

**MODELS: FR-D820(0.1K-008 to 15K-580)**

**TITLE: SIMULATION DATA OF LOAD FACTOR VERSUS INPUT POWER FACTOR, THDI and THDV WHEN USED WITH REACTOR**

The following is simulation data of input power factor and THDi , THDv versus load factor.

Simulation conditions

Inverter:	FR-D820-0.1K-008 to FR-D820-15K-580
Input voltage	200V
Input frequency:	50Hz
Output frequency	50Hz
Power supply capacity:	500kVA (without reactor) 1000kVA (with reactor)
Impedance of power supply	5%
Length of input cable	10m
Reactor:	FR-HEL connected FR-HAL+FR-HEL connected Without reactor

Simulation result

Input power factor

- Refer to the table1.1 and Table1.2

THDi characteristics

- Refer to the Table2.1 and Table2.2

THDv characteristics

- refer to the table3.1 and table3.2

**MODELS: FR-D820(0.1K-008 to 15K-580)**

Table 1.1 Load factor - input power factor characteristics [ND rating]

Model FR-D820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [ND rating]				Load factor [ND rating]				Load factor [ND rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	64%	70%	73%	76%	70%	74%	79%	85%	53%	56%	58%	60%
0.2K-014	71%	77%	85%	89%	74%	85%	90%	92%	53%	57%	60%	61%
0.4K-025	74%	87%	92%	93%	82%	91%	93%	94%	54%	58%	61%	62%
0.75K-042	75%	88%	92%	94%	83%	91%	93%	94%	56%	60%	63%	64%
1.5K-070	76%	88%	92%	94%	84%	91%	93%	94%	59%	63%	66%	68%
2.2K-100-	76%	88%	92%	94%	84%	91%	93%	94%	61%	66%	69%	71%
3.7K-165	76%	88%	92%	94%	84%	91%	93%	94%	61%	66%	68%	70%
5.5K-238	76%	88%	92%	94%	84%	91%	93%	94%	61%	65%	69%	70%
7.5K-318	76%	89%	92%	94%	84%	92%	93%	94%	58%	63%	66%	67%
11K-450	76%	89%	92%	94%	84%	92%	93%	94%	60%	65%	68%	70%
15K-580	76%	89%	92%	94%	84%	92%	93%	94%	60%	65%	68%	70%

Table 1.2 Load factor - input power factor characteristics [SLD rating]

Model FR-D820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [SLD rating]				Load factor [SLD rating]				Load factor [SLD rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	65%	71%	73%	76%	69%	74%	79%	85%	52%	56%	58%	60%
0.2K-014	70%	76%	84%	89%	74%	84%	89%	92%	53%	57%	59%	62%
0.4K-025	71%	77%	85%	90%	74%	86%	90%	92%	53%	58%	61%	62%
0.75K-042	70%	76%	84%	88%	74%	84%	89%	91%	56%	60%	63%	64%
1.5K-070	73%	82%	89%	92%	77%	88%	92%	93%	59%	63%	66%	68%
2.2K-100-	72%	79%	87%	90%	75%	87%	91%	92%	58%	62%	65%	67%
3.7K-165	72%	82%	88%	91%	76%	88%	91%	93%	58%	63%	66%	67%
5.5K-238	73%	84%	90%	92%	78%	89%	92%	93%	57%	61%	64%	66%
7.5K-318	73%	82%	89%	92%	77%	88%	92%	93%	58%	63%	66%	67%
11K-450	73%	84%	90%	92%	78%	89%	92%	93%	59%	63%	66%	68%
15K-580	74%	86%	91%	93%	80%	90%	93%	93%	59%	63%	66%	68%

**MODELS: FR-D820(0.1K-008 to 15K-580)**

Table 2.1 Load factor - THDi characteristics [ND rating]

Model FR-D820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [ND rating]				Load factor [ND rating]				Load factor [ND rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	117%	97.8%	88.8%	80.5%	99.3%	84.6%	71.9%	57.8%	160%	146%	141%	133%
0.2K-014	96.1%	79.8%	58.2%	48.0%	85.2%	57.0%	44.5%	38.6%	160%	143%	133%	127%
0.4K-025	85.4%	54.2%	42.5%	37.3%	65.0%	42.1%	35.6%	32.1%	155%	139%	130%	124%
0.75K-042	83.0%	52.1%	41.2%	36.5%	62.6%	41.0%	34.9%	31.6%	148%	133%	124%	119%
1.5K-070	81.2%	51.0%	40.6%	36.0%	61.4%	40.5%	34.4%	31.5%	137%	120%	111%	105%
2.2K-100-	80.8%	50.3%	40.1%	35.5%	60.5%	40.4%	34.2%	31.3%	129%	113%	104%	98.3%
3.7K-165	80.6%	50.3%	40.2%	35.5%	60.6%	40.2%	34.2%	31.4%	130%	114%	105%	99.5%
5.5K-238	79.9%	49.7%	39.8%	35.3%	60.1%	39.9%	34.1%	31.2%	129%	113%	104%	98.4%
7.5K-318	80.1%	49.7%	40.1%	35.3%	59.7%	39.8%	33.9%	31.3%	139%	122%	113%	108%
11K-450	80.3%	50.0%	40.4%	35.6%	60.3%	40.2%	34.3%	31.3%	131%	115%	106%	100%
15K-580	80.7%	49.8%	40.2%	35.5%	59.8%	39.9%	34.1%	31.2%	131%	115%	106%	100%

Table 2.2 Load factor - THDi characteristics [SLD rating]

Model FR-D820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [LD rating]				Load factor [LD rating]				Load factor [LD rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	111%	95.8%	87.8%	80.9%	99.9%	85.6%	71.5%	58.1%	162%	148%	139%	133%
0.2K-014	97.6%	81.1%	61.5%	49.8%	86.4%	60.0%	46.4%	39.8%	161%	144%	134%	127%
0.4K-025	95.8%	78.1%	57.9%	47.7%	84.7%	56.3%	44.4%	38.4%	158%	139%	130%	124%
0.75K-042	98.0%	81.1%	62.3%	50.8%	86.6%	61.0%	47.2%	40.4%	148%	133%	123%	118%
1.5K-070	89.7%	65.2%	49.2%	41.8%	78.4%	49.3%	39.5%	35.4%	137%	120%	111%	105%
2.2K-100-	93.1%	73.0%	53.9%	45.2%	81.9%	53.5%	42.3%	37.2%	140%	124%	115%	110%
3.7K-165	90.8%	67.2%	50.4%	42.8%	79.5%	50.4%	40.2%	35.8%	139%	123%	114%	108%
5.5K-238	88.9%	61.8%	47.1%	40.4%	75.4%	47.0%	38.2%	34.3%	144%	127%	119%	113%
7.5K-318	90.5%	65.9%	49.6%	42.2%	78.6%	49.5%	39.6%	35.4%	138%	123%	114%	108%
11K-450	89.2%	62.2%	47.3%	40.5%	75.6%	47.2%	38.2%	34.0%	137%	122%	112%	107%
15K-580	86.5%	57.7%	44.8%	38.5%	70.5%	44.8%	36.9%	33.3%	137%	121%	113%	106%

**MODELS: FR-D820(0.1K-008 to 15K-580)**

Table 3.1 Load factor - THDv characteristics [ND rating]

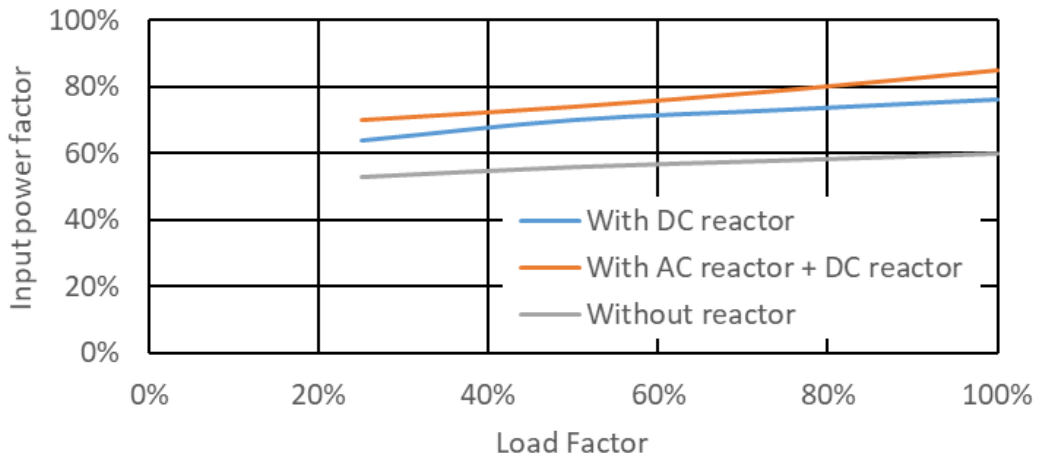
Model FR-E820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [ND rating]				Load factor [ND rating]				Load factor [ND rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	0.05%	0.07%	0.09%	0.24%	0.04%	0.06%	0.08%	0.08%	0.08%	0.15%	0.18%	0.24%
0.2K-014	0.07%	0.24%	0.24%	0.24%	0.06%	0.08%	0.11%	0.12%	0.18%	0.26%	0.4%	0.44%
0.4K-025	0.09%	0.24%	0.24%	0.24%	0.08%	0.11%	0.13%	0.16%	0.27%	0.46%	0.61%	0.69%
0.75K-042	0.28%	0.29%	0.29%	0.61%	0.14%	0.19%	0.27%	0.31%	0.47%	0.79%	0.93%	1.17%
1.5K-070	0.41%	0.43%	0.66%	1.12%	0.27%	0.37%	0.52%	0.59%	0.85%	1.32%	1.66%	2.03%
2.2K-100-	0.55%	0.73%	1.18%	1.2%	0.37%	0.52%	0.72%	0.81%	0.98%	1.53%	2.13%	2.56%
3.7K-165	0.54%	0.71%	1.17%	1.18%	0.36%	0.5%	0.69%	0.78%	1%	1.57%	2.21%	2.45%
5.5K-238	0.52%	0.7%	1.16%	1.17%	0.35%	0.49%	0.68%	0.76%	0.93%	1.45%	2.02%	2.42%
7.5K-318	0.5%	0.69%	1.16%	1.16%	0.33%	0.46%	0.64%	0.72%	0.73%	1.18%	1.52%	1.86%
11K-450	0.46%	0.67%	0.68%	1.14%	0.30%	0.42%	0.58%	0.66%	0.94%	1.48%	2.06%	2.47%
15K-580	0.44%	0.66%	0.66%	1.12%	0.28%	0.40%	0.55%	0.62%	0.95%	1.49%	2.08%	2.49%

Table 3.2 Load factor - THDv characteristics [SLD rating]

Model FR-D820- [ ]	FR-HEL connected				FR-HAL + FR-HEL connected				Without reactor			
	Load factor [LD rating]				Load factor [LD rating]				Load factor [LD rating]			
	25%	50%	75%	100%	25%	50%	75%	100%	25%	50%	75%	100%
0.1K-008	0.05%	0.07%	0.09%	0.24%	0.04%	0.06%	0.08%	0.08%	0.09%	0.16%	0.18%	0.24%
0.2K-014	0.07%	0.24%	0.24%	0.24%	0.06%	0.08%	0.11%	0.12%	0.17%	0.24%	0.37%	0.41%
0.4K-025	0.12%	0.29%	0.29%	0.29%	0.11%	0.14%	0.19%	0.19%	0.28%	0.48%	0.64%	0.72%
0.75K-042	0.23%	0.42%	0.44%	0.44%	0.20%	0.27%	0.37%	0.38%	0.48%	0.82%	0.96%	1.21%
1.5K-070	0.37%	0.56%	0.73%	1.18%	0.36%	0.40%	0.52%	0.72%	0.85%	1.32%	1.66%	2.03%
2.2K-100-	0.36%	0.55%	0.72%	0.72%	0.28%	0.38%	0.50%	0.56%	0.73%	1.06%	1.53%	1.73%
3.7K-165	0.35%	0.54%	0.71%	0.71%	0.34%	0.38%	0.49%	0.68%	0.77%	1.26%	1.65%	1.87%
5.5K-238	0.44%	0.51%	0.69%	1.16%	0.32%	0.45%	0.52%	0.65%	0.55%	0.92%	1.20%	1.50%
7.5K-318	0.30%	0.48%	0.68%	0.13%	0.29%	0.32%	0.42%	0.59%	0.72%	1.17%	1.51%	1.86%
11K-450	0.39%	0.46%	0.66%	0.67%	0.28%	0.39%	0.45%	0.75%	0.87%	1.21%	1.57%	2.12%
15K-580	0.48%	0.70%	0.71%	1.16%	0.34%	0.48%	0.54%	0.68%	0.88%	1.38%	1.58%	2.14%

**MODELS: FR-D820(0.1K-008 to 15K-580)**

1. Simulation result of FR-D820-0.1K-008 [ND rating]



Figur

e1.1 Load factor - input power factor characteristics

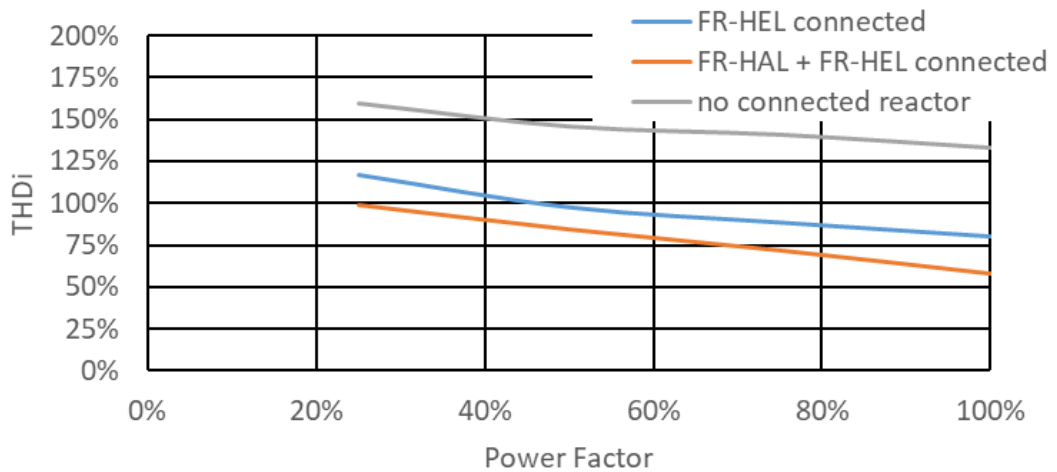


Figure1.2 Load factor - THDi characteristics

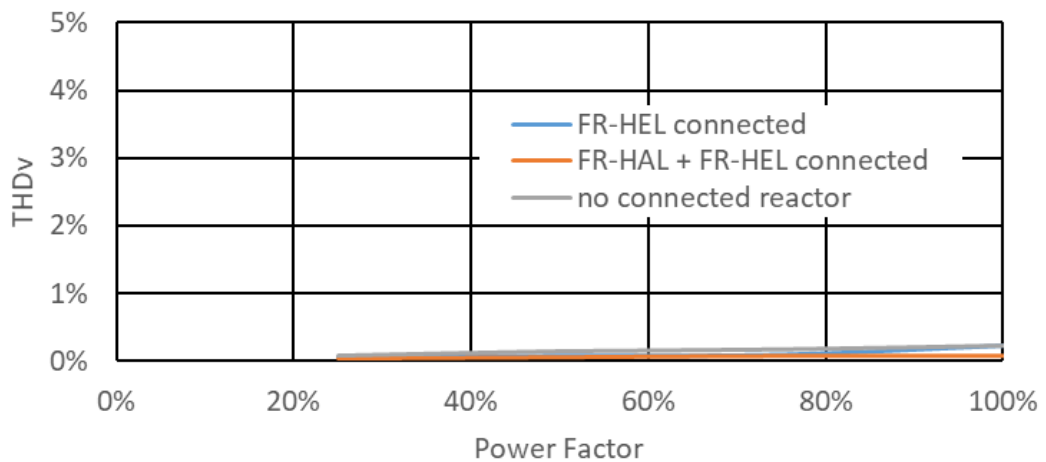


Figure1.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

2. Simulation result of FR-D820-0.2K-014 [ND rating]

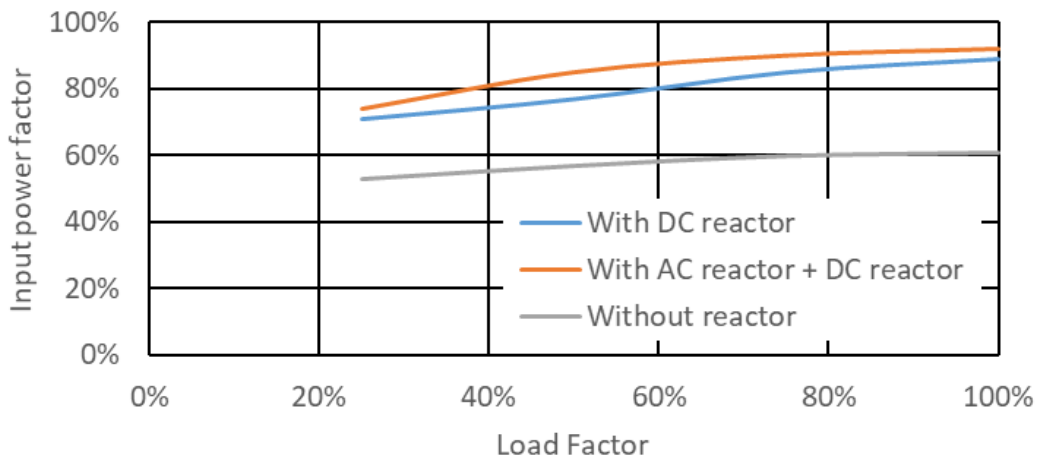


Figure2.1 Load factor - input power factor characteristics

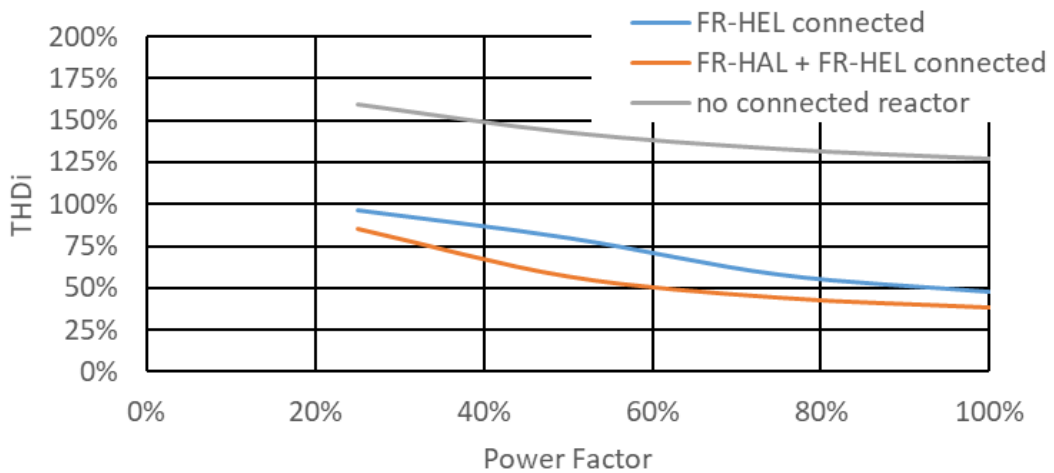


Figure2.2 Load factor - THDi characteristics

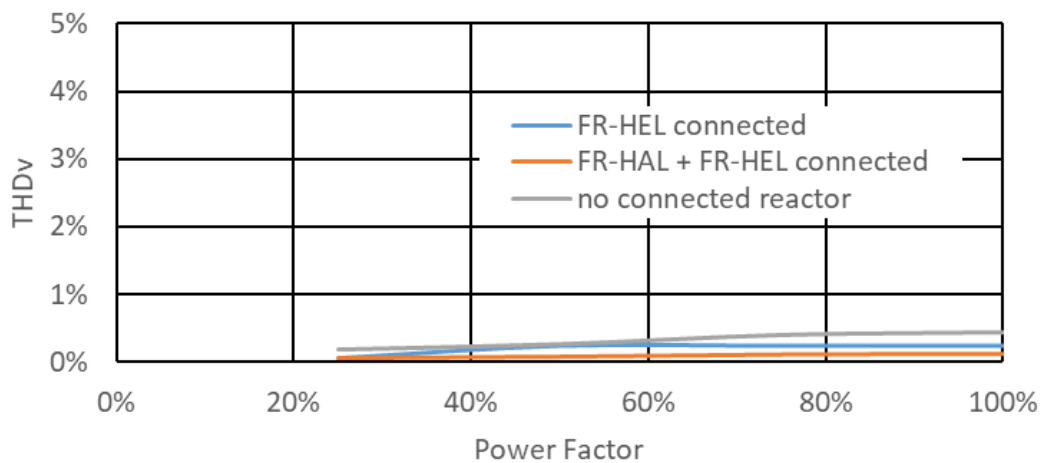


Figure2.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

3. Simulation result of FR-D820-0.4K-025 [ND rating]

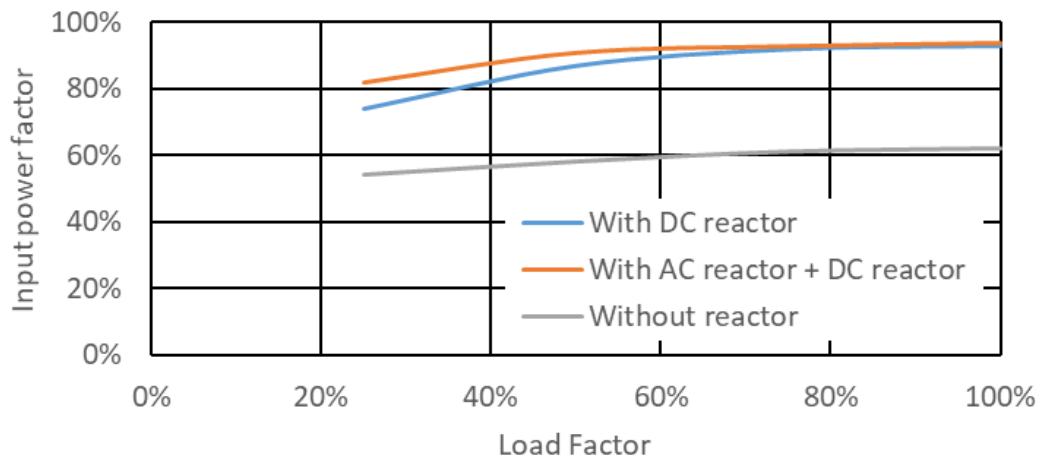


Figure3.1 Load factor - input power factor characteristics

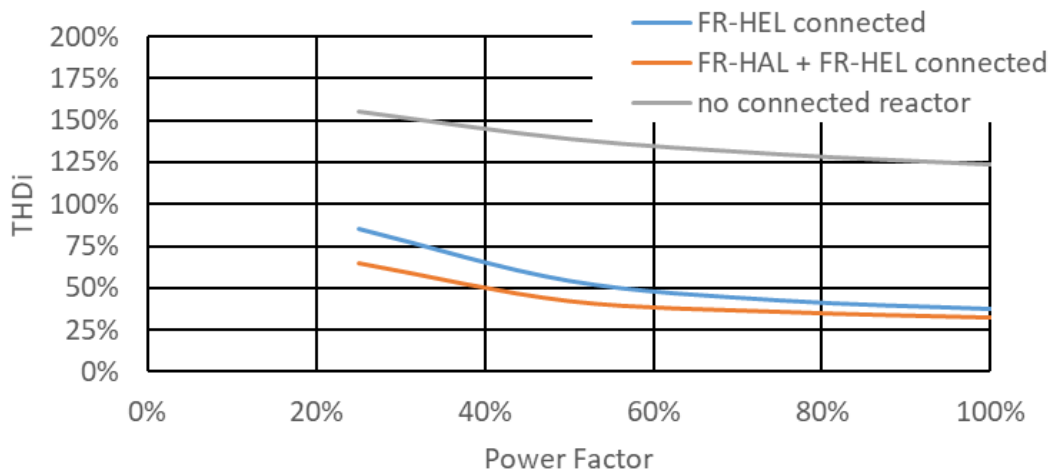


Figure3.2 Load factor - THDi characteristics

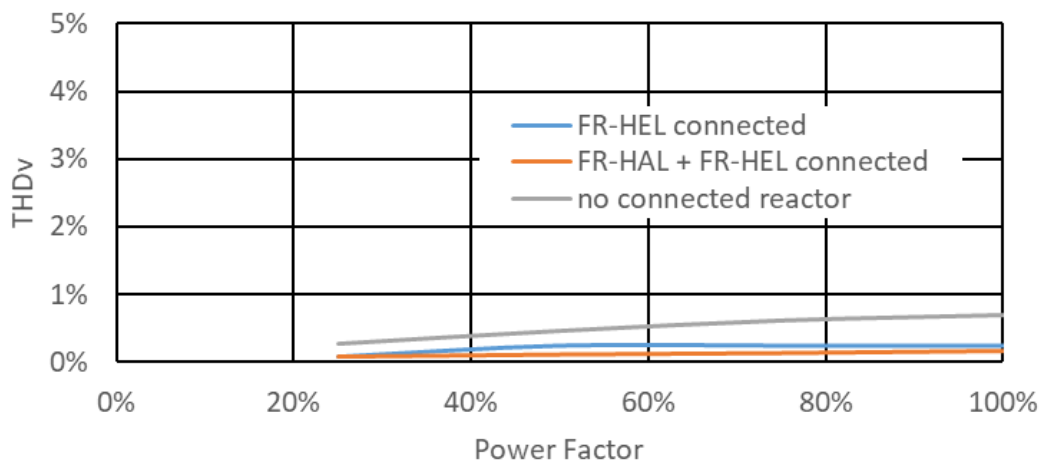


Figure3.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

4. Simulation result of FR-D820-0.75K-042 [ND rating]

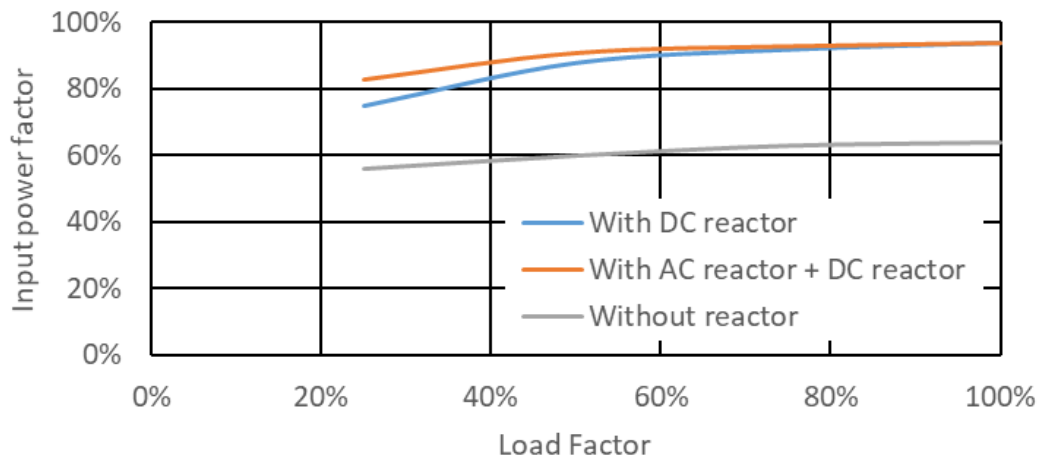


Figure4.1 Load factor - input power factor characteristics

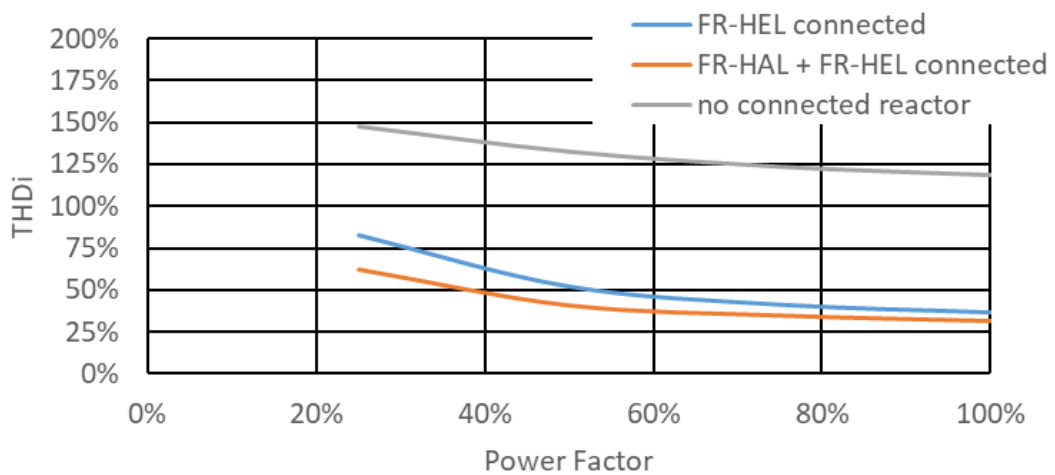


Figure4.2 Load factor - THDi characteristics

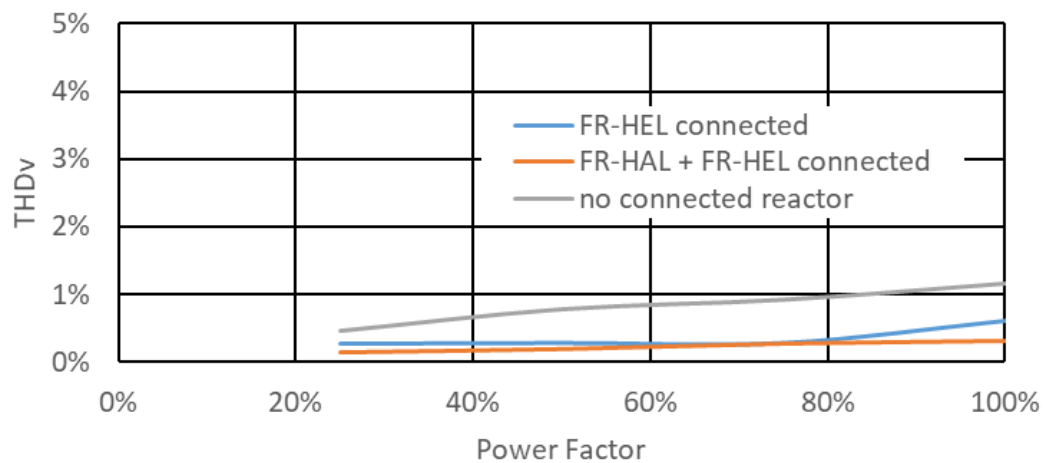


Figure4.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

5. Simulation result of FR-D820-1.5K-070 [ND rating]

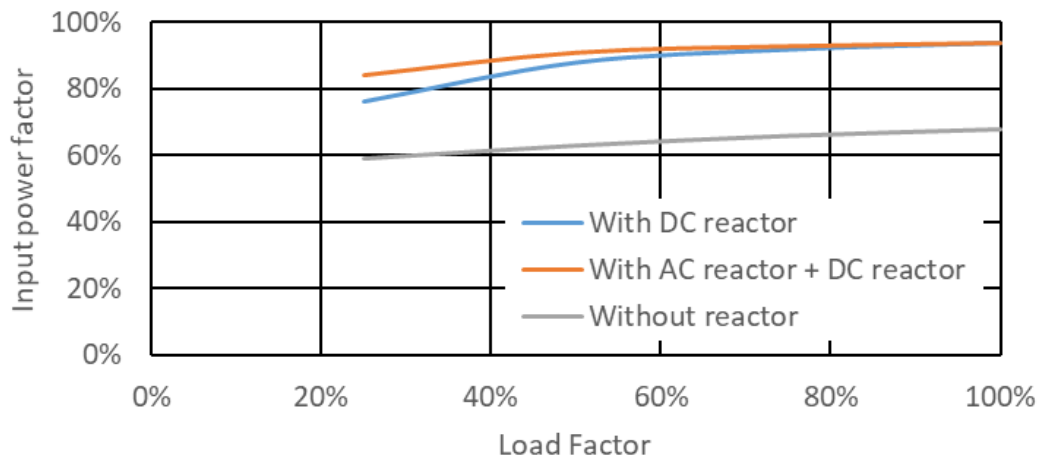


Figure5.1 Load factor - input power factor characteristics

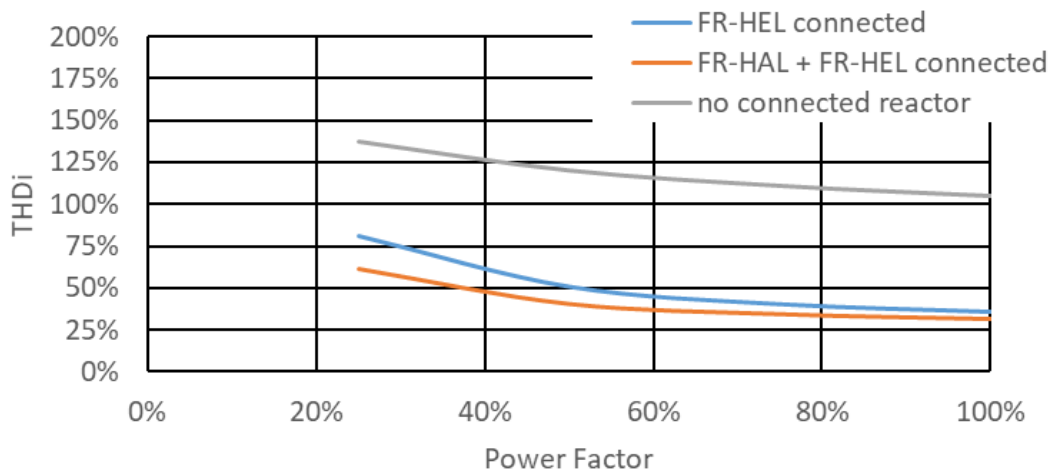


Figure5.2 Load factor - THDi characteristics

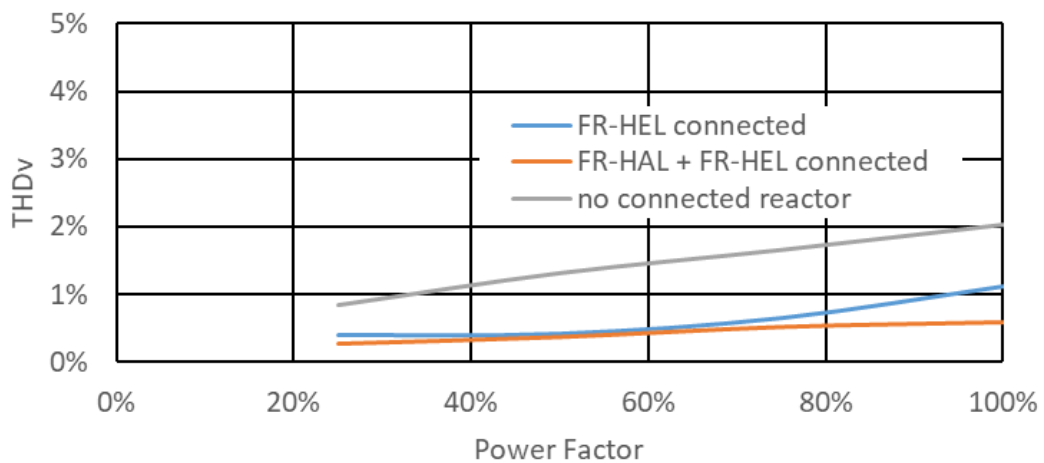


Figure5.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

6. Simulation result of FR-D820-2.2K-100 [ND rating]

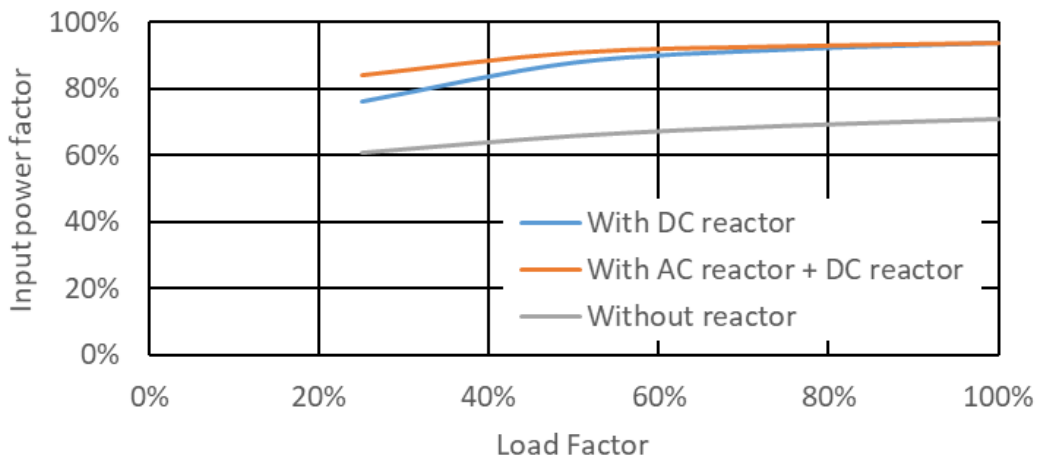


Figure6.1 Load factor - input power factor characteristics

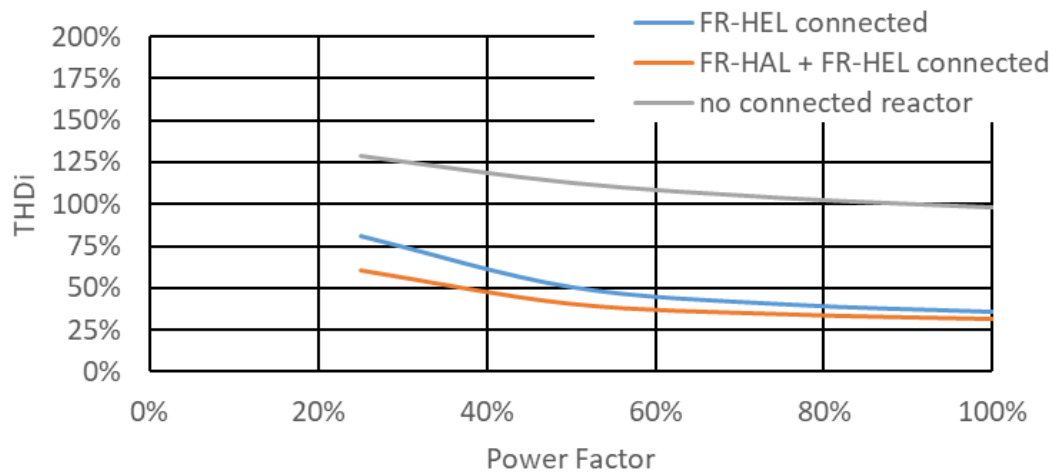


Figure6.2 Load factor - THDi characteristics

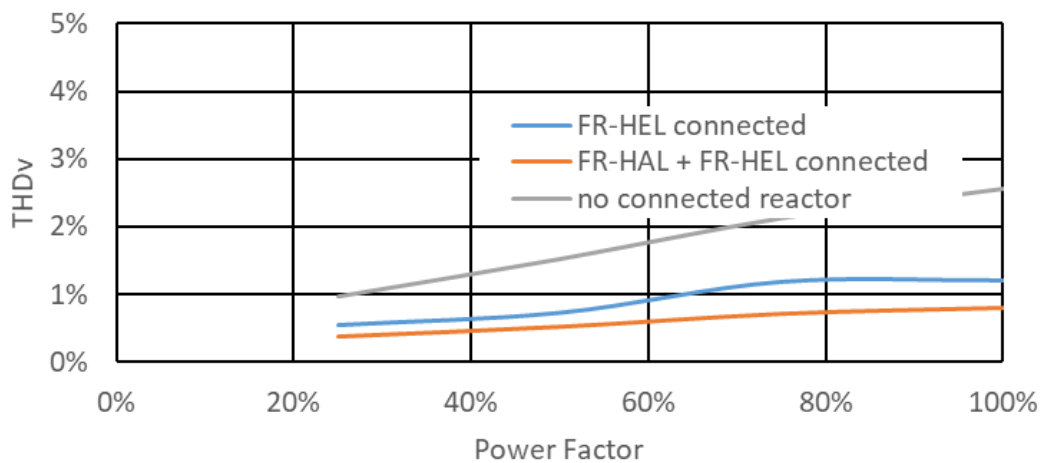


Figure6.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

7. Simulation result of FR-D820-3.7K-165 [ND rating]

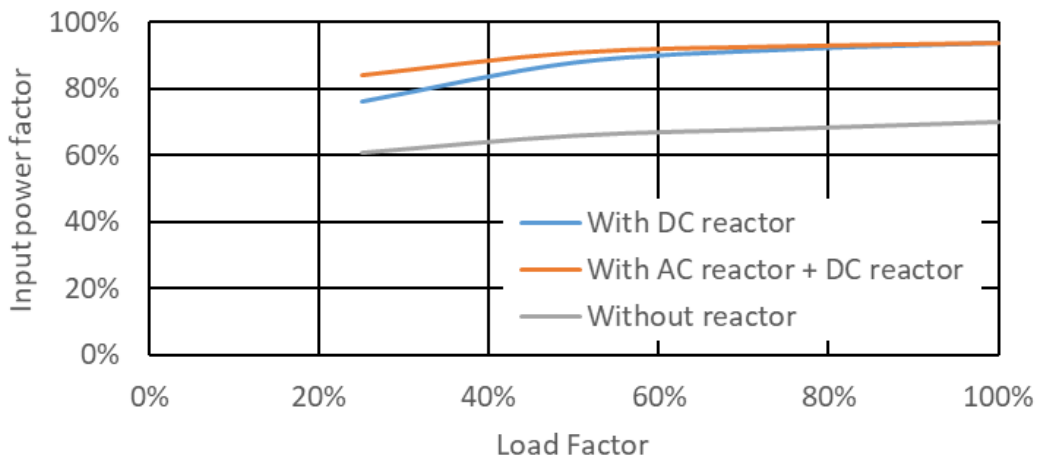


Figure7.1 Load factor - input power factor characteristics

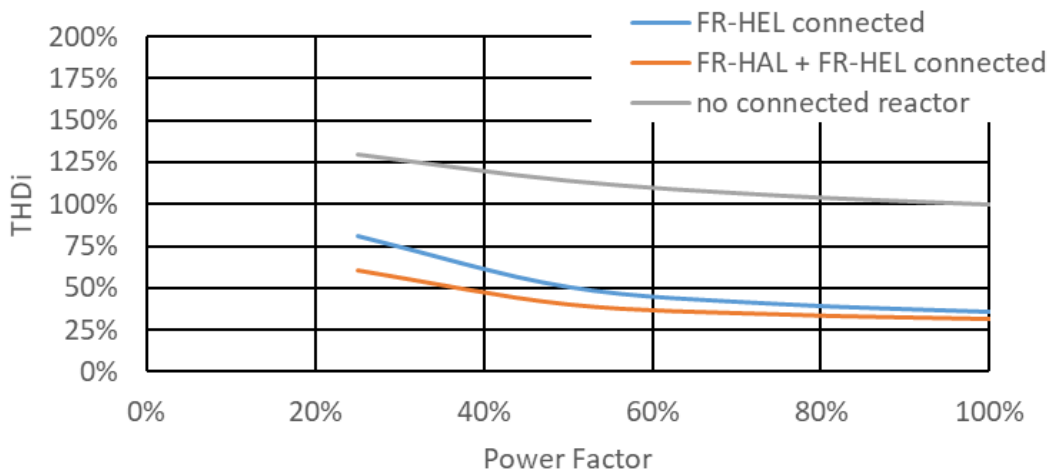


Figure7.2 Load factor - THDi characteristics

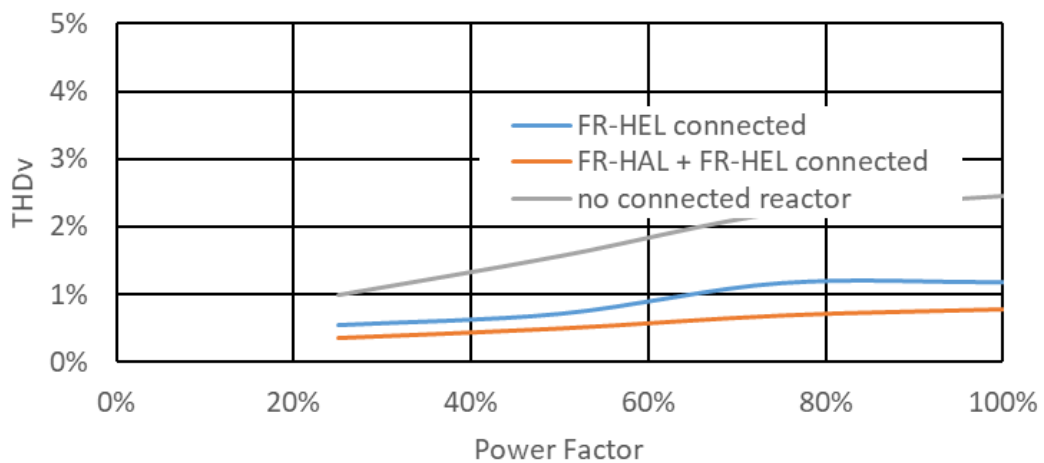


Figure7.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

8. Simulation result of FR-D820-5.5K-238 [ND rating]

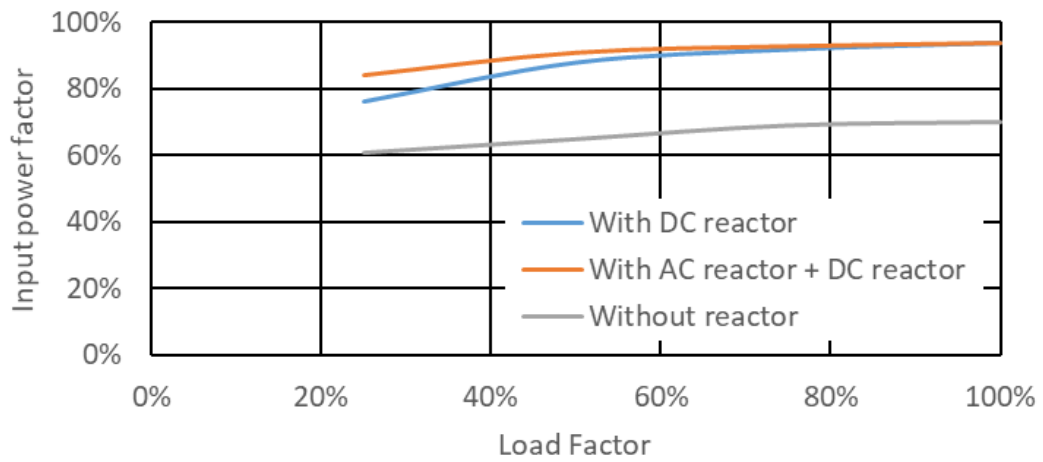


Figure8.1 Load factor - input power factor characteristics

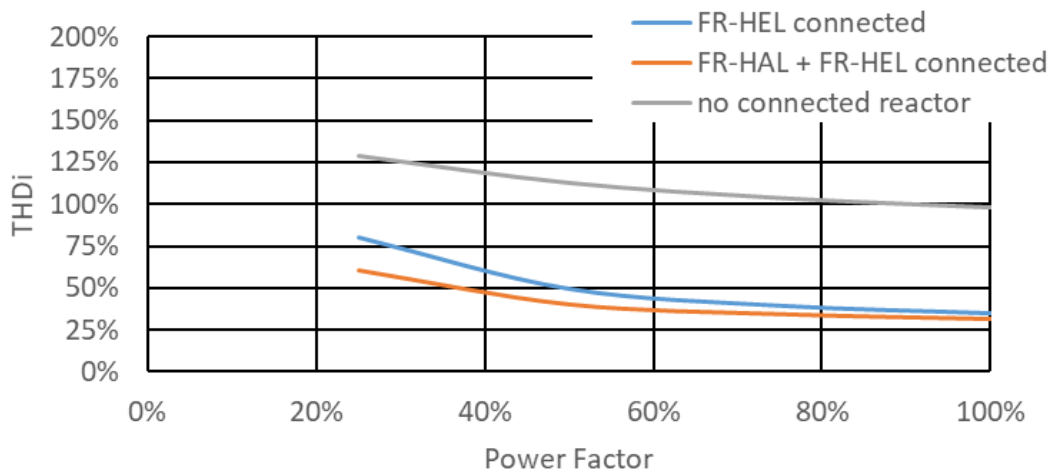


Figure8.2 Load factor - THDi characteristics

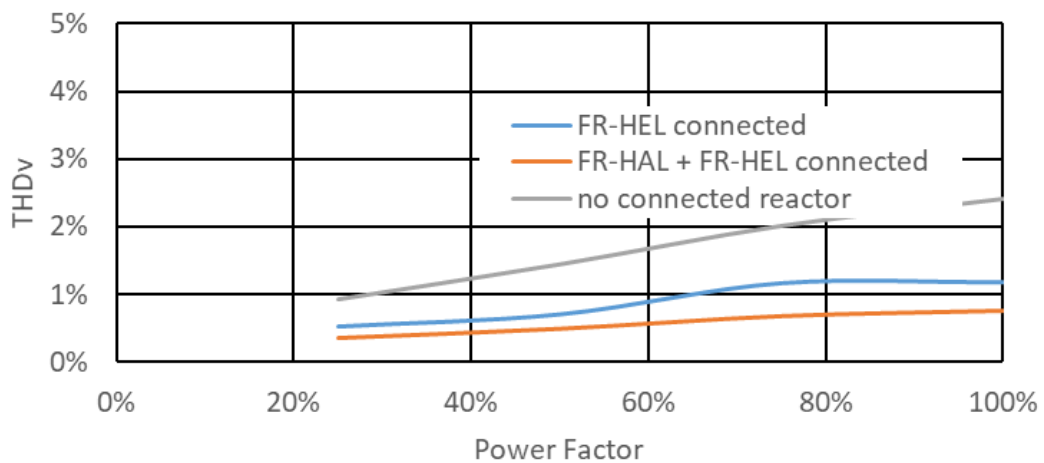


Figure8.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

9. Simulation result of FR-D820-7.5K-318 [ND rating]

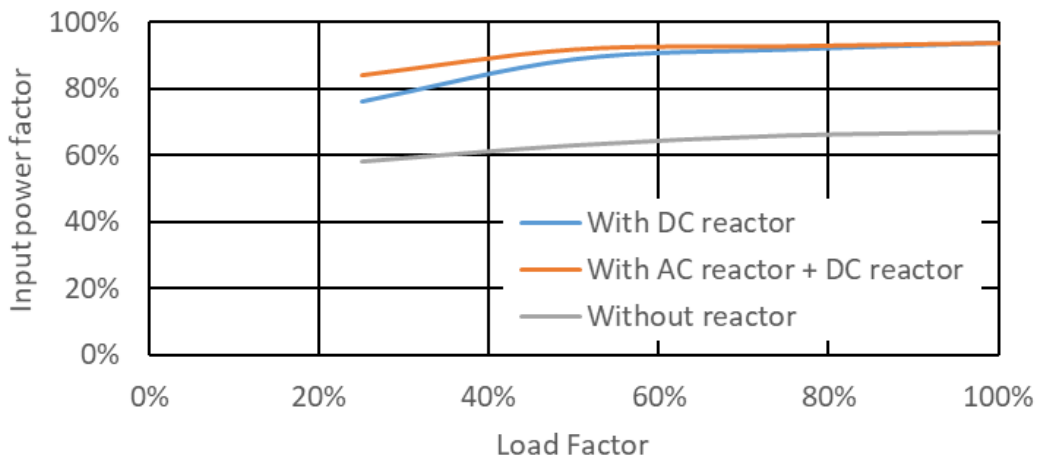


Figure9.1 Load factor - input power factor characteristics

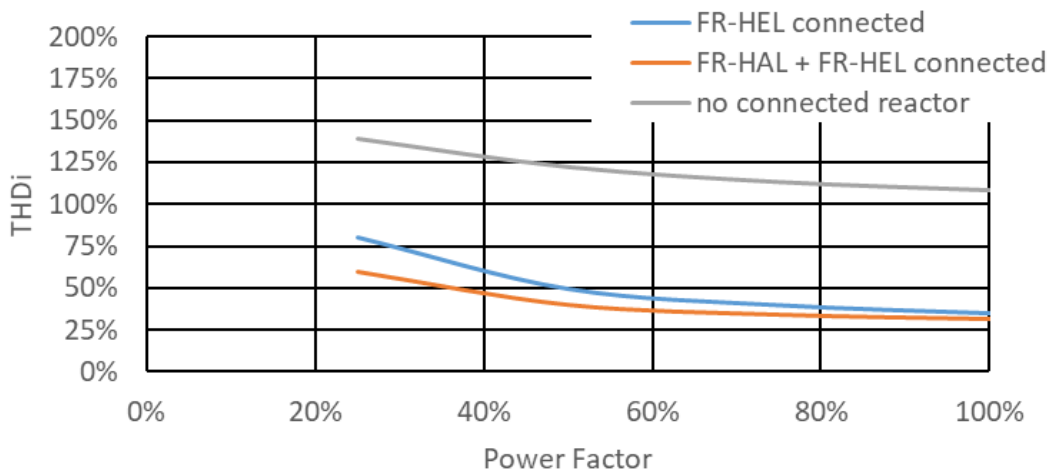


Figure9.2 Load factor - THDi characteristics

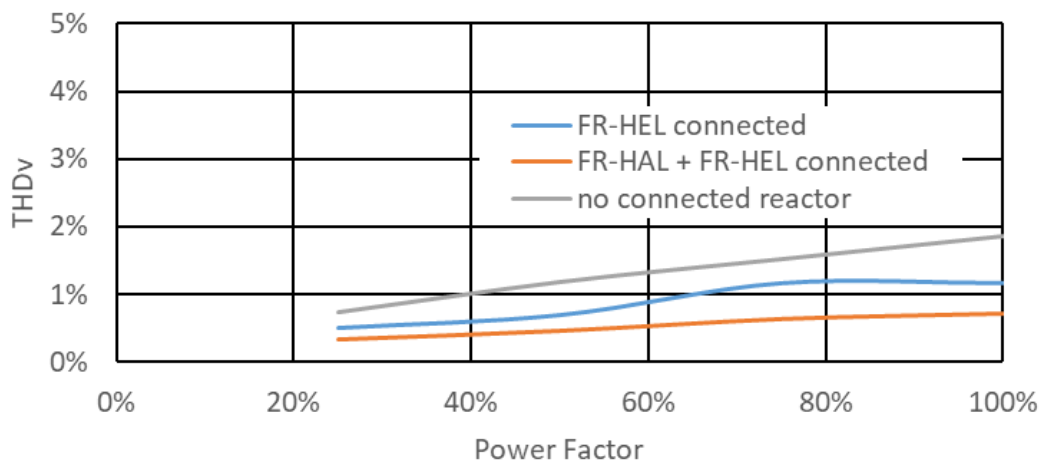


Figure9.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

10. Simulation result of FR-D820-11K-450 [ND rating]

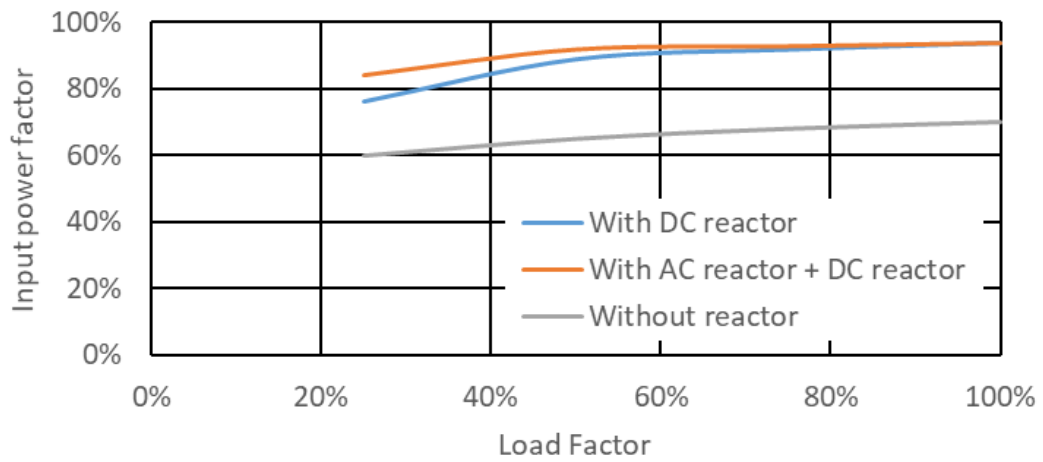


Figure10.1 Load factor - input power factor characteristics

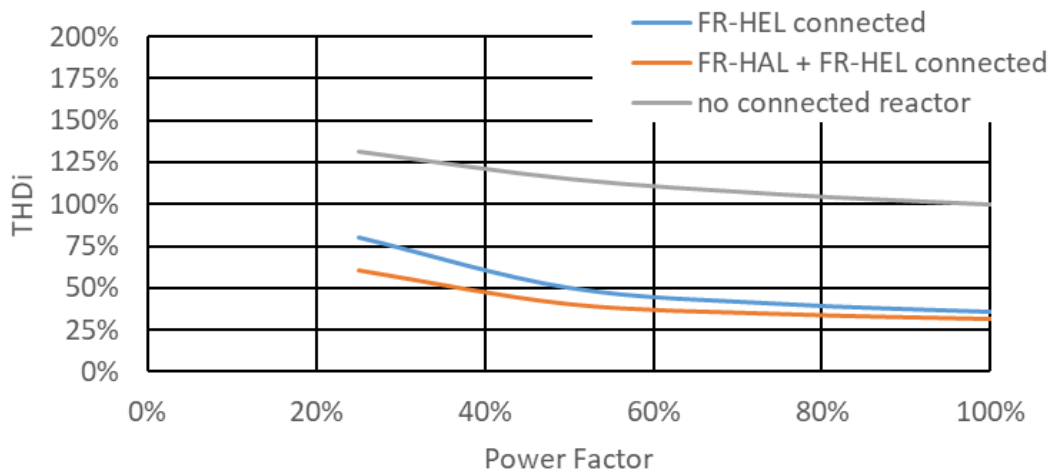


Figure10.2 Load factor - THDi characteristics

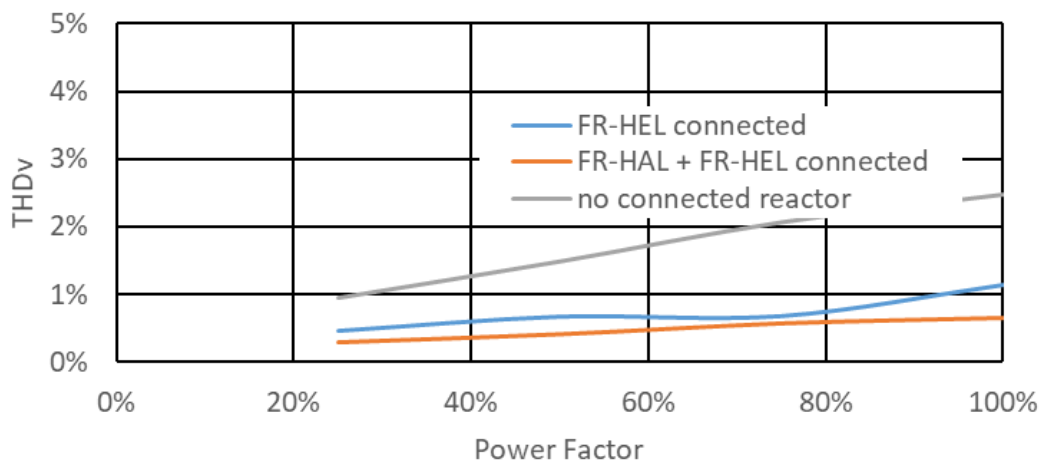


Figure10.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

11. Simulation result of FR-D820-15K-580 [ND rating]

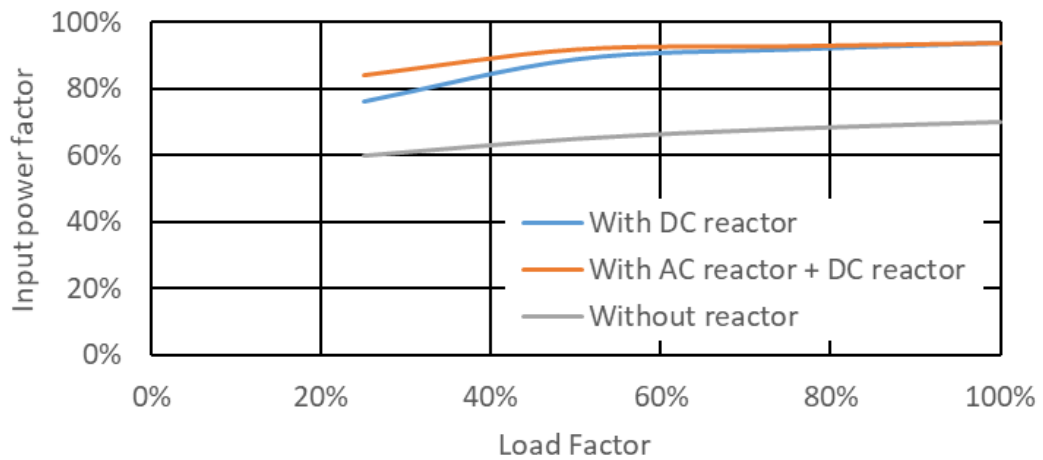


Figure11.1 Load factor - input power factor characteristics

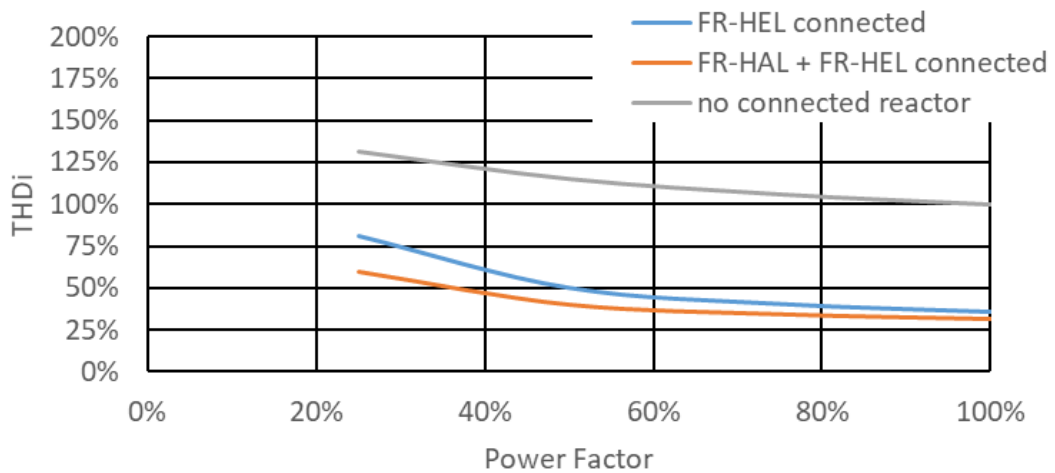


Figure11.2 Load factor - THDi characteristics

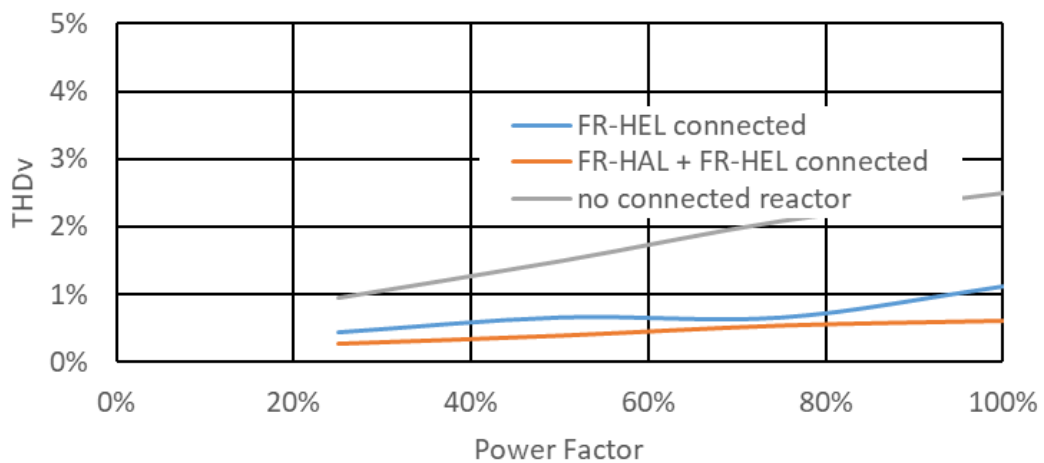


Figure11.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

12. Simulation result of FR-D820-0.1K-008 [SLD rating]

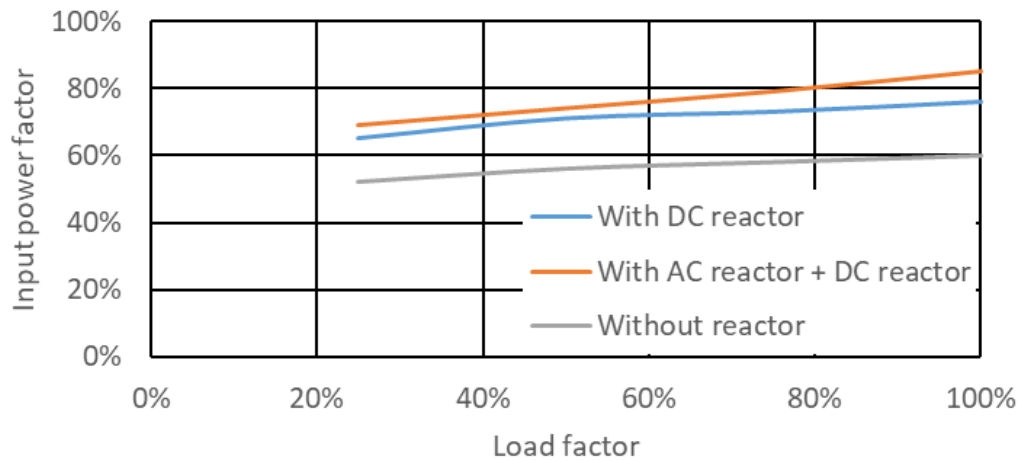


Figure12.1 Load factor - input power factor characteristics

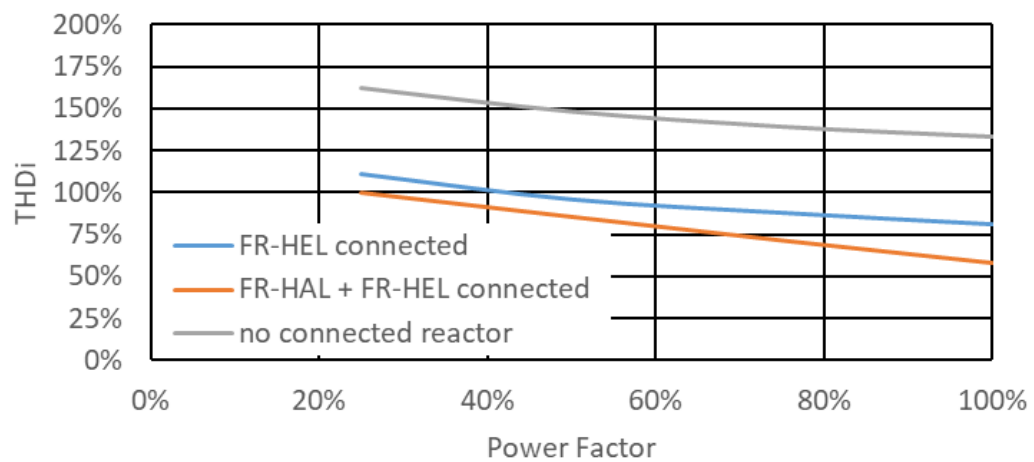


Figure12.2 Load factor - THDi characteristics

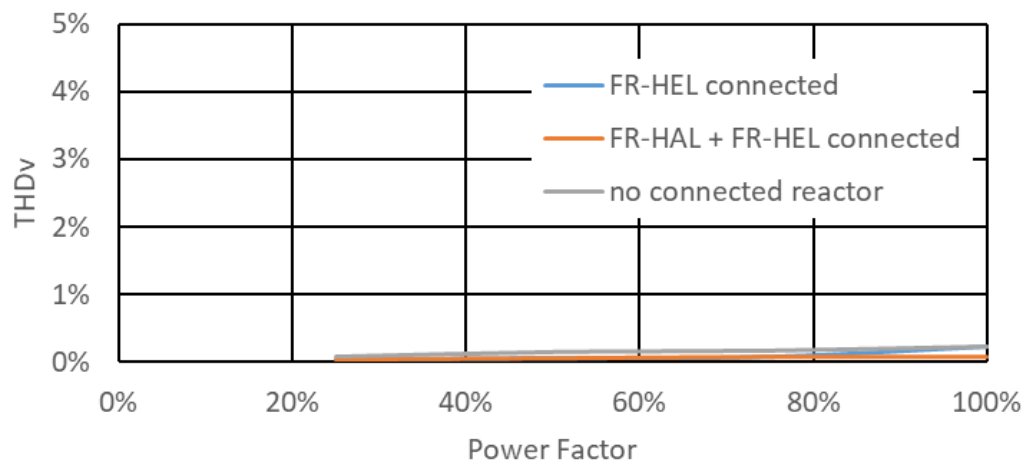


Figure12.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

13. Simulation result of FR-D820-0.2K-014 [SLD rating]

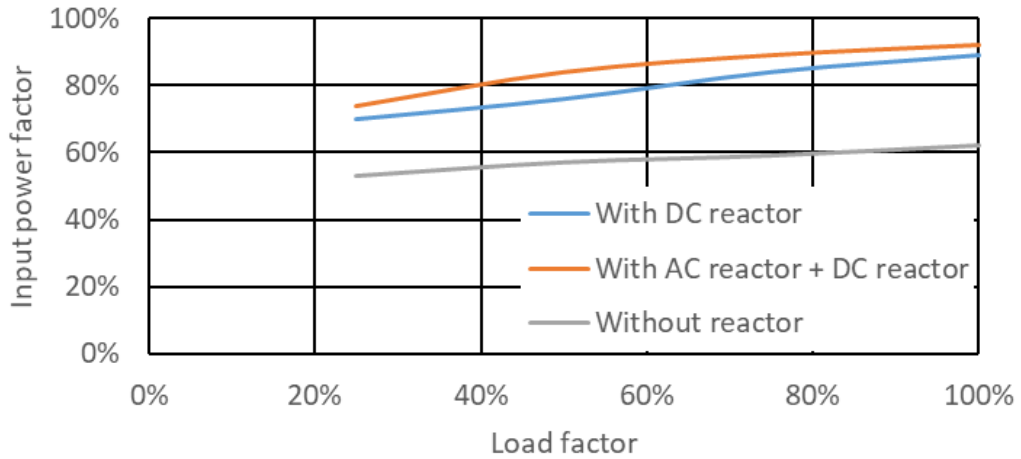


Figure13.1 Load factor - input power factor characteristics

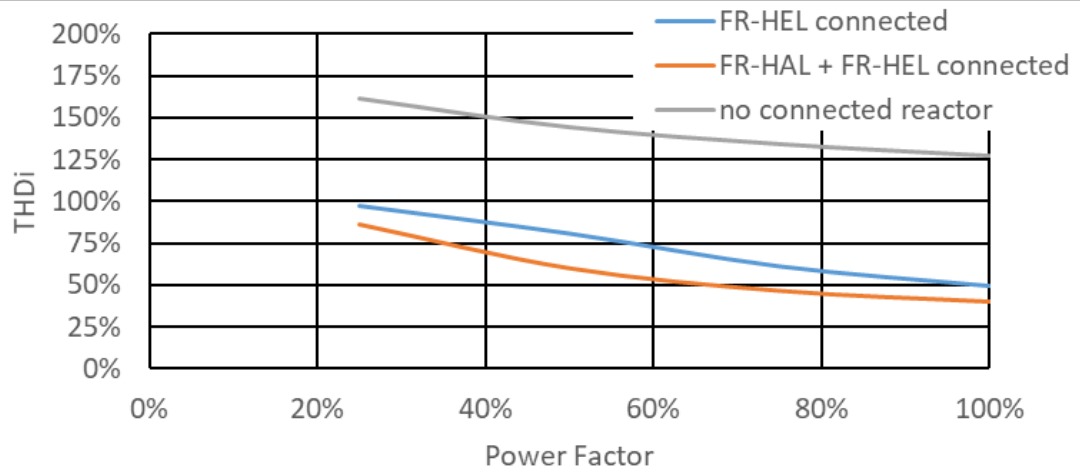


Figure13.2 Load factor - THDi characteristics

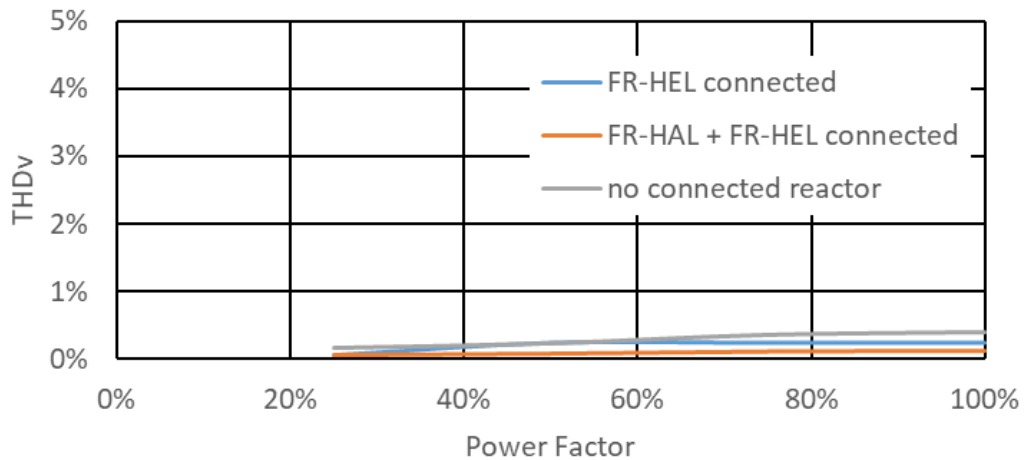


Figure13.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

14. Simulation result of FR-D820-0.4K-025 [SLD rating]

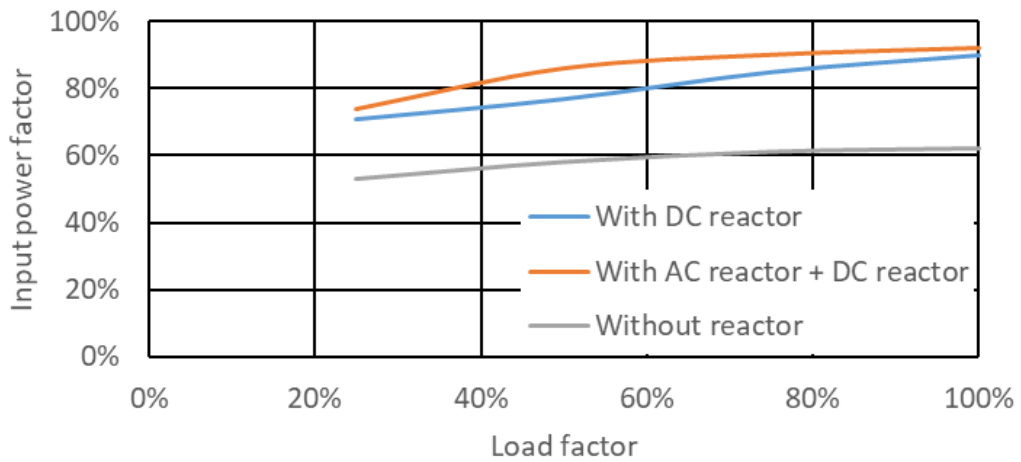


Figure14.1 Load factor - input power factor characteristics

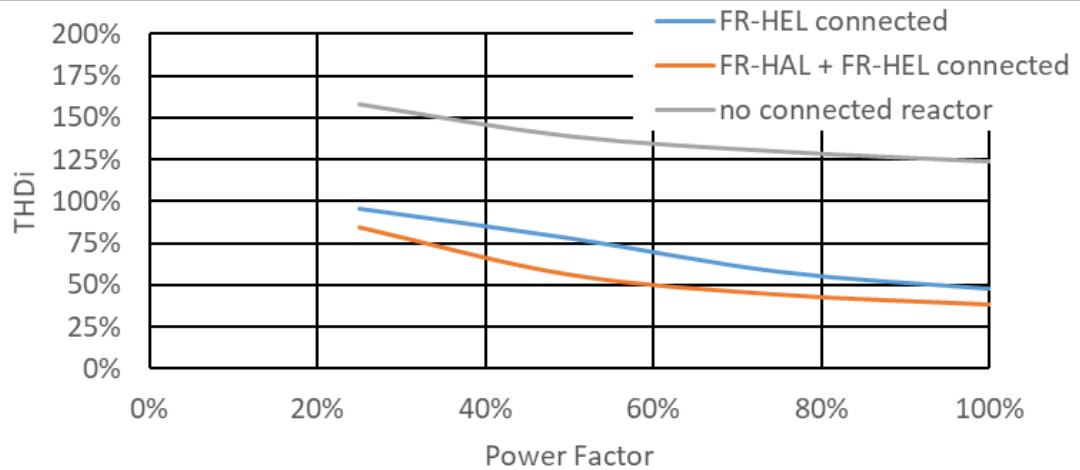


Figure14.2 Load factor - THDi characteristics

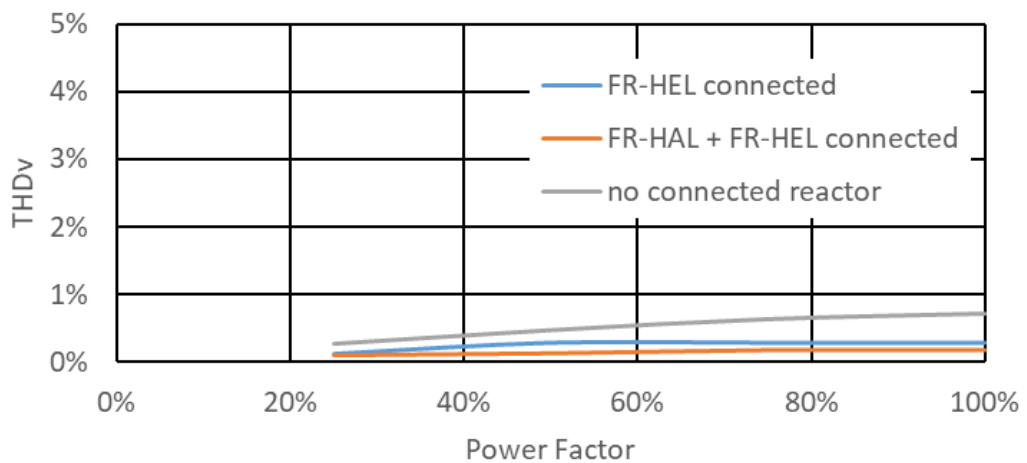


Figure14.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

15. Simulation result of FR-D820-0.75K-042 [SLD rating]

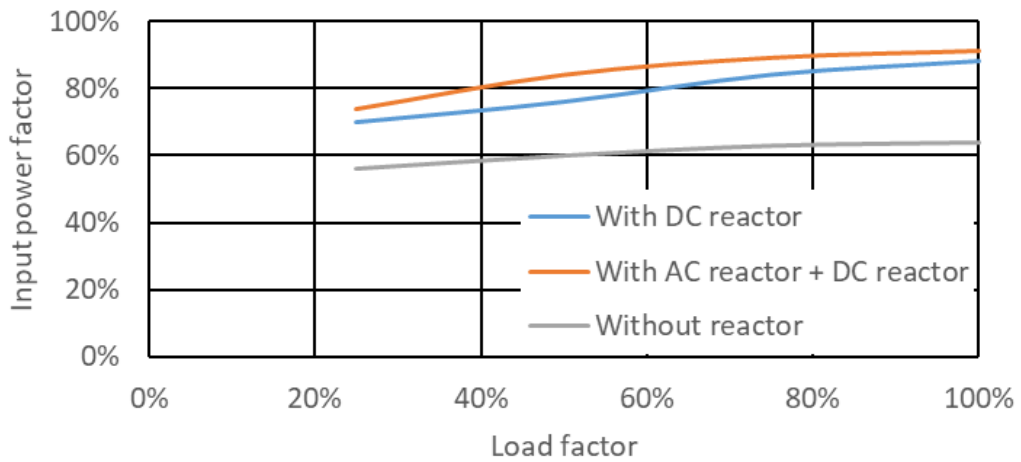


Figure15.1 Load factor - input power factor characteristics

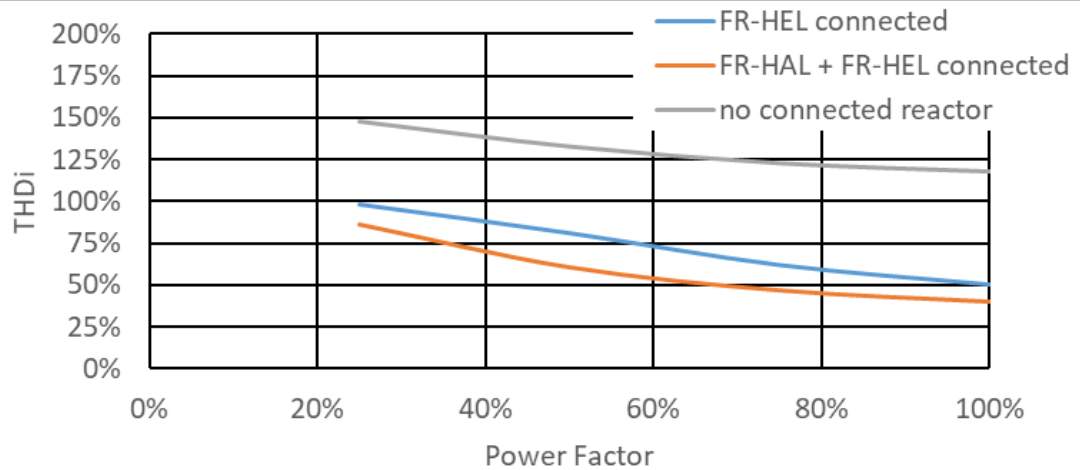


Figure15.2 Load factor - THDi characteristics

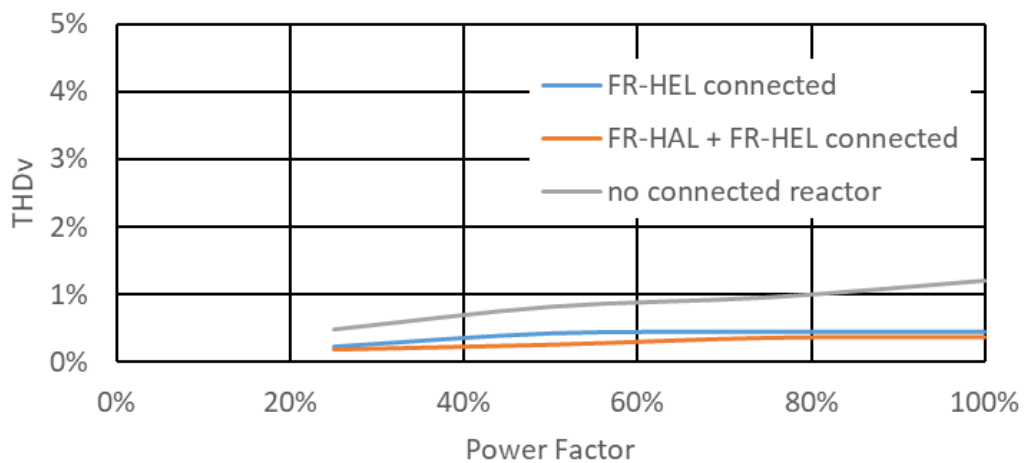


Figure15.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

16. Simulation result of FR-D820-1.5K-070 [SLD rating]

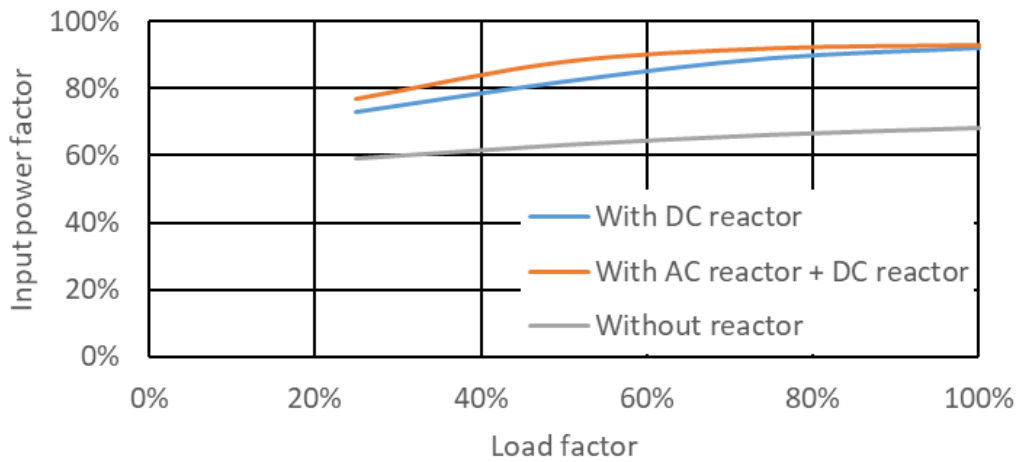


Figure16.1 Load factor - input power factor characteristics

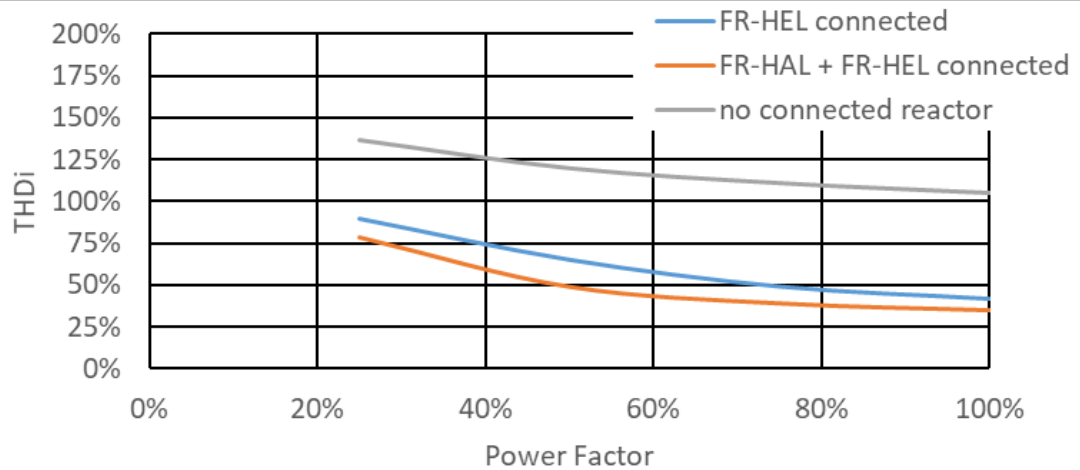


Figure16.2 Load factor - THDi characteristics

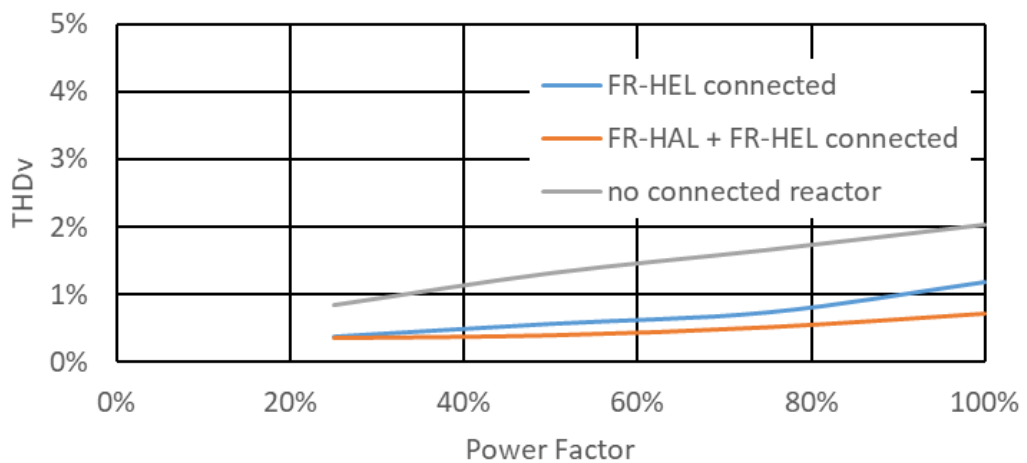


Figure16.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

17. Simulation result of FR-D820-2.2K-100 [SLD rating]

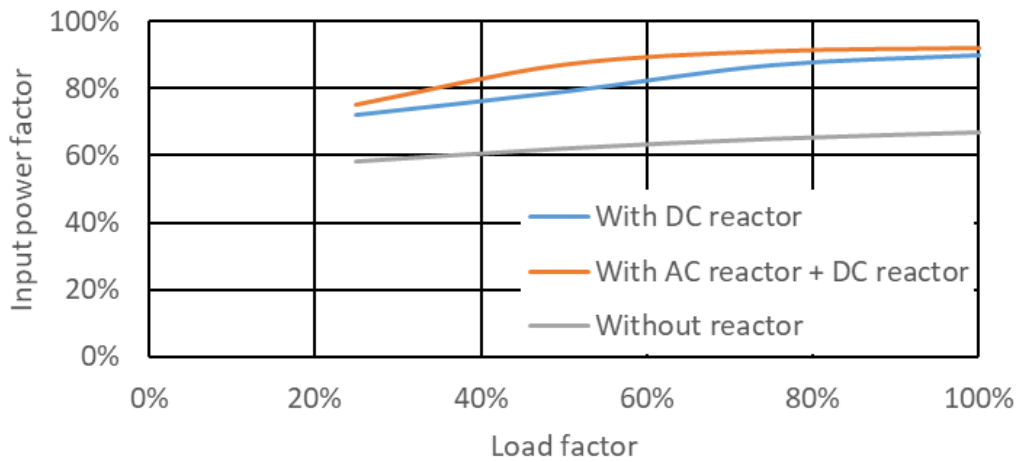


Figure17.1 Load factor - input power factor characteristics

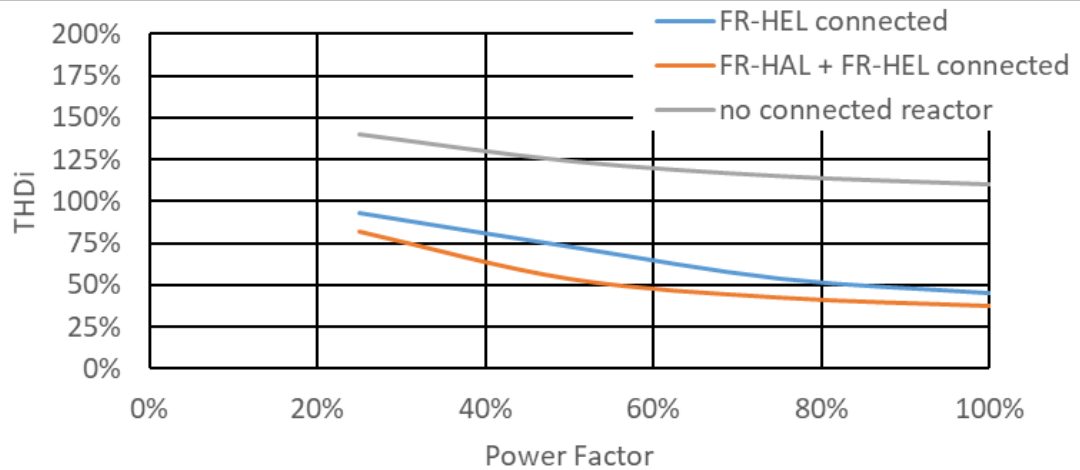


Figure17.2 Load factor - THDi characteristics

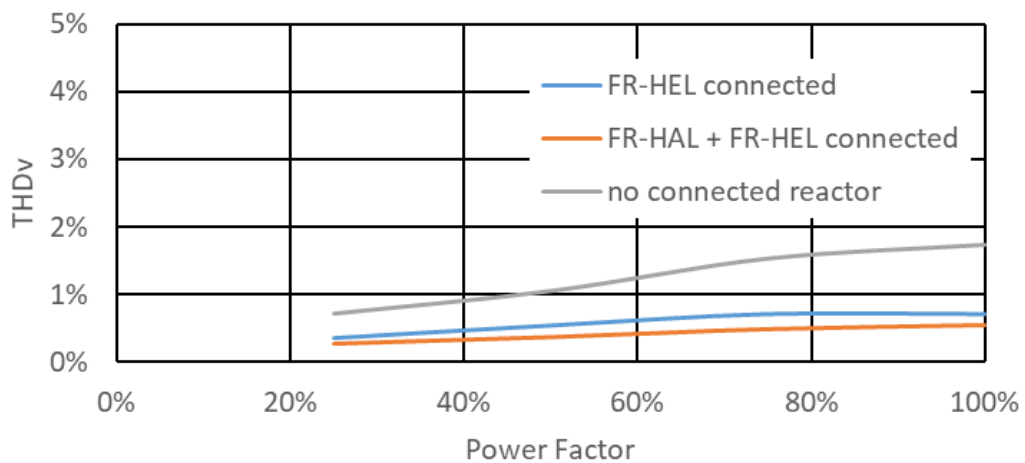


Figure17.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

18. Simulation result of FR-D820-3.7K-165 [SLD rating]

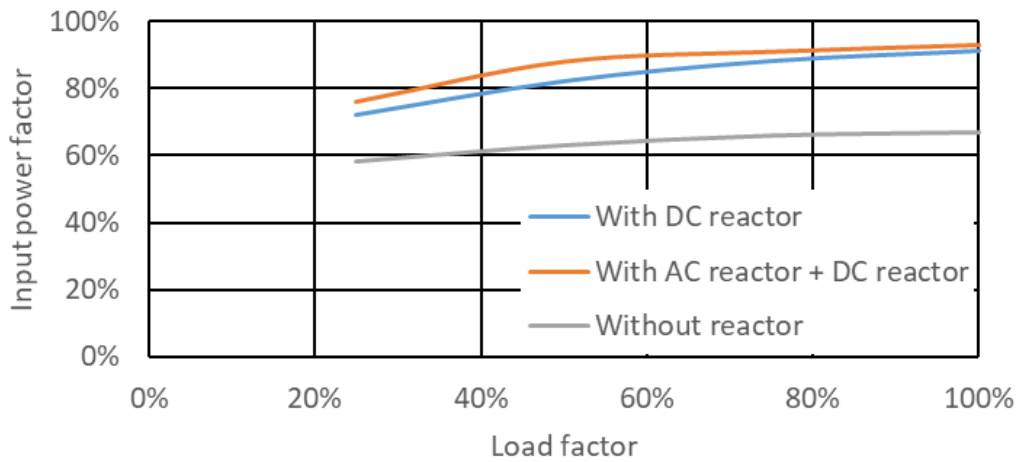


Figure18.1 Load factor - input power factor characteristics

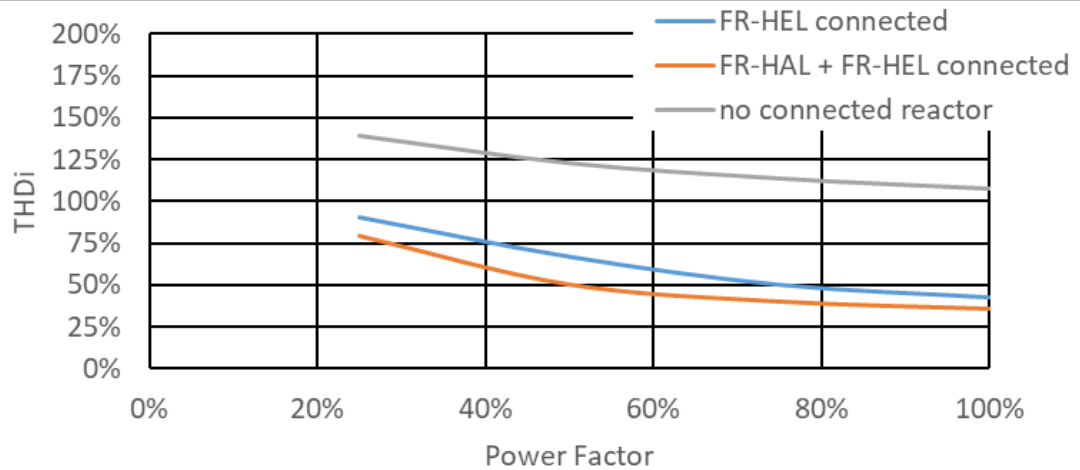


Figure18.2 Load factor - THDi characteristics

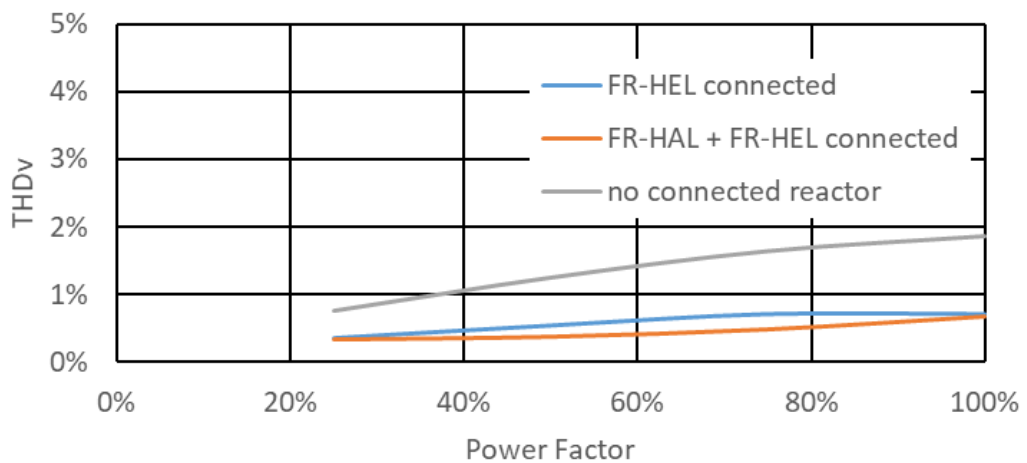


Figure18.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

19. Simulation result of FR-D820-5.5K-238 [SLD rating]

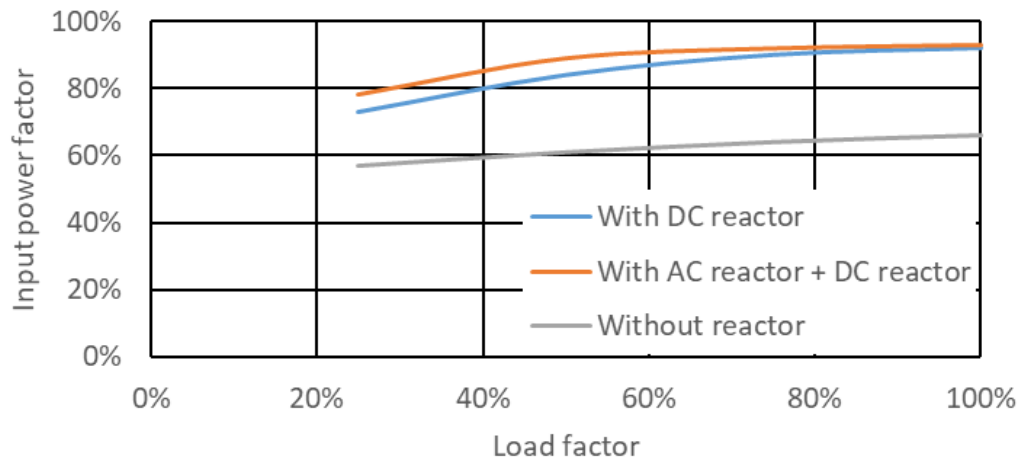


Figure19.1 Load factor - input power factor characteristics

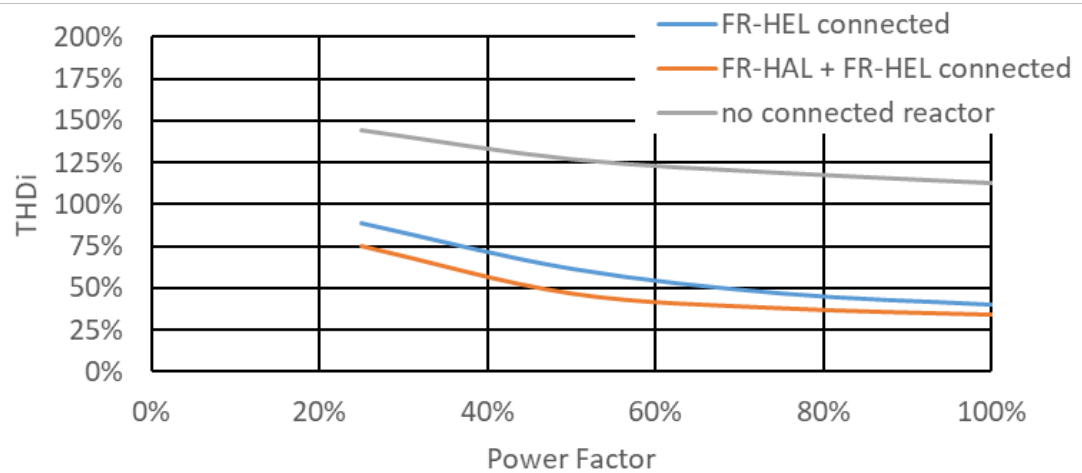


Figure19.2 Load factor - THDi characteristics

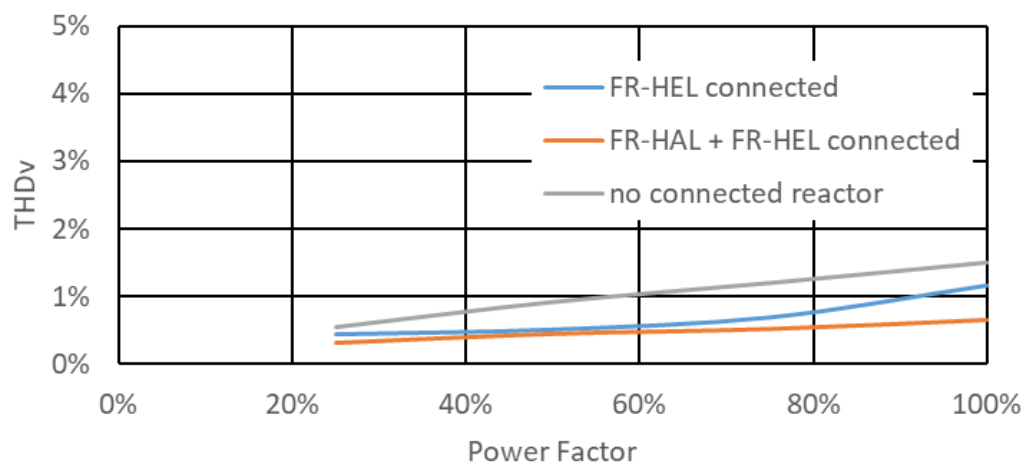


Figure19.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

20. Simulation result of FR-D820-7.5K-318 [SLD rating]

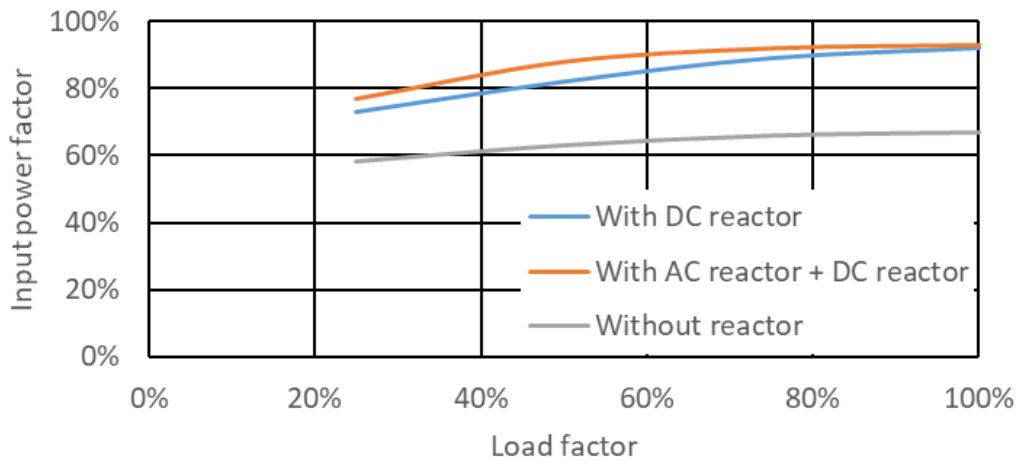


Figure20.1 Load factor - input power factor characteristics

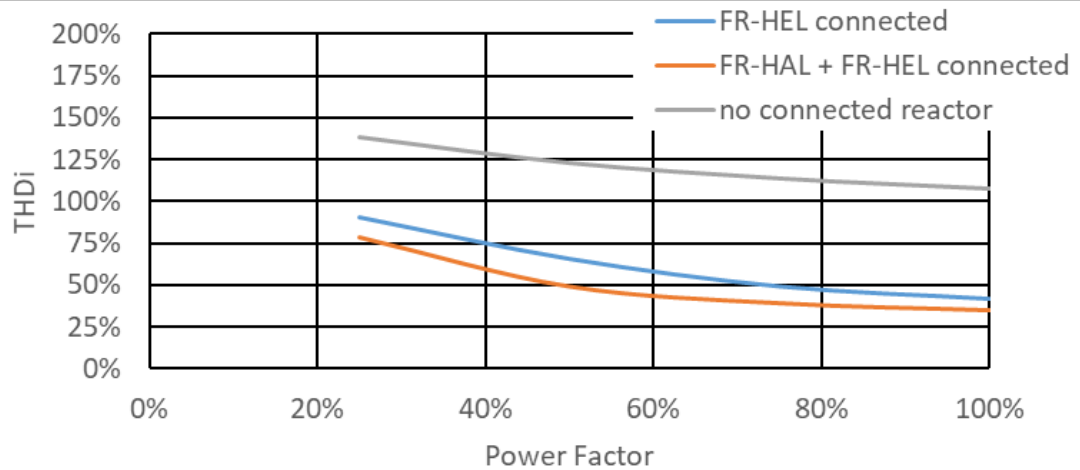


Figure20.2 Load factor - THDi characteristics

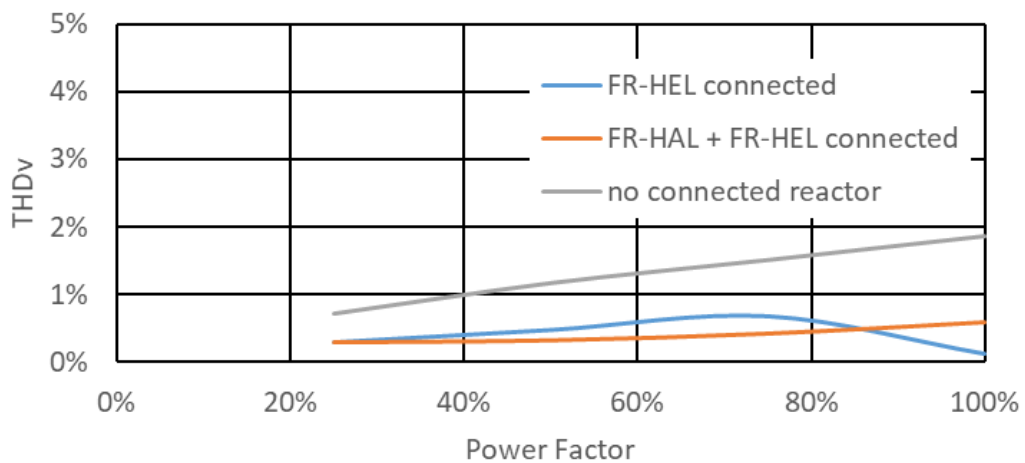


Figure20.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

21. Simulation result of FR-D820-11K-450 [SLD rating]

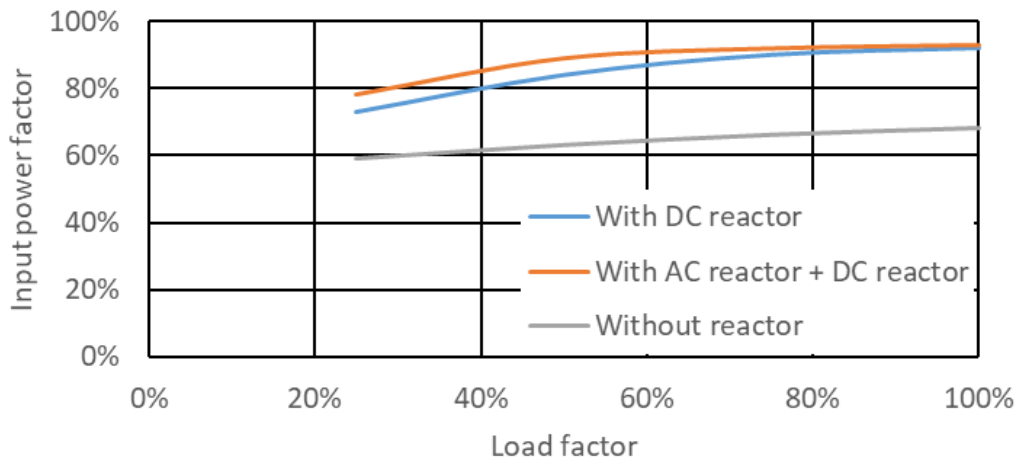


Figure21.1 Load factor - input power factor characteristics

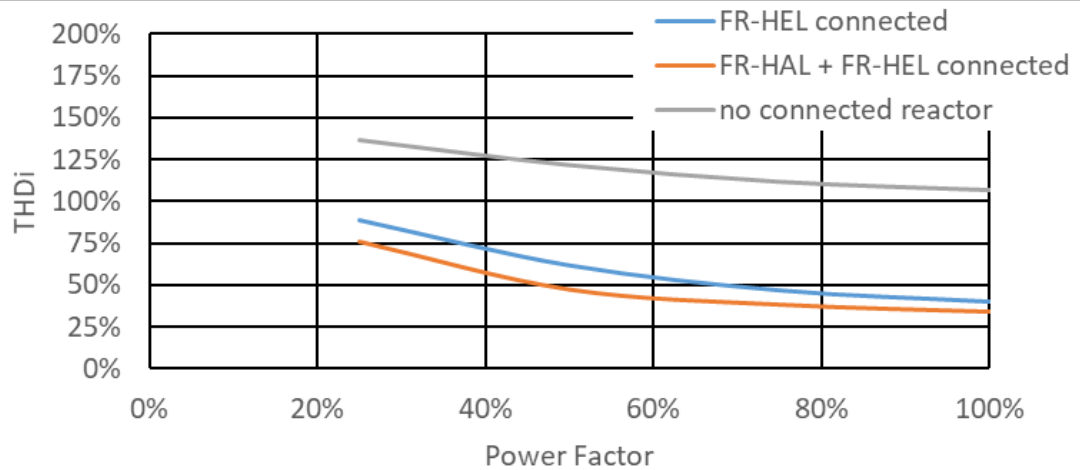


Figure21.2 Load factor - THDi characteristics

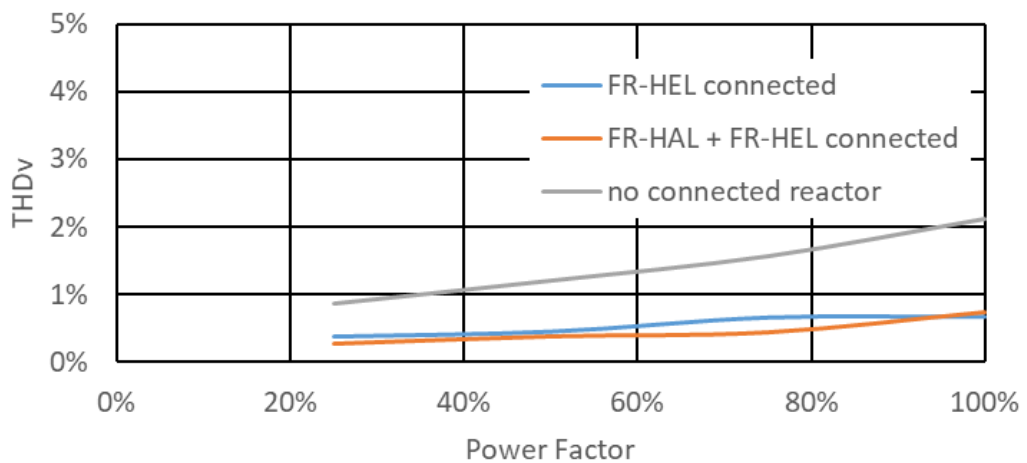


Figure21.3 Load factor - THDv characteristics

**MODELS: FR-D820(0.1K-008 to 15K-580)**

22. Simulation result of FR-D820-15K-580 [SLD rating]

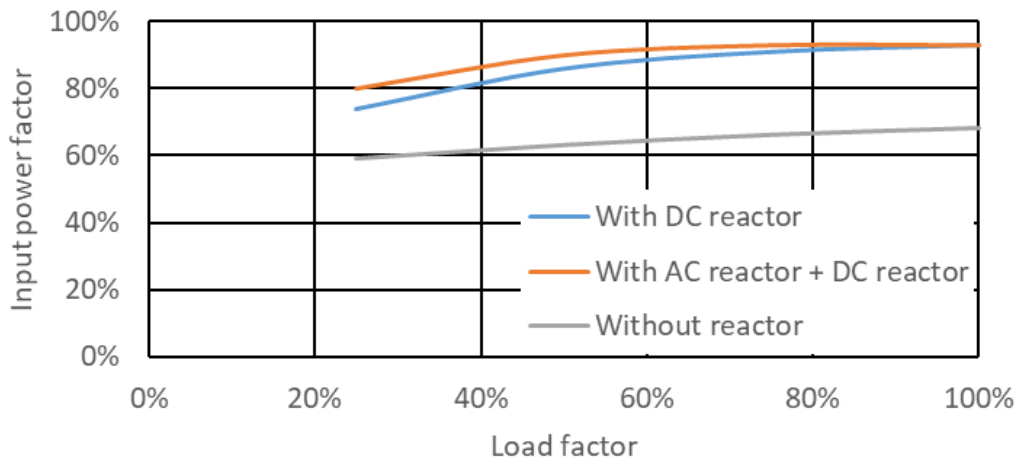


Figure22.1 Load factor - input power factor characteristics

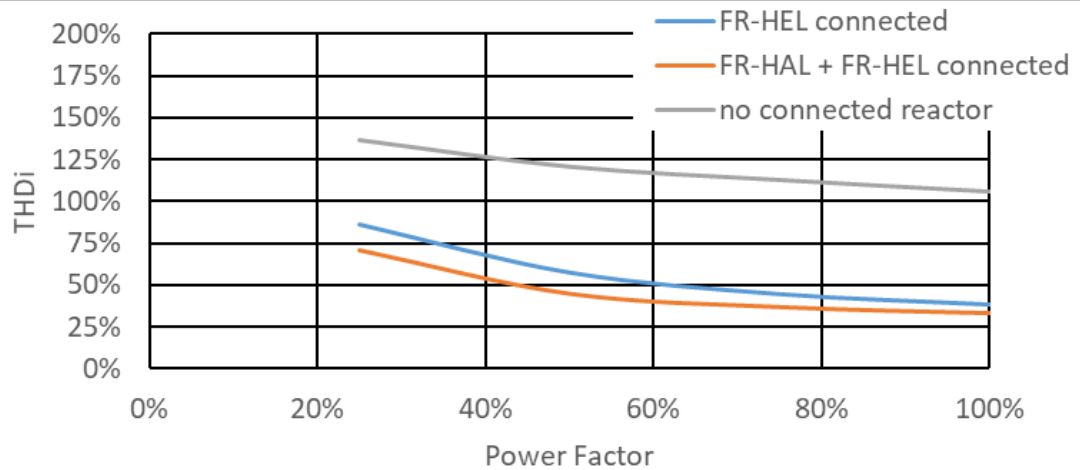


Figure22.2 Load factor - THDi characteristics

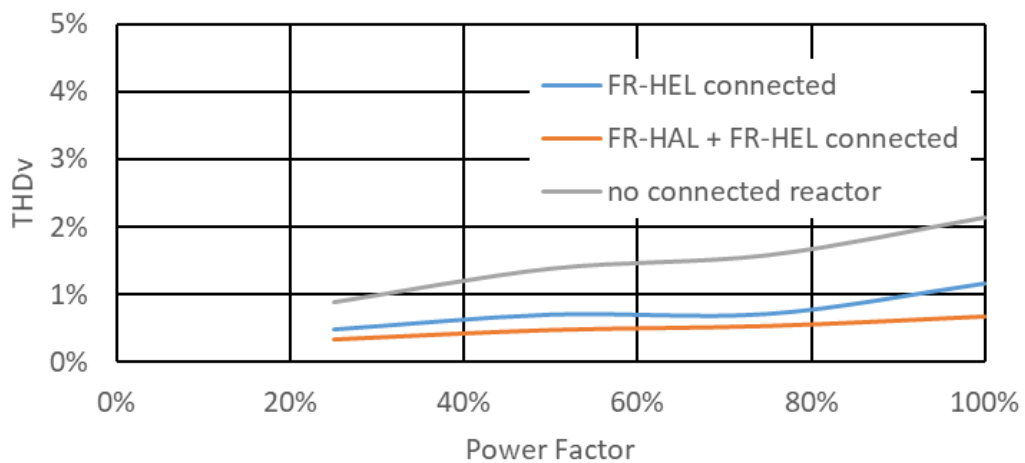


Figure22.3 Load factor - THDv characteristics