



Flexible affordable

Automatization for

Greenhouses and Agriculture

1- Greenspec focus

Greenspec supplies an automatization package that is very flexible in its set-up, working for small and large growers, where extensions can be made for low costs.

The central computer controls a wide package of I/O units and can control multiple sensors. We set no limits, with an extensive online manual your installer can adjust your software as needed to improve your crop.

Communication between the units is by optical fibre. Control of the system is made simple by internet or by mobile access, so remote adjustment by yourself, your installer or the Greenspec team is easy.



1- Concept Greenspec



Materials:

- Industriel PC (GSC)
- Distributed Inputs/Outputs module (AFP)
- Sensors





Software for Greenhouse Automatization and control

- Ferti-irrigation
- Climate regulations
- Energy management
- Water management
- Personalized extra features possible

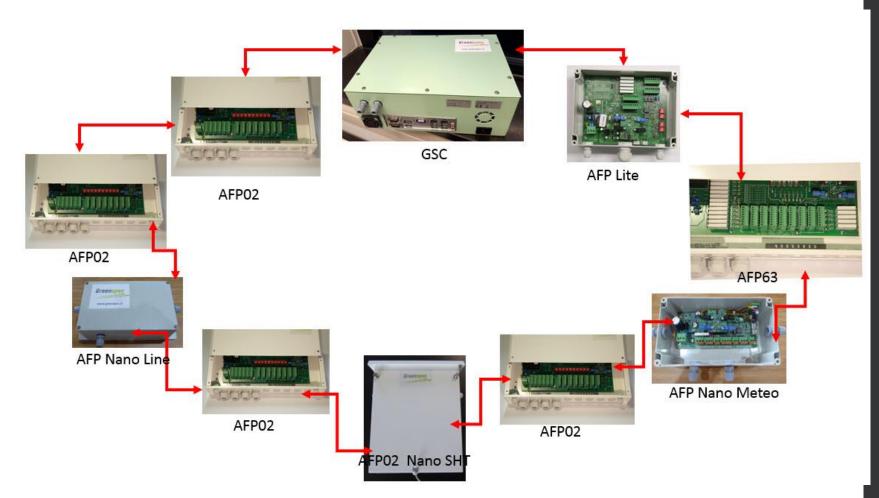
Production and development of electronics in the Netherlands since 2009



1- Dealers and Installations around the world

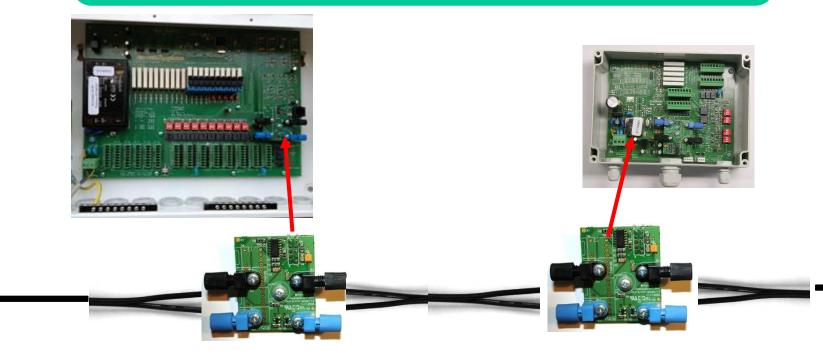


2- Inputs/Outputs modules are connected by optical fiber Overview of the central PC (GSC) and all different I/O units (AFP)



About Greenspec copyright reserved Greenspec BV 11/2022

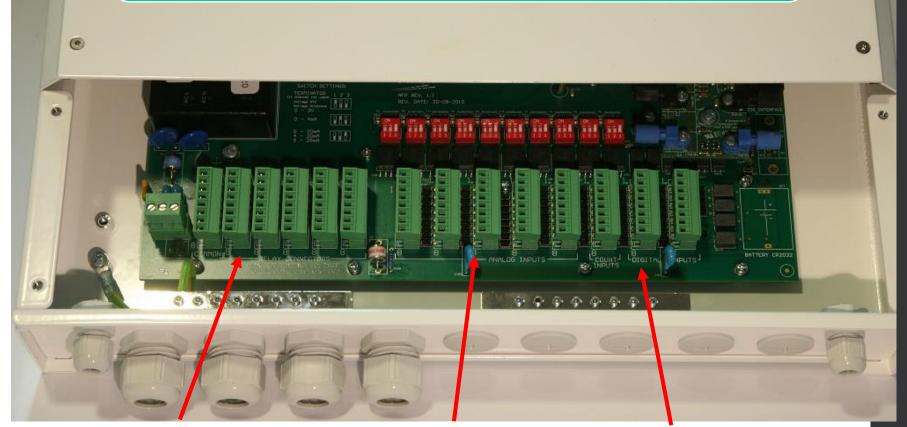
2- Greenspec Hardware : Simple opto com connexion : POF cable



POF cable: easy and affordable connection, electrical separation of all units, simple cutting tools Distance between modules up to 120 meters

GREEN SPEC

2- AFP inputs/outputs



Digital Outputs : Dry contact relays with separate common

Analogue inputs configurable: 0-3 or 10V 0-20 and 4-20 mA Digital/Contact inputs Counters/frequency inputs GREEN SPEC

2- Hardware a flexible range of I/O modules



AFP Standard 20 I / 20 O







AFP Lite extension $7\,\mathrm{I}\,/\,5\,\mathrm{O}$





AFP Nano:

- Dedicated single functions
- Modbus, RS485 communication connections

About Greenspec copyright reserved Greenspec BV 11/202





2- Hardware : I/O modules can be installed distributed or centralized







Distributed I/O, installed next to electric boxes



Centralised I/O, installed as replacement of old controllers



2- A wide range of industrial sensors and many more can be used with our system



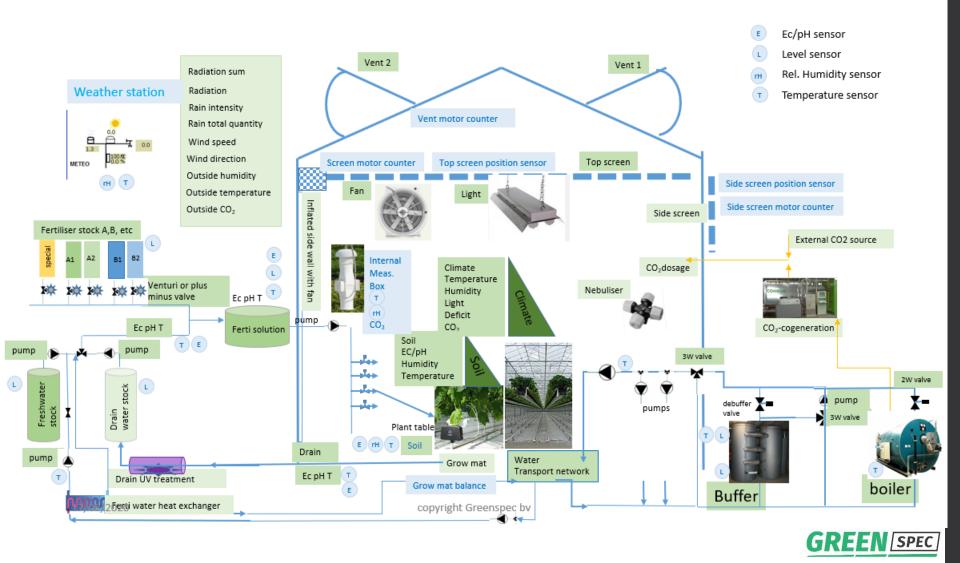
Greenspec pH plus electronics



Greenspec stable toroid EC

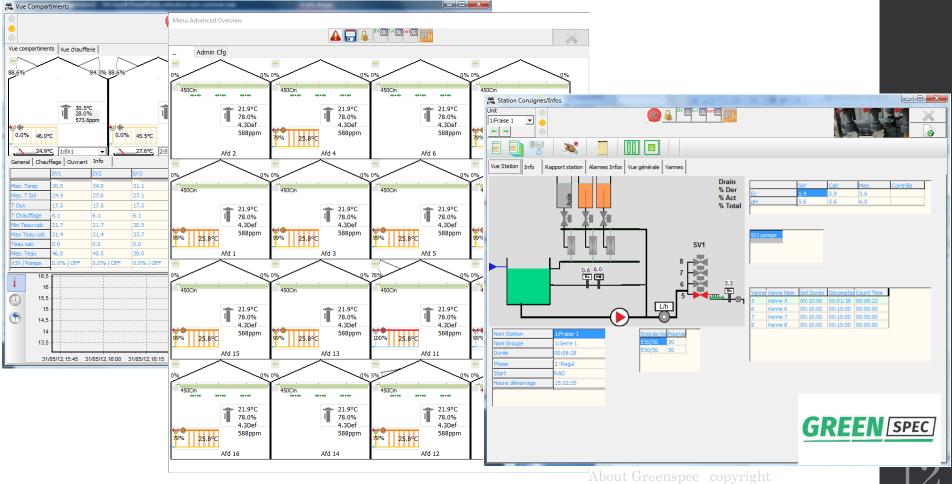


3- Greenspec Software functions



TT

3- Greenspec Software Quick overviews for Ferti-irrigation and Climate



eserved Greenspec BV 11/2022

3- Greenspec Software Menus for Climate settings.

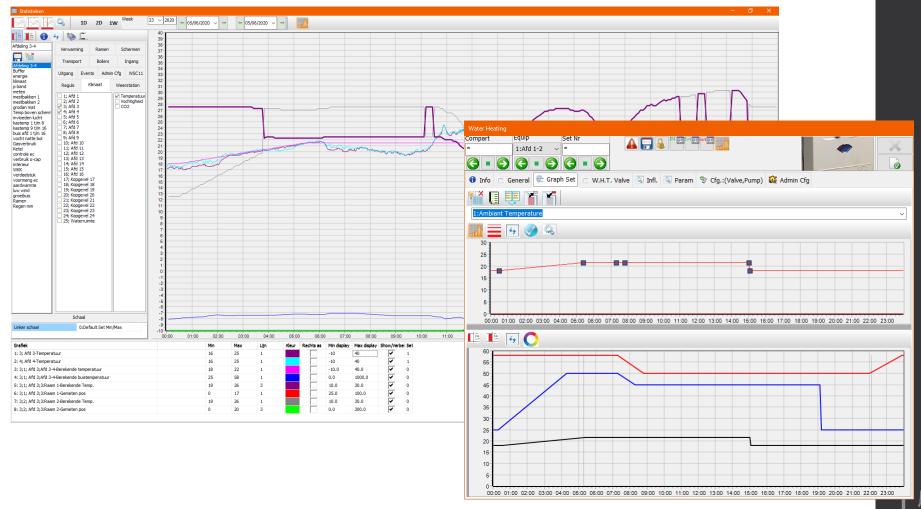
General	▲ Screens													2 0	Outputs P – 🗆	1 ×	17/06/20 13:58
Adv. Overview	Compart Equip	Set Nr	🔺 🗔 🔒 🕺												V A		Sun Up: 05 Sun Dw: 22 osc ver 6.10.31
Overview Climat	6•66•	66.6											M/	All		~	10.8°C 175.6W/m ² 80.0%
	🜒 Info 🚝 Thermal Fo				Param 🔄 Set Side Scr		t design of a							Out	Name	Statu ^	1.9Def 0.0Km/h, [N]
Overview Ferti	U 210	-	ct on Time 🔬 Gene	erai 🧠 Innuence 👒	Param Set Side Scr	eens 🐨 Conng 🔤	Admin Crg							39 40			A
Report Units	🔹 🍺 🎢 🎢	2200												40	5,Scherm +		11-12 Buis onder 21.9 Gas WKK 1 m3/u 0.0
i Kepore onica		Afd 1/1,S	Scherm	Afd 1/1,Scherm	Afd 2/2,Sche Afd 2/2	,Sche Afd 3/3,Sche A	fd 3/3,Sche Afd 4/4,Sch	Afd 4/4	,Sche	Afd 5/5,Sche	Afd 5/5,Sche	Afd 6/6,Sch	e Afd 6/6,		11.Raam 2+		Gas WKK 2 m3/u 0.0
🔒 Alarm	Set Name	Energie 1		Energie 2	Energie 1 Energie	2 Energie 1 E	nergie 2 Energie 1	Energie	2	 Energie 1	Energie 2	Energie 1	Energie	43	5,Raam 1-	•	Gas ketel m3/u 0.0
	Activation	Vater Heating								1:Yes	1:Yes	1:Yes	1:Yes	44	5,Scherm -		Check Opto Com
Chart e	Actif Set in Period On	ompart Equip	Set Nr		N gig Evt gig our gig					0:No	1:Yes	0:No	1:Yes	45	5,Raam 1+		Reset and Reconfig A
Manual Control	Time Begin Set	1:Afd 1-2	~ *	🔺 🗔 🌲			<i>(</i>	\sim	3:48	SD+60=23:0	SU-90=03:4	8 SD+60=23:0	0 SU-90=	0 46	5,Raam 2-	•	Reset and Reconfig A
	Level O/s Temp Swite	3 • 🕤 🔾 •	66•6	1						9.0	-20.0	9.0	-20.0	47	6,Raam 1+	•	
Heat	cereman sinter on						12			10.0	0.0	10.0	0.0	48	6,Raam 2-	•	
Heat Water	Level Calc W.T. Sw 0	🕽 Info 🖾 General 🏤	Graph Set 📃 W.H.	.T. Valve 🛞 Infl. 🥱	Param 💱 Cfg.:(Valve,F	°ump) 🚟 Admin Cfg				52.0 25.0	0.0 30.0	52.0 25.0	0.0	49	6,Raam 2+		
	O/s T. fold on night Condition Switch On	S 🖉 🖉		7, 🧏 🍕 💷							30.0 0:0/s Temp			50 e 51	19,Raam 1-		
Transports 3	Condition Switch On		Afd 1/Afd 1-2	Afd 1/Afd 1-2	Afd 1/Afd 1-2	Afd 1/Afd 1-2	Afd 1/Afd 1-2	Afc ^		4.Calc. W.H.	0.0/s remp	4.Cdic. W.H	. 0.0/51	52	6,Scherm - 6,Raam 1-		millionillio
Boiler Room	Time Start Step Swite	Set Name	Periode 1	Periode 2	Periode 3	Periode 4	Periode 5	Per		SU-90=03:4	SD+60=23:0	SU-90=03:4	18 SD+60=	53	5,Raam 2+		
		Ambiant Temperature	T=3.0	T=3.0	T=3.0	T=3.0	T=3.0	T=		10.0	10.0	10.0	10.0	54	6,Scherm +	•	Ω
Buffer		Min Water Temperature	35.0	35.0	35.0	35.0	35.0	35.		900.0	250.0	900.0	250.0	55	19,Raam 1+		
		Max Water Temperature	45.0	45.0	45.0	45.0	45.0	45.		35.0	35.0	35.0	35.0	56		•	7/06/20 10:28:47;Conne
CO2 CO2 Central		D.Temp Set 0 on Min Wate	e 30.0	30.0	30.0	30.0	30.0	30.	ly	1:Rad only	1:Rad only	1:Rad only	1:Rad o	r 57			AFPs
Energy Counters	Cond. Switch On Day1	Time Begin	FT=00:02	FT=01:00	SU+60=06:18	SU+120=07:18	SD-185=19:02	SD	ly	1:Rad only	1:Rad only	1:Rad only	1:Rad o	r 58			
		Time Slope End	FT=00:55	FT=01:00	SU+90=06:48	SU+150=07:48	SD-180=19:07	SD						59	21,Gevel onder +		Help Desk and Service
WKKs I		Time End	FT=01:00	SU+60=06:18	SU+120=07:18	SD-185=19:02	SD-30=21:37	FT		1:Yes	1:Yes	1:Yes	1:Yes	60	Zwavel 7-10		
Coverage	Dist. End Step Switch									420	420	420	420	61	20,Raam 1+		L 🔊 🔹 💆
4		Humidity Set Infl	0:None	1:I. Set 1	0:None	0:None	0:None	1:0		00:03:00 3	00:03:00	00:03:00	00:03:0	62 63	20,Raam 1-		
Vents		0/s T. Set Infl Rad. Set Infl	1:buitentemp inv	1:buitentemp inv	1:buitentemp inv	1:buitentemp inv	1:buitentemp inv	1:t		3 5	3	3	3	64	8,Raam 2+ 7,Raam 2-		
Screen		Rad. Set Infl Rad.S. Set Infl	2:instraling Set 2	2:instraling Set 2 2 2:stralingssom invl	2:instraling Set 2 2 2:stralingssom invl 2	2:instraling Set 2 2:stralingssom invl	2:instraling Set 2 2 2:stralingssom invl 2	2:1		20	20	20	20	65	7,Raam 1+		
Compartment	Delay before Switch C	Rdu.5. Set Inn	2.50 000 35000 000	2 2.50 0111955011 1111	2 2.50 000 255011 100 2	2.30 0111933011 1111	2 2.30 dingssom mvr 2	2.0		00:00:00	00:00:00	00:00:00	00:00:0	_	7,Raam 1-	•	
compartment .														67	7,Scherm -		
Compart Set	CO2 € Compart ⊨qu									1:Yes	1:Yes	1:Yes	1:Yes	68	7,Scherm +	•	
Kick	* *									15.0	10.0	15.0	10.0	69	9,Raam 2+	•	
NICK		c la						>		30.0	21.7	30.0	21.7	70	8,Scherm -		
Fan Ventilator	6.06													71	8,Raam 1-	•	
	📵 Info 🚝 General	🚳 Influences 😵 Confi	ig Admin Cfg											72	8,Scherm +	•	
CO2 Injection		1												73	7,Raam 2+		
Ferti	- <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u> - <u>-</u>													74	8,Raam 1+		
Group LP	<		fd 5 /1 Afd			Afd 13 /1	Afd 15 /1							75	8,Raam 2- 20,Gevel LA boven-		
Group Er	Set Name			7 CO2 Afd 9 C		Afd 13 CO2	Afd 15 CO2	Ana	10	Nive	eau B2		0.0	70	20,Gevel LA boven+		
Group	Activation		:Yes 1:Ye		1:Yes	1:Yes	0:N0	Ana	4		iling ongedem	pt	-400.0		21.Gevel R	-	
	Time Begin			-150=07:48 SU+150			SU+ v 150 SD-180=19:07	Count	2	In43			0.0	<			
Unit	Time End	FT=12:00 SI	D-90=20:37 SD-	180=19:07 SD-180	=19:07 SD-90=20:37	FT=12:00	20-180=13:01	Count	3	Win	dsnelheid		0.0		" , G l		

13

3- Greenspec Software.Menus for Ferti settings

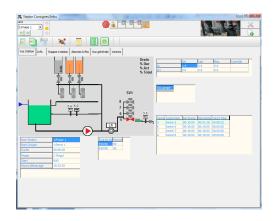
General	 Group set / Inf 																	~		17/06/20
Adv. Overview	Unit	Group				IN EDEXTEDOUT						Menu Valve					-			Sun U
		 1:Groep 1 	~		••••														×	Sun D GSC Ve
Overview Climat	• 🕒 🕤	\bigcirc																M		10.8℃ 290.0W/m 80.0%
Overview Ferti			9							s Manual Sta	art								Ø	1.9Def 0.0Km/h,
	Groep 1		9					Fixed	l Time Star	rts (0: Actif)		🕕 Info 💈	Valves Set	💱 Config	🔍 Admin Cfg					
Report Units	Activ.		Unit:2, Group::	1								🤹 🗗								11-12 Buis onder Gas WKK 1 m3/u
Alarm	Ec 2.8	в			G-1.4	0.10	0-1-0	G-1.4	0.45	0-1-C	-	Valve Nr	Valve Nar	N Drip	l/h Drip	Debit theo				Gas WKK 2 m3/u Gas ketel m3/u
Aidrin	pH 5.3	3			Set 1		Set 3	Set 4	Set 5	Set 6		1	Kraan 1	9180	3.0	27890.0				Check Opto
Chart	Post Ec 1.3		Set Name		Vast 1	Vast 2	Vast 3	Vast 4	Vast 5	Vast 6		2	Kraan 2	9180	3.0	27890.0				
Chart			Actif		0:No	0:No	0:No	0:No	0:No	0:No		3	Kraan 3	10200	3.0	31300.0				
	p 3WV Pos 0.0		Fixed Time			09:00:00	11:00:00	13:00:00	21:00:00			4	Kraan 4	10200	3.0	31300.0				Reset and Recor
Manual Control	Nutrient		Fixed Date									5	Kraan 5	10200	3.0	31300.0				
leat	A2/B2	~									_	6	Kraan 6	10200	3.0	31300.0				I I MEM
								Cyclic/Conta	act/Radiatio	on Starts (4:	Actif)	7	Kraan 7	10200	3.0	31300.0				
Heat Water			Unit:2, Group:1	1								8	Kraan 8	10200	3.0	31300.0				
2	Alarm Set											9	Kraan 9	10200	3.0	31300.0				1 1 1
Transports			×									10	Kraan 10	10200	3.0	31300.0				-dillomo
	Alarm unit 2	~			5	Set 1	Set	2	Set 3		Set 4	11	Kraan 11	10200	3.0	31300.0				
Boiler Room			Set Name			Straling start	Stra	aling start	Stralin	ng start	Straling star	12	Kraan 12	10200	3.0	31300.0				
-			Type Start			:Radiation S		adiation Sun		iation Sum	1:Radiation	13	Kraan 13	10200	3.0	31300.0				
Buffer												14	Kraan 14	10200	3.0	31300.0				
			Actif			:Yes	1:Y	es	1:Yes		1:Yes	15	Kraan 15	10200	3.0	31300.0				
12 CO2 Control			Cycle Date				0		0		0	16	Kraan 16	10200	3.0	31300.0				7/06/20 10:28:47;
02 CO2 Central			Time Beg		3	GU+5=05:23	SU+	180=08:18	SU+30	00=10:18	SD-300=17:	17	1:Filter sp	1	5.0	50300.0) AFPs
			Time End			SU+180=08:1	8 SU+	300=10:18	SD-30	0=17:07	SD-180=19:	18	2:Filter sp		5.0	50300.0				
Energy Counters	IS		Pause Cyc			3:59:00		45:00	01:30:		23:59:00	19	1:Inspoel		5.0	50300.0				
·	-											20	2:Inspoel		5.0	50300.0				Help Desk and S
WKKs			Sum Level To	o Start		.00.0	100		100.0		100.0									
Coverage			Min Level To	Sum	(.0	0.0		0.0		300.0									
1			Rad permit S	tart		.0	0.0		0.0		0.0									
Vents			Infl. On first S	Start		.0	0.0		0.0		0.0									_
Screen			Infl On All Sta			5.0	75.0)	0.0		-20.0									
			Nr Set Inj Pro	op			0		0		0									
Compartment		II	T.					,	Valves (8:	Activ.)										
Compart Set			Valves Set Ad	Ivanced Val	ves Set															imad
Kick			Valves, Unit: 2,			[8 Actif]														
				group. 1 ,																
Fan Ventilator			Actif Nr Orde			hh: Volume	22211 23221	e/Ti Name	Inf 1 O	On V Inf.2 O	n 1/									
CO2 Injection			1	1	15:00	0.100		t coi Kraan 1		-5.0										
			1	2	15:00	0.100	-	t coi Kraan 2		-5.0										
Ferti			2	3	15:00	0.100	-	t coi Kraan 3		-5.0										
Group LP			2	4	15:00	0.100		t coi Kraan 4		-5.0										
D			3	5	15:00	0.100	3:cc/gt	t coi Kraan 5	5 -5.0	-5.0										
Group			3	6	15:00	0.100	3:cc/gt	t coi Kraan 6	6 -5.0	-5.0					ic ic	p M Start/F: Start/Cyc Star				
Unit			4	7	15:00	0.100		t coi Kraan 7		-5.0										SP
															~					

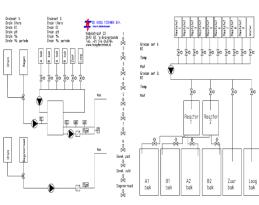
3- Greenspec Software. Graphical adjustable settings and measured curves

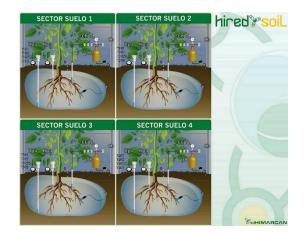


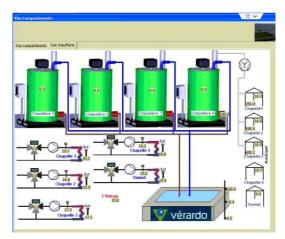
About Greenspec copyright reserved Greenspec BV 11/202

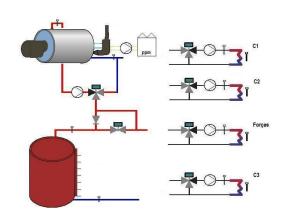
3- Software : All overviews of the application are personalizable

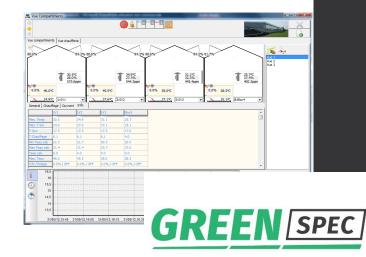












4- Greenspec services

 \bigcirc



- Manual fully incorporated in software functions in all screens
- Remote assistance by TeamViewer or AnyDesk
- Learning sessions for technicians
- Maintenance sessions



4- Simple tools to assist the installer and make remote data handling easy



GscBackup: a tool to save all Gsc settings on a Greenspec server



Gsc Data Fetcher: a tool to interconnect I/O of Gsc via Ethernet

 - 1

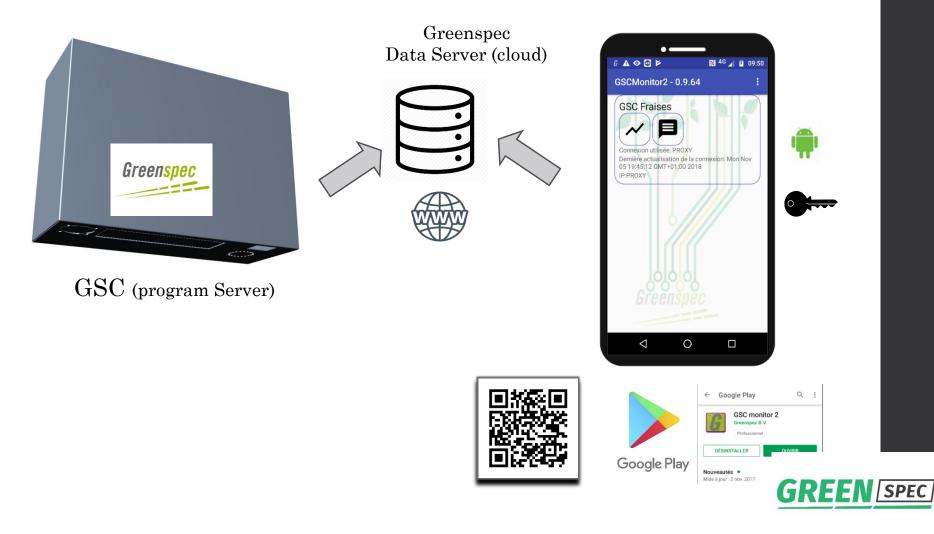
Settings copier: a tool to duplicate settings between compartments or irrigation groups



Exporting Data tools : for better analysis on remote or assistance via AI Data Server.



4- GscMonitor, an Android app for assistance



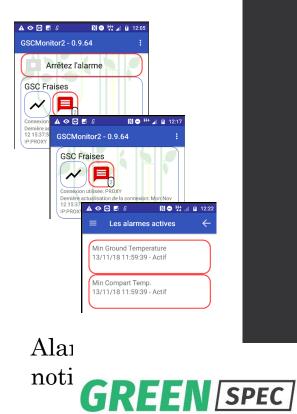
4- GscMonitor, remote reading



Actual data in greenhouse



Graphs





5- Views of Clients installations Different irrigation units systems

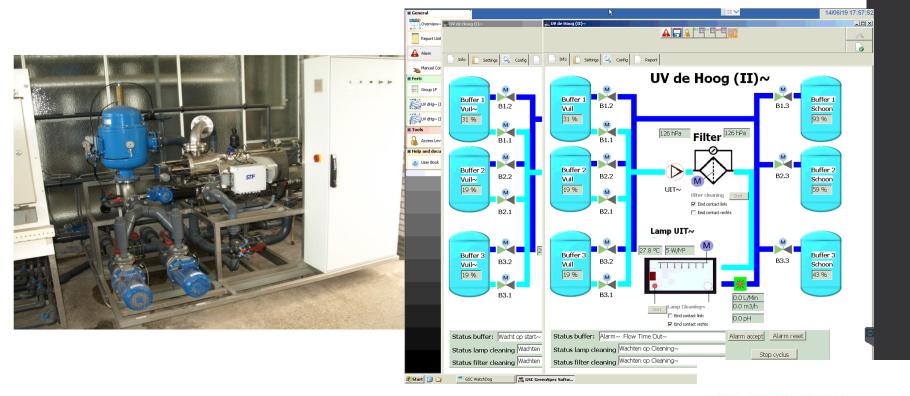


5- Views of Clients installations

Vents, Screens, Heating, Cooling Pad and Fan, Light, CO2 injections, etc.



4 View of client installations: Dedicated UV program





5- Views of Clients installations



About Greenspec copyright reserved Greenspec BV 11/2022

Greenspec : summary of Advantages

LE	AD FREE
47102	Pb
c	OMPLIANT

 Distributed Inputs/Outputs modules with up to date electronics, Concept and production in the Netherlands,



• Module connected by optical fiber (POF) to a central PC running under embedded windows (IOT),



• Software is sold with a licence dongle, standard software updates and Remote assistance to installers are free of charges. Adjustments can be made by the local installer.



Software Extension is included in the I/O module price, (No fixed number of compartments, ferti units, groups, valves, periods, etc.)







Greenspec Partner for succes



Support Centre Holland : +31 620 361 578 France : +33 610 155 523 Email : **info@greenspec.**

www.greenspec.nl

About Greenspec copyright reserved Greenspec BV 11/2022