Informazioni utili per la compilazione del regolamento d'esercizio

Indice:

Inverter monofase

	Modello inverter	Tipologia convertitore	N° poli	Potenza nominale AC [W]	Cosφ nominale	Tensione nominale	Icc [A]	Rapporto Icc/In	DDI					SPI		
									Marca	Modello	Tipo	CEI EN	Interblocchi	Marca	Modello	FW
🟨	SB1.5-1VL-40	Statico	1P+N	1500	1	230 V	9	1,29	Zettler Electronics	AZ733W-2A-12DE	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB2.0-1VL-40	Statico	1P+N	2000	1	230 V	11	1,22	Zettler Electronics	AZ733W-2A-12DE	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB2.5-1VL-40	Statico	1P+N	2500	1	230 V	13	1,18	Zettler Electronics	AZ733W-2A-12DE	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB3.0-1AV-41	Statico	1P+N	3000	1	230 V	16	1,23	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB3.6-1AV-41	Statico	1P+N	3680	1	230 V	19	1,19	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB4.0-1AV-41	Statico	1P+N	4000	1	230 V	21	1,21	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB5.0-1AV-41	Statico	1P+N	5000	1	230 V	24	1,20	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟨	SB6.0-1AV-41	Statico	1P+N	6000	1	230 V	27,5	1,20	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟧	SBS2.5-1VL-10	Statico	1P+N	2500	1	230 V	13	1,18	Zettler Electronics	AZ733W-2A-12DE	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟧	SBS3.7-10	Statico	1P+N	3680	1	230 V	20	1,25	Panasonic	AHES3191	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟧	SBS5.0-10	Statico	1P+N	5000	1	230 V	28	1,29	Panasonic	AHES3191	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟧	SBS6.0-10	Statico	1P+N	6000	1	230 V	32	1,23	Panasonic	AHES3191	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
🟧	SI4.4M-13	Statico	1P+N	3300	1	230 V	60	4,14			Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.20.xx.R
🟧	SI6.0H-13	Statico	1P+N	4600	1	230 V	120	6,00			Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.20.xx.R
🟧	SI8.0H-13	Statico	1P+N	6000	1	230 V	120	4,62			Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.20.xx.R

🟨 Inverter FV
🟧 Inverter per batterie
🟦 Inverter ibrido

Ai fini del regolamento d'esercizio i sistemi d'accumulo sono da considerarsi BIDIREZIONALI poiché gli inverter per batteria possono assorbire energia sia dall'impianto di produzione che dalla rete.

Inverter trifase

	Modello inverter	Tipologia convertitore	N° poli	Potenza nominale AC [W]	Cosφ nominale	Tensione nominale	Icc [A]	Rapporto Icc/In	DDI					SPI		
									Marca	Modello	Tipo	CEI EN	Interblocchi	Marca	Modello	FW
	STP3.0-3AV-40	Statico	3P+N	3000	1	230 V / 400 V	7,55	1,68	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP4.0-3AV-40	Statico	3P+N	4000	1	230 V / 400 V	9,06	1,56	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP5.0-3AV-40	Statico	3P+N	5000	1	230 V / 400 V	10,41	1,37	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP6.0-3AV-40	Statico	3P+N	6000	1	230 V / 400 V	11,47	1,26	FUJITSU	FTR-K3 AB012W-PS	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP8.0-3AV-40	Statico	3P+N	8000	1	230 V / 400 V	11,90	1,03	Hongfa	HF161-W/12-HT(704) 12V 277Vac 26A 1A 2.26mm	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP10.0-3AV-40	Statico	3P+N	10000	1	230 V / 400 V	14,83	1,02	Hongfa	HF161-W/12-HT(704) 12V 277Vac 26A 1A 2.26mm	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.10.xx.R
	STP5.0-3SE-40	Statico	3P+N	5000	1	230 V / 400 V	39	5,34	Hongfa	HF161F	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.02.20.R
	STP6.0-3SE-40	Statico	3P+N	6000	1	230 V / 400 V	39	4,48	Hongfa	HF161F	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.02.20.R
	STP8.0-3SE-40	Statico	3P+N	8000	1	230 V / 400 V	39	3,36	Hongfa	HF161F	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.02.20.R
	STP10.0-3SE-40	Statico	3P+N	10000	1	230 V / 400 V	39	2,69	Hongfa	HF161F	Relé	EN61810-1	NO	SMA Solar Technology AG	SMA Grid Guard 10.0	3.02.20.R
	STP 15000TL-30	Statico	3P+N	15000	1	230 V / 400 V	30,31	1,40								
	STP 20000TL-30	Statico	3P+N	20000	1	230 V / 400 V	31,07	1,07								
	STP 25000TL-30	Statico	3P+N	25000	1	230 V / 400 V	40,06	1,11								
	STP 12-50	Statico	3P+N	12000	1	230 V / 400 V	38,30	2,20								
	STP 15-50	Statico	3P+N	15000	1	230 V / 400 V	42,53	1,96								
	STP 20-50	Statico	3P+N	20000	1	230 V / 400 V	43,06	1,48								
	STP 25-50	Statico	3P+N	25000	1	230 V / 400 V	42,73	1,18								
	STP 50-40/41	Statico	3P+N	50000	1	230 V / 400 V	85,91	1,18								
	STP 110-60	Statico	3P	110000	1	400 V	175	1,10								
	SHP 100-20/21	Statico	3P	100000	1	400 V	166,39	1,15								
	SHP 150-20/21	Statico	3P	150000	1	600 V	170,34	1,18								
	SHP 172-21	Statico	3P	172000	1	660 V	174,97	1,16								
	SHP 180-21	Statico	3P	180000	1	690 V	175,09	1,16								

Inverter FV
Inverter per batterie
Inverter ibrido

Soglie (SPI esterno)

- **STP AV-40 – STP TL-30 – STP X – STP CORE1 – SHP PEAK3**

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Statement about Grid Guard for Italy for plant higher than 11.08 KW (external SPI):

To whom it may concern

we hereby confirm that following SMA products:

1. STP3.0/4.0/5.0/6.0/8.0/10.0-3AV-40-3AV-40
2. STP 15000-20000-25000 TL-30
3. STP X
4. STP 50-41 Core1
5. SHP-20 PEAK3 (100 kW/150 kW)
6. SHP-21 PEAK3 (100 kW/150 kW/172kW/180kW)

Fulfill below parameter setting list, based on grid guard selected for Italy (IT-CEI0-21/19_c / IT-CEI0-16/19).

Protections	Grid Guard STP TL-30/xx-3AV-40, STP X, CORE1, SHP PEAK3	
	CEI0-21/19_c / CEI0-16/19	
VOLTAGE		
59.S1	1,22 GridGuard.Cntry.VolCtl.hLimPu Voltage monitoring lower maximum threshold	60000ms GridGuard.Cntry.VolCtl.hLimTmms Voltage monitoring lower max. threshold trip. Time
59.S2	2.0 GridGuard.Cntry.VolCtl.hhLimPu Voltage monitoring upper maximum threshold	100000ms GridGuard.Cntry.VolCtl.hhLimTmms Voltage monitoring upper max. threshold trip. Time
27.S1	0.2 GridGuard.Cntry.VolCtl.lLimPu Voltage monitoring lower minimum threshold	10000ms GridGuard.Cntry.VolCtl.lLimTmms Voltage monitoring lower min. threshold trip.time
27.S2	0.2 GridGuard.Cntry.VolCtl.llLimPu Voltage monitoring of median minimum threshold	10000ms GridGuard.Cntry.VolCtl.llLimTmms Voltage monitoring median min. threshold trip. Time
FREQUENCY		
81>S1	55Hz GridGuard.Cntry.FrqCtl.hLim Frequency monitoring lower maximum threshold	90000ms GridGuard.Cntry.FrqCtl.hLimTmms Frequency monitoring lower max. threshold trip. Time
81<S1	44Hz GridGuard.Cntry.FrqCtl.lLim Frequency monitoring median minimum threshold	300000ms GridGuard.Cntry.FrqCtl.lLimTmms Frq. monitoring median min. threshold trip. Time
81>S2	66Hz GridGuard.Cntry.FrqCtl.Max Frequency monitoring median maximum threshold	100000ms GridGuard.Cntry.FrqCtl.MaxTmms Frq. monitoring median max. threshold trip. Time
81<S2	44Hz GridGuard.Cntry.FrqCtl.Min Frequency monitoring upper minimum threshold	1000000ms GridGuard.Cntry.FrqCtl.MinTmms Frq. monitoring upper min. threshold trip. Time

Yours sincerely
SMA Solar Technology AG

i. V. Mario Trinkaus
Head of Global Technical Consulting

i. A. Bernd Krah
Global Technical Consultant

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Executive Board: Dr.-Ing. Jürgen Reinert, Barbara Gregor
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Soglie (SPI esterno)

- **STP CORE2**

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Statement about Grid Guard for Italy for plant higher than 11.08 KW (external SPI):

To whom it may concern

we hereby confirm that following SMA products:

1. STP 110-60 (Core2)

Fulfill below parameter setting list, based on grid guard selected for Italy (IT-CEI0-16/19).

Protections	Grid Guard STP110-60 CORE2	
	CEI0-16/19	
VOLTAGE		
59.S1	1.15 Overvoltage Level-1 Protection Value	0.5 s Overvoltage Level-1 Tripping Time
59.S2	1.2 Overvoltage Level-2 Protection Value	0.1 s Overvoltage Level-2 Tripping Time
27.S1	0.85 Undervoltage Level-1 Protection Value	1.5 s Undervoltage Level-1 Tripping Time
27.S2	0.2 Undervoltage Level-2 Protection Value	0.5 s Undervoltage Level-2 Tripping Time
FREQUENCY		
81>S1	51.5 Hz Overfrequency Level-1 Protection Value	1 s Overfrequency Level-1 Tripping Time
81<S1	47.5 Hz Underfrequency Level-1 Protection Value	4 s Underfrequency Level-1 Tripping Time
81>S2	52.5 Hz Overfrequency Level-2 Protection Value	0.1 s Overfrequency Level-2 Tripping Time
81<S2	46.5 Hz Underfrequency Level-2 Protection Value	0.1 s Underfrequency Level-2 Tripping Time

Yours sincerely
SMA Solar Technology AG

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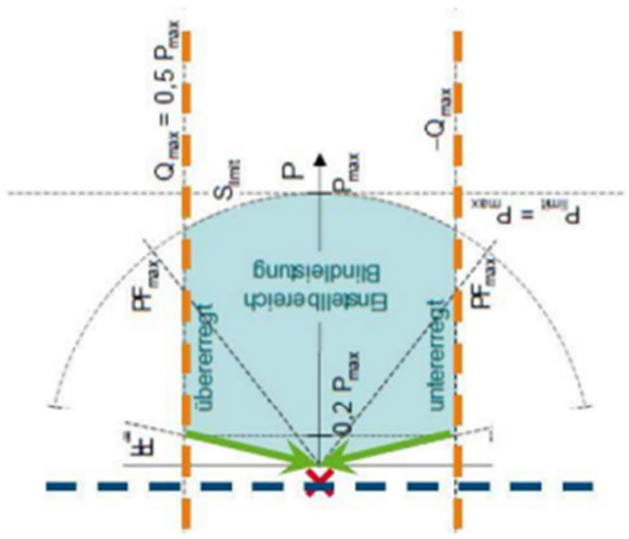
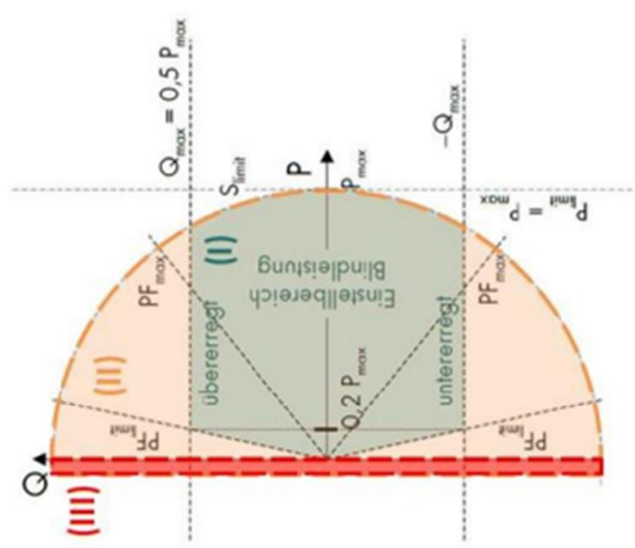
Curve di capability

- **STP 15000/20000/25000TL-30 (STP TL-30)**
- **STP 50-40/41 (STP CORE1)**

P-Q diagram without Q on Demand:



P-Q diagram with Q on Demand:

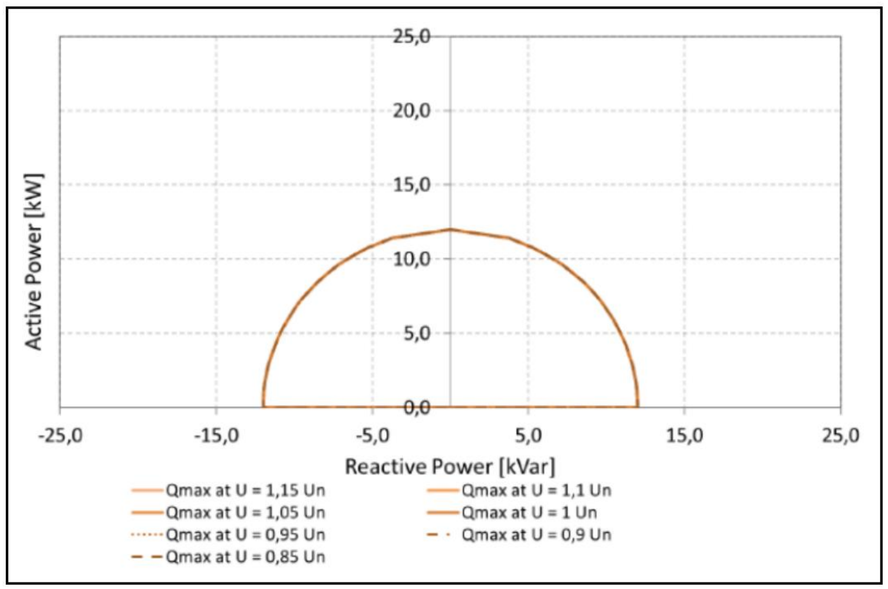


> Inverters operating in parallel grid operation are able to export/import (overexcited/underexcited) reactive power when running in non-feed-in mode

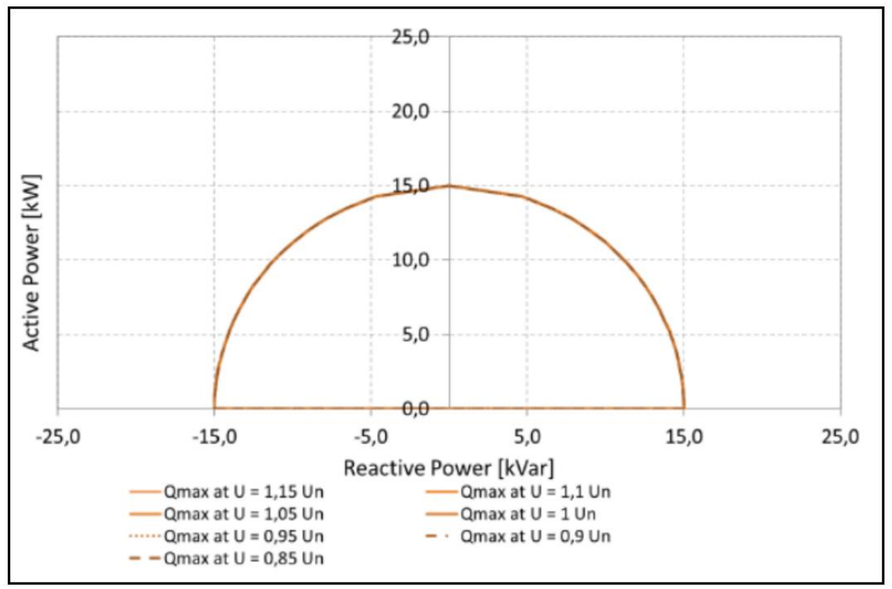
> The inverter makes a self-test everyday and DC power is needed even when is working 24h with reactive power.

> The inverter is a 2 quadrants generator with full capability in these two quadrants

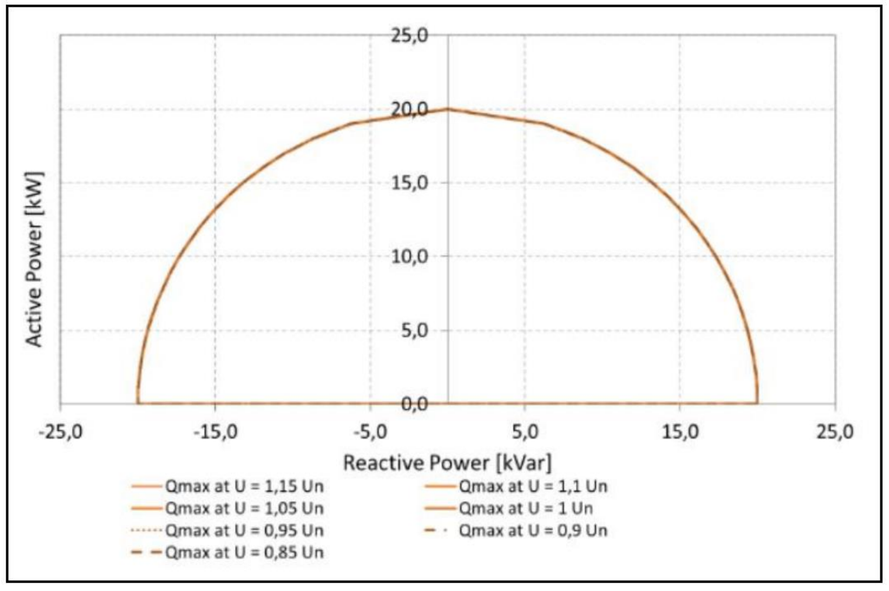
- **STP 12-50 (STP X)**



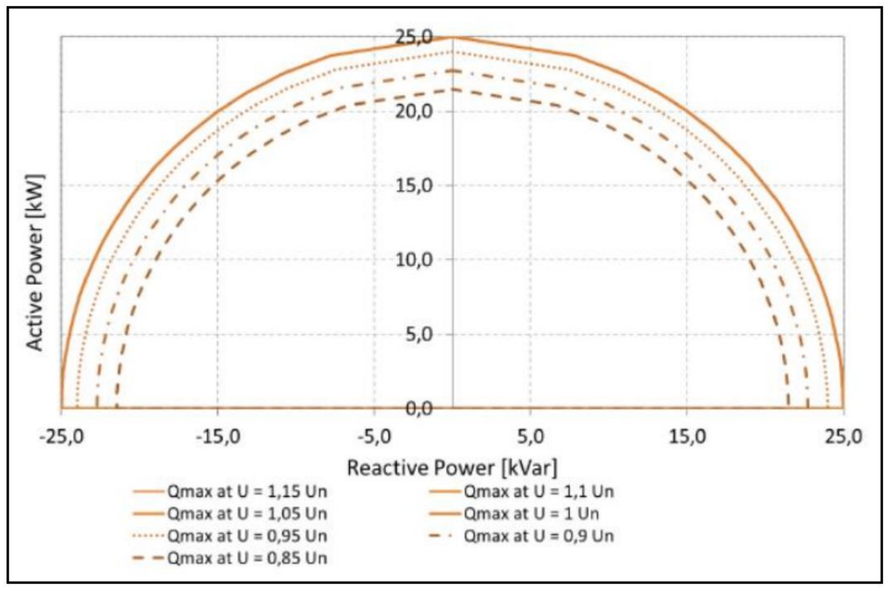
- **STP 15-50 (STP X)**



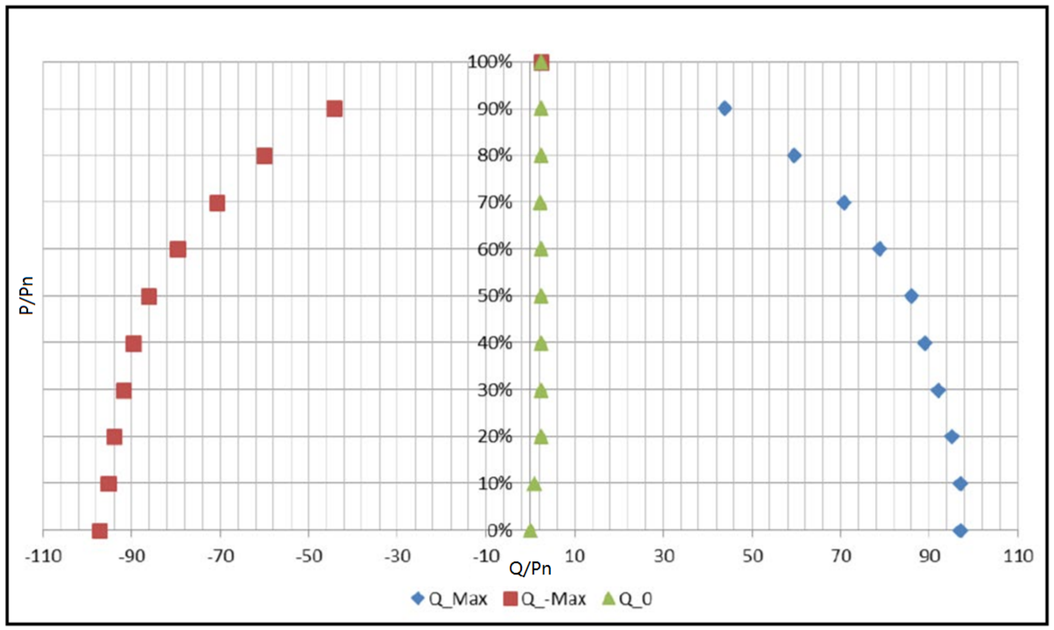
- **STP 20-50 (STP X)**



- **STP 25-50 (STP X)**



- **STP 110-60 (STP CORE2)**



- **SHP 100/150-20 (SHP PEAK3)**
- **SHP 100/150/172/180-21 (SHP PEAK3)**