Test 4: Semicircle Curve (S = 110 %Sn)

This test verifies the capability of the inverter to provide a fixed value of apparent power.

Test results are offered in the tables below.

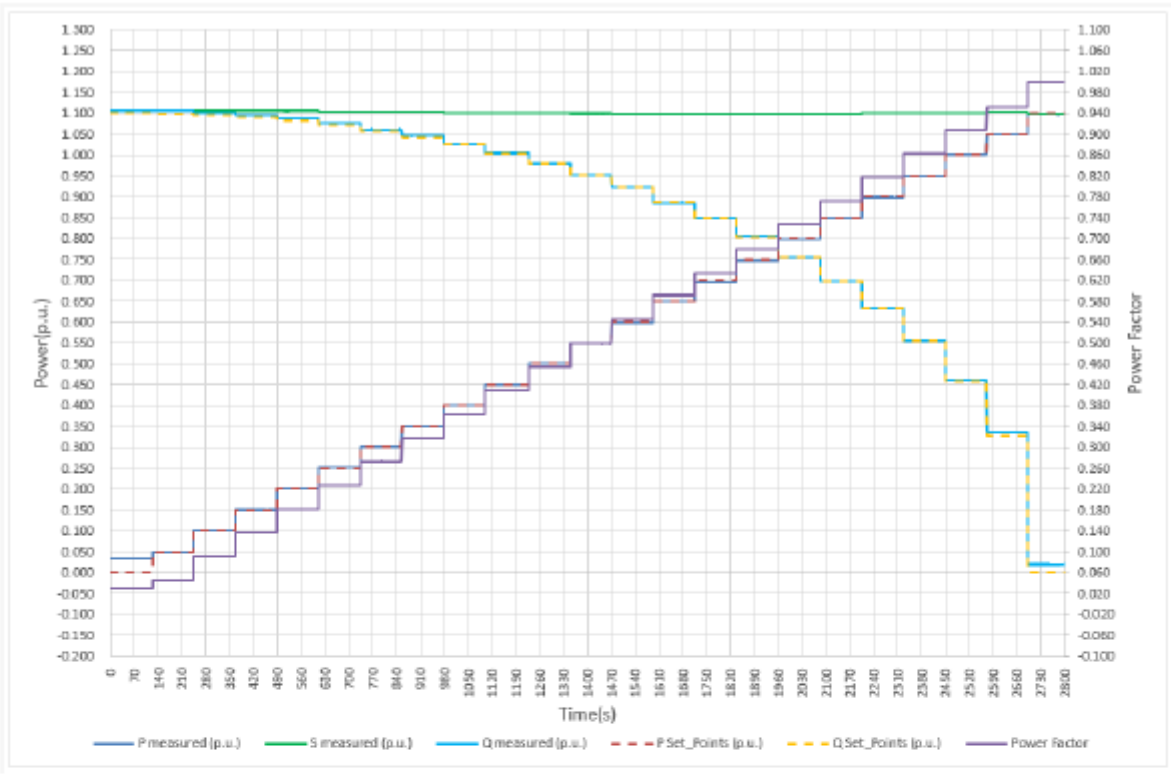
Semicircle Curve (S = 110 %Sn / Inductive)						
P Desired (%Sn)	P measured (%Sn)	S measured (%Sn)	Power Factor (cos φ)	Q measured (%Sn)	Q desired (%Sn) (2)	Q deviation (±5%Sn)
0(1)	3.4	110.7	0.031	+110.6	+110.0	--
5(1)	5.1	110.7	0.046	+110.6	+109.9	--
10	10.1	110.7	0.092	+110.2	+109.5	+0.7
15	15.1	110.6	0.136	+109.6	+109.0	+0.6
20	20.2	110.5	0.183	+108.7	+108.2	+0.5
25	25.2	110.5	0.228	+107.6	+107.1	+0.5
30	30.2	110.4	0.274	+106.2	+105.8	+0.4
35	35.0	110.3	0.318	+104.6	+104.3	+0.3
40	40.1	110.2	0.364	+102.6	+102.5	+0.1
45	45.0	110.1	0.409	+100.5	+100.4	+0.1
50	50.0	110.1	0.455	+98.0	+98.0	0.0
55	54.9	110.0	0.499	+95.3	+95.3	0.0
60	59.9	109.9	0.545	+92.2	+92.2	0.0
65	65.0	109.9	0.592	+88.6	+88.7	-0.1
70	69.6	109.9	0.634	+85.0	+84.9	+0.1
75	74.7	109.9	0.680	+80.6	+80.5	+0.1
80	79.8	109.9	0.726	+75.5	+75.5	0.0
85	84.9	109.9	0.772	+69.8	+69.8	0.0
90	90.0	110.0	0.818	+63.3	+63.2	+0.1
95	95.0	110.1	0.863	+55.5	+55.5	0.0
100	100.0	110.1	0.908	+46.0	+45.8	+0.2
105	105.0	110.3	0.952	+33.8	+32.8	+1.0
110	109.5	109.8	0.997	+3.8	+0.0	+3.8

(1) According to point N.6.1 for lower values of generated active power (P≤10 %Sn), deviations in the reactive power are allowed up to a 10 %Sn.
(2) The desired Q is calculated from Q = -√ (S^2 - P^2).

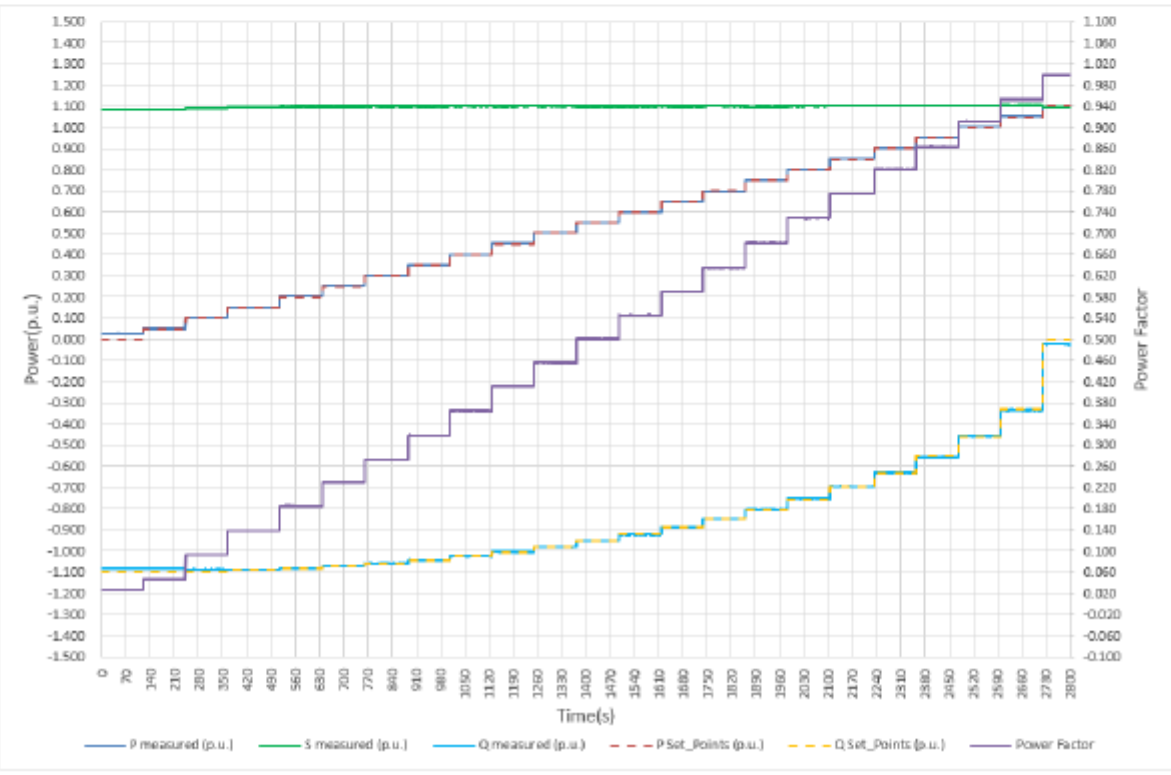
Semicircle Curve (S = 110 %Sn / Capacitive)						
P Desired (%Sn)	P measured (%Sn)	S measured (%Sn)	Power Factor (cos φ)	Q measured (%Sn)	Q desired (%Sn) (2)	Q deviation (%Sn)
0(1)	2.9	108.4	0.0	-108.3	-110.0	--
5(1)	5.1	108.5	0.0	-108.4	-109.9	--
10	10.1	108.9	0.1	-108.5	-109.5	+1.0
15	15.2	109.6	0.1	-108.6	-109.0	+0.4
20	20.3	109.9	0.2	-108.0	-108.2	+0.2
25	25.2	110.0	0.2	-107.0	-107.1	+0.1
30	30.0	110.0	0.3	-105.8	-105.8	+0.0
35	35.1	110.0	0.3	-104.2	-104.3	+0.1
40	40.1	110.0	0.4	-102.4	-102.5	+0.1
45	45.2	110.0	0.4	-100.3	-100.4	+0.1
50	50.1	110.0	0.5	-97.9	-98.0	+0.1
55	55.1	110.0	0.5	-95.2	-95.3	+0.1
60	60.0	110.0	0.5	-92.2	-92.2	-0.0
65	65.0	110.0	0.6	-88.7	-88.7	+0.0
70	69.9	110.0	0.6	-85.0	-84.9	-0.1
75	75.0	109.9	0.7	-80.4	-80.5	+0.1
80	80.2	110.0	0.7	-75.4	-75.5	+0.1
85	85.2	110.0	0.8	-69.6	-69.8	+0.2
90	90.3	110.1	0.8	-62.9	-63.2	+0.3
95	95.3	110.3	0.9	-55.7	-55.5	-0.2
100	100.5	110.3	0.9	-45.6	-45.8	+0.2
105	105.2	110.4	1.0	-33.6	-32.8	-0.8
110	109.6	109.7	1.0	-2.2	0.0	-2.2

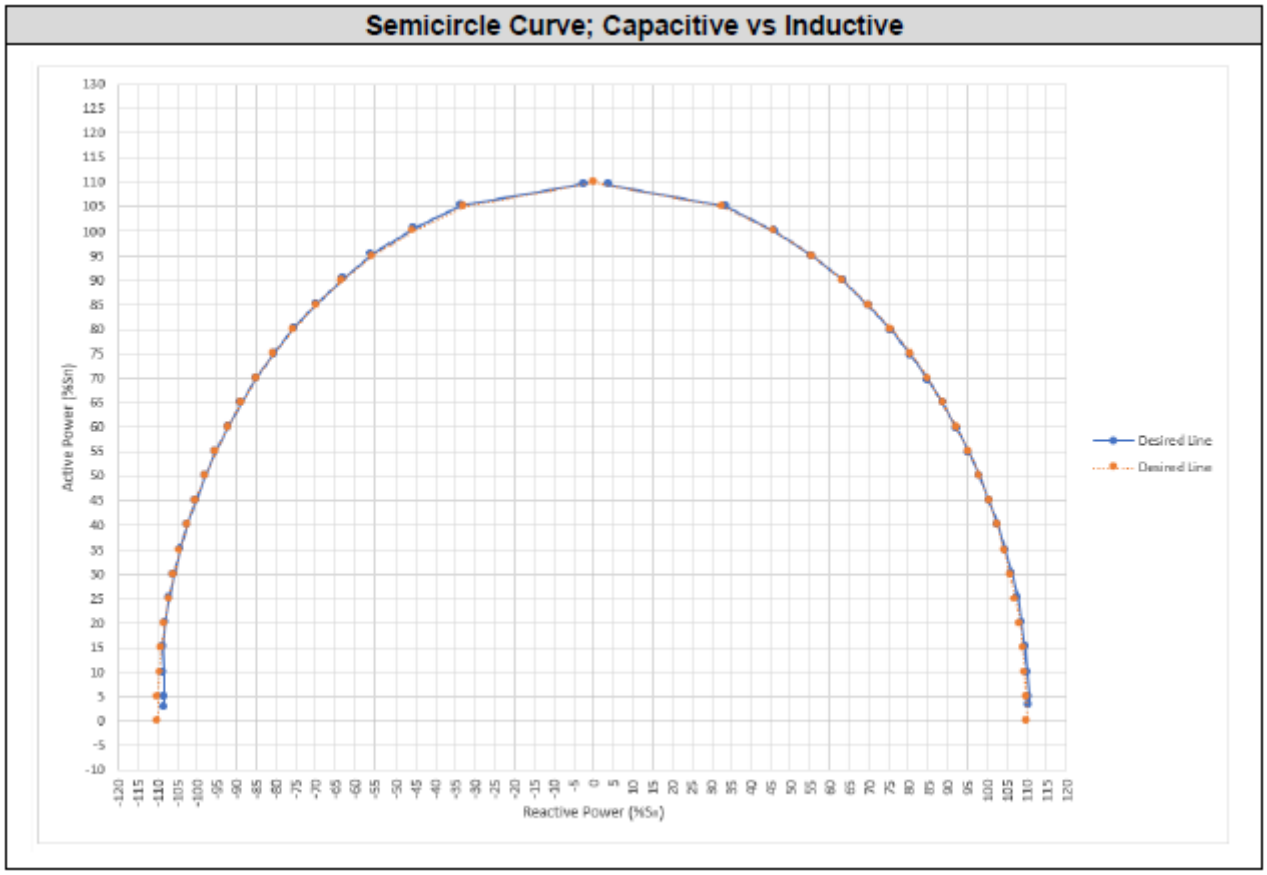
(1) According to point N.6.1 for lower values of generated active power (P≤10 %Sn), deviations in the reactive power are allowed up to a 10 %Sn.
(2) The desired Q is calculated from Q = -√ (S^2 - P^2).

Semicircle Curve (S = 110 %Sn / Inductive)



Semicircle Curve (S = 110 %Sn / Capacitive)




Semicircle Curve; Capacitive vs Inductive
Active Power (%Sn)
Reactive Power (%Sn)
Desired Line
Desired Line