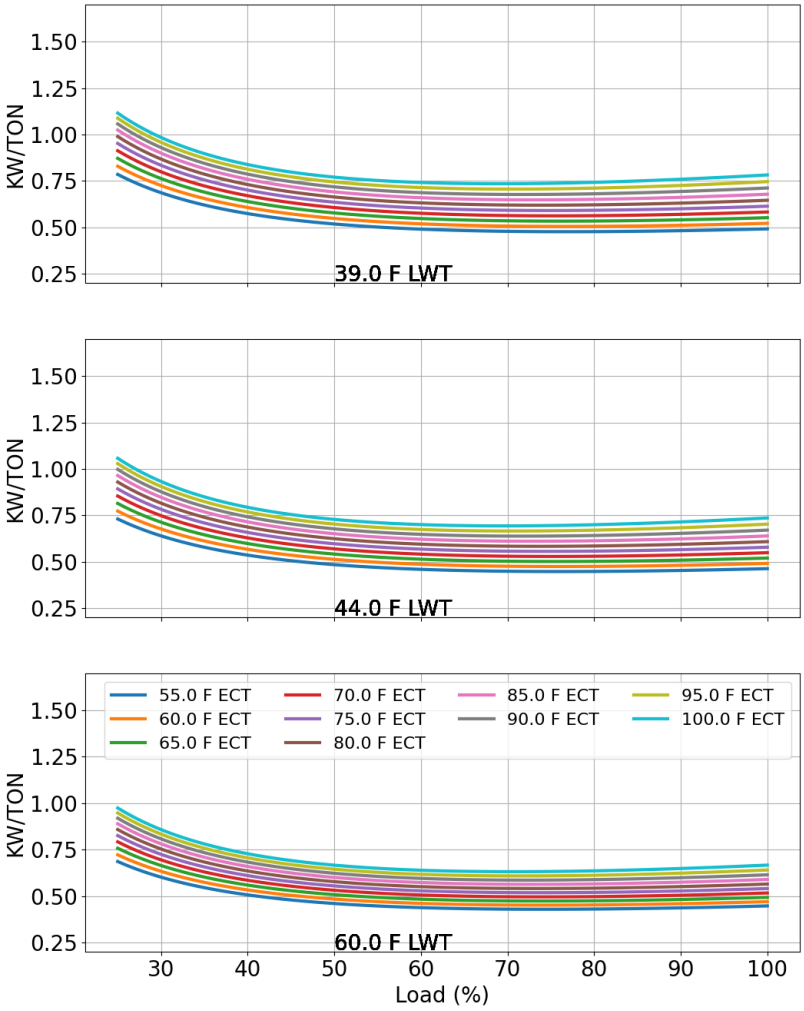

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

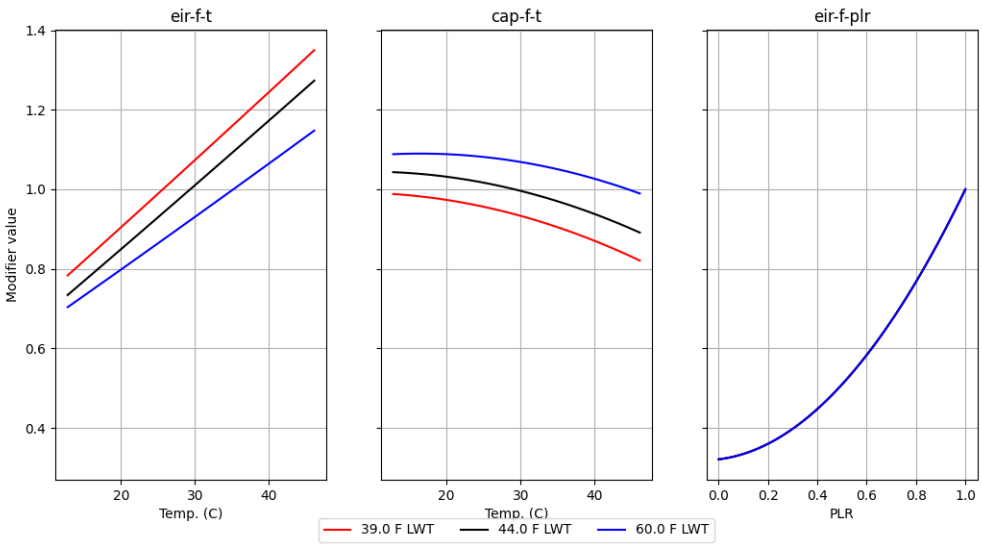
Curve: X


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

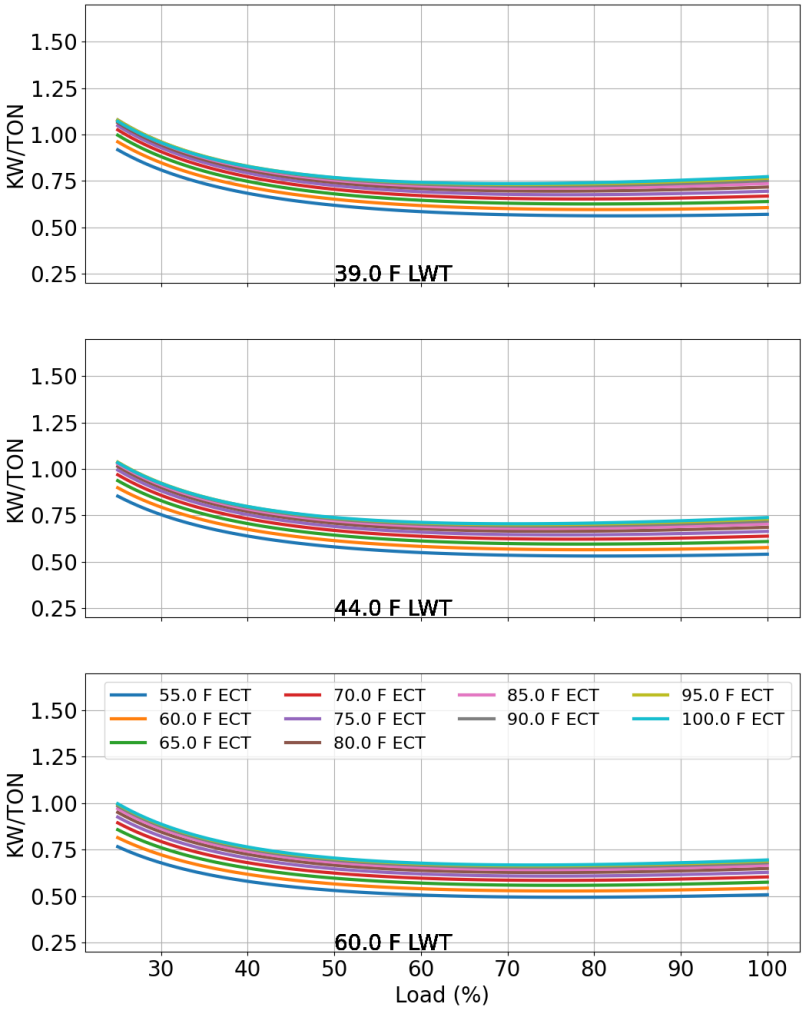

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

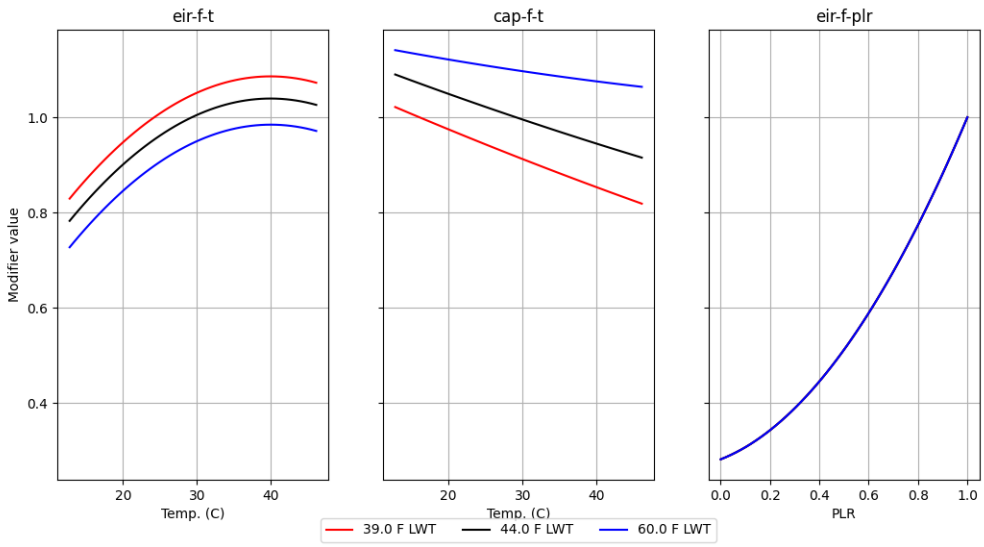
Curve: Y


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

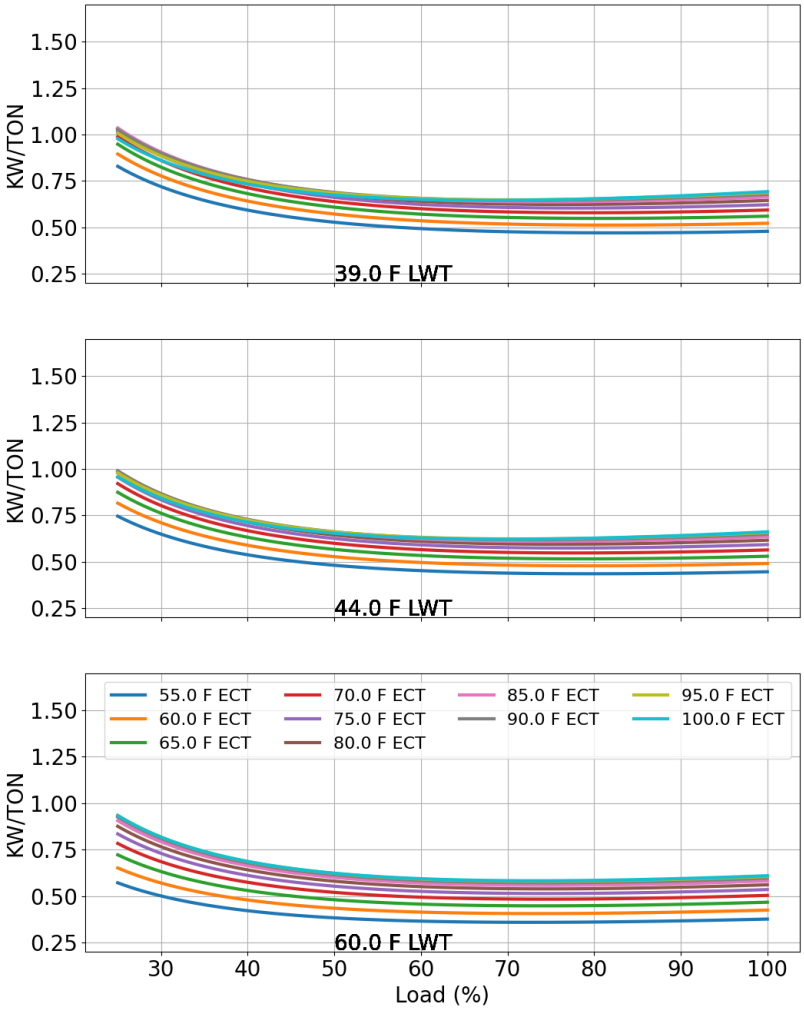

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.4
1.2
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

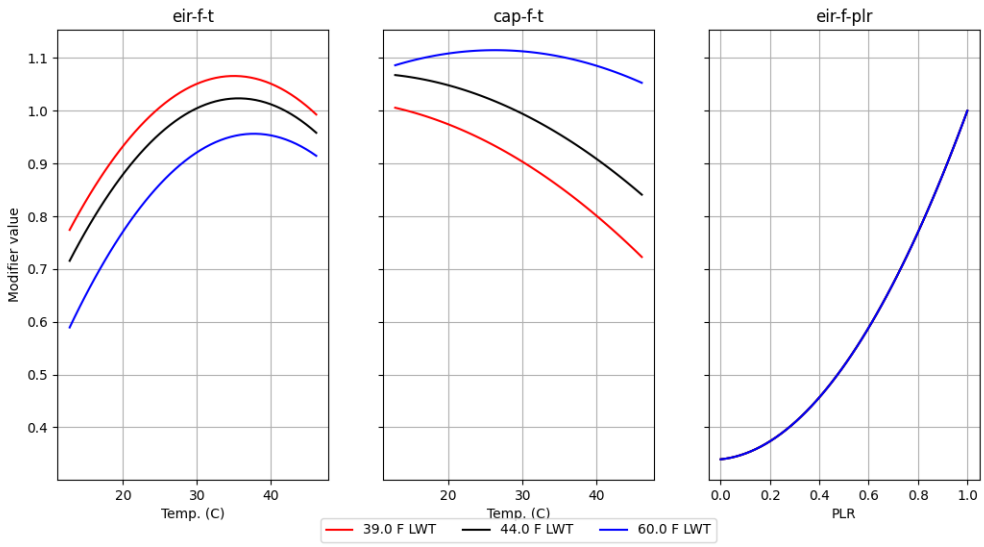
Curve: Z


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)

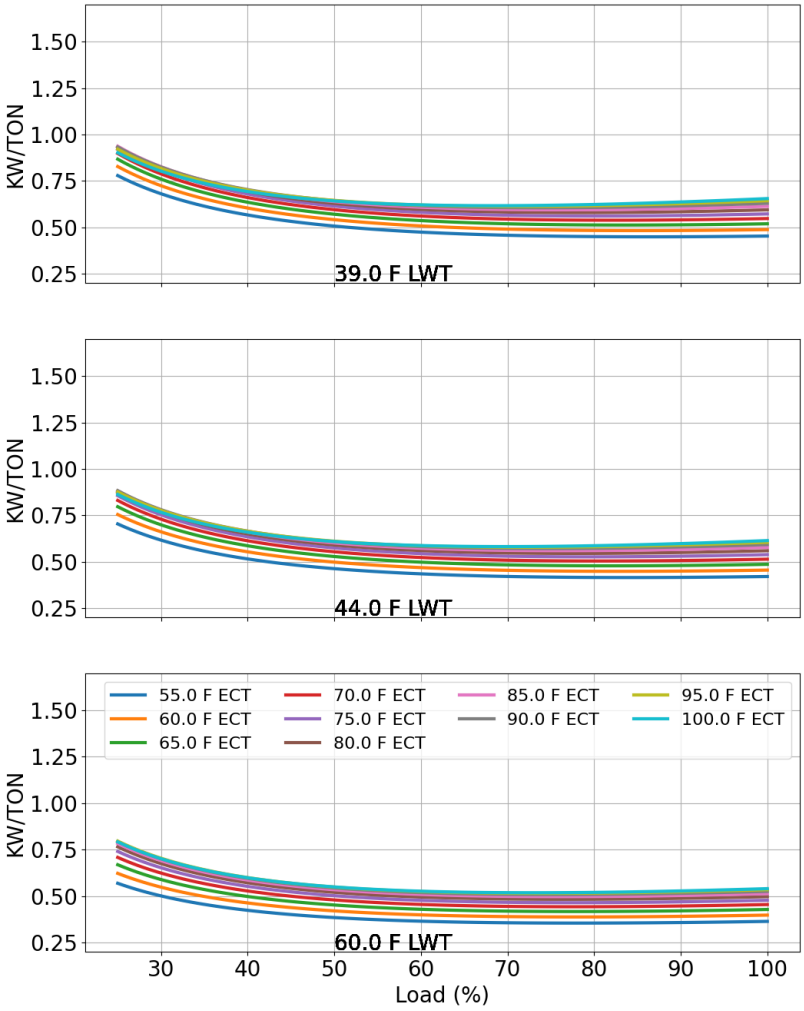

eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

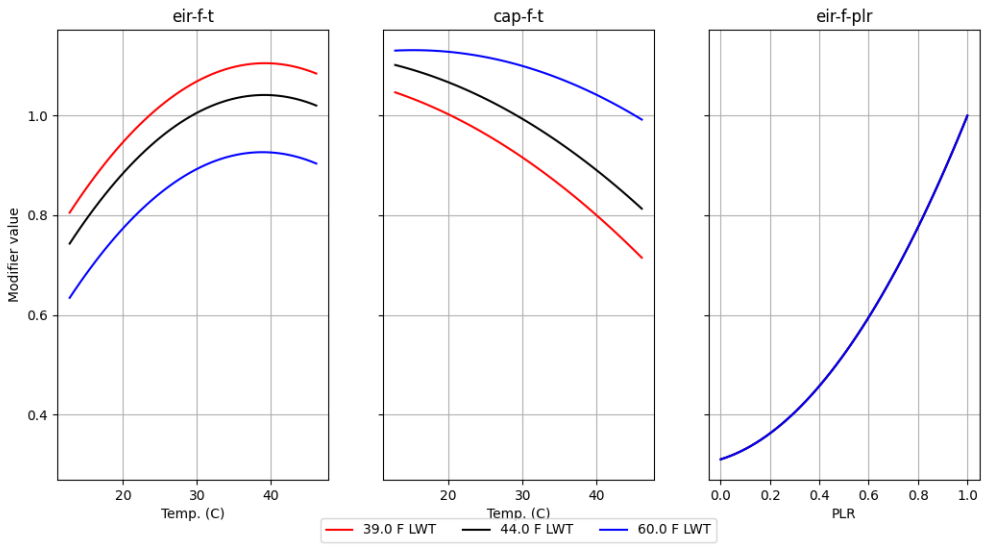
Curve: AA


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT

Curve: AB


KW/TON
1.50
1.25
1.00
0.75
0.50
0.25
39.0 F LWT
44.0 F LWT
60.0 F LWT
55.0 F ECT
60.0 F ECT
65.0 F ECT
70.0 F ECT
75.0 F ECT
80.0 F ECT
85.0 F ECT
90.0 F ECT
95.0 F ECT
100.0 F ECT
30
40
50
60
70
80
90
100
Load (%)


eir-f-t
cap-f-t
eir-f-plr
Modifier value
1.0
0.8
0.6
0.4
20
30
40
Temp. (C)
0.0
0.2
0.4
0.6
0.8
1.0
PLR
39.0 F LWT
44.0 F LWT
60.0 F LWT