Quick Instruction manual

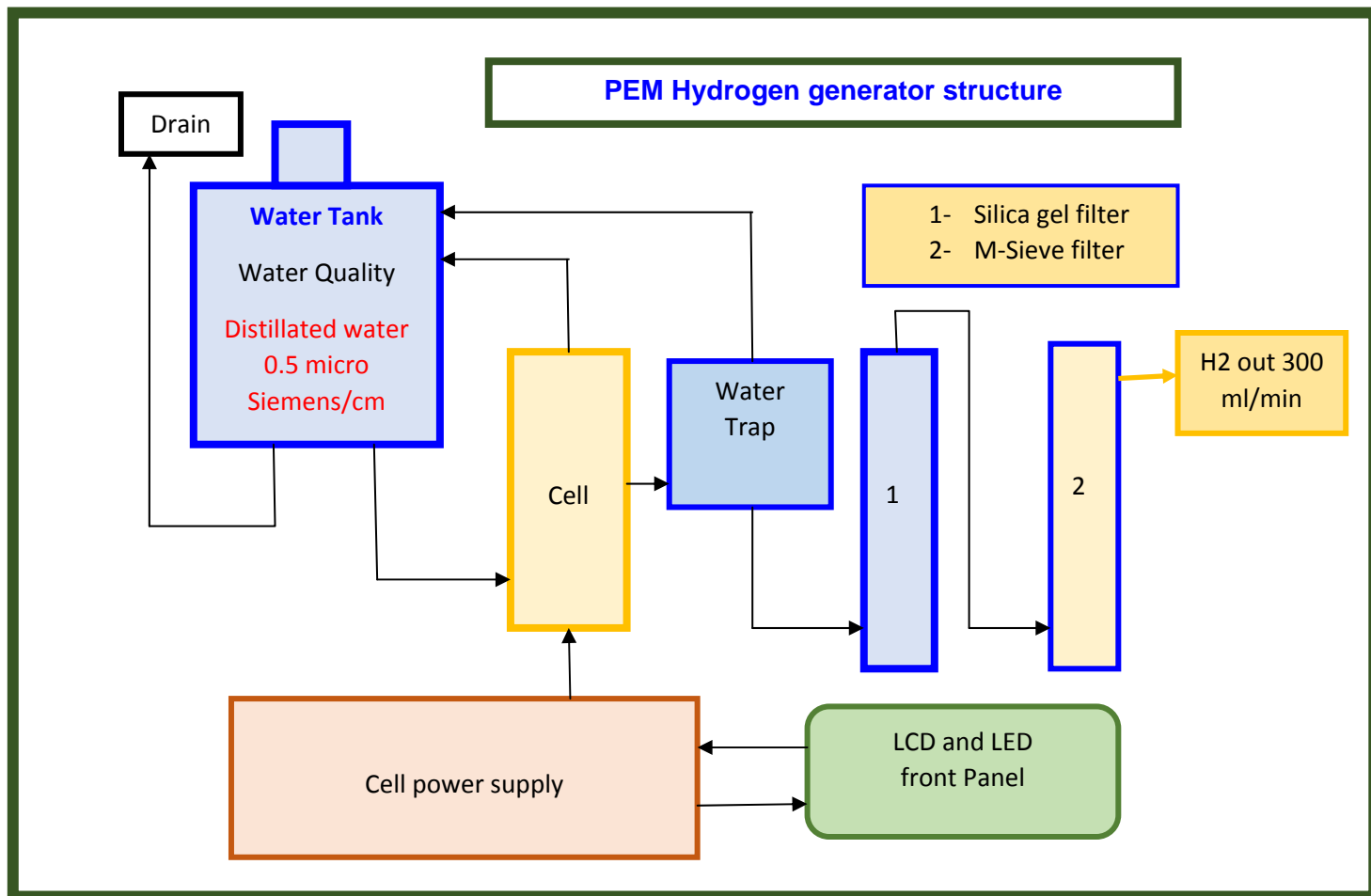# PEM-HG

PEM Hydrogen Generator

Technology:

This hydrogen generator use PEM membrane and electrolysis of pure water to produce pure hydrogen up to 99.9995%

PEM Hydrogen generator structure

Drain

Water Tank

Water Quality

Distillated water
0.5 micro
Siemens/cm

1- Silica gel filter
2- M-Sieve filter

Cell

Water Trap

1

2

H2 out 300 ml/min
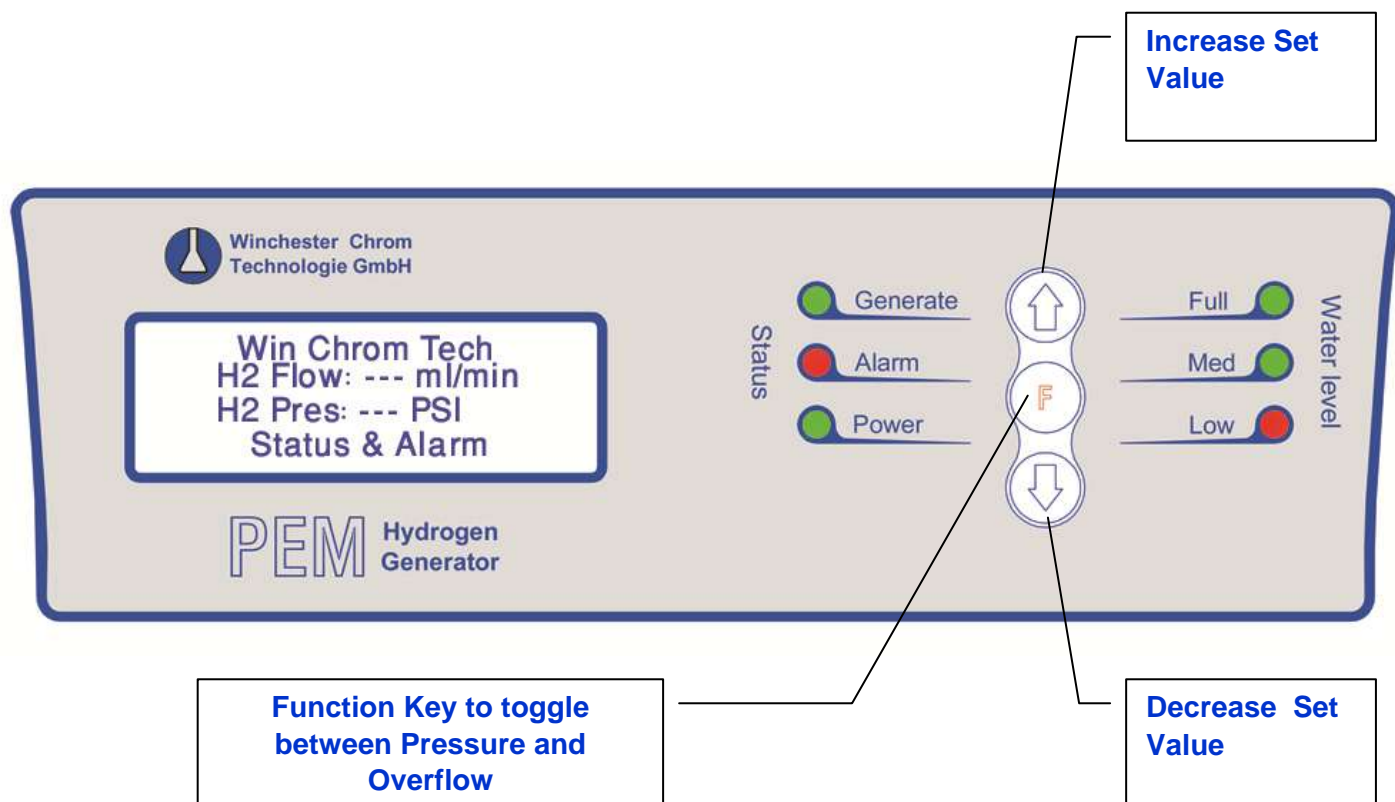
Cell power supply

LCD and LED front Panel

Attention!!!

➢ **Don't add any lye to water such as KOH or NaOH**
➢ **Use only de ionized pure water less than 0.5 micro Siemens /cm or more than 2 Mega ohm/cm**
➢ **Change water and clean water tank every 1 month (30 days)**

Key board and LCD

Increase Set Value

Winchester Chrom Technologie GmbH

Win Chrom Tech
H2 Flow: --- ml/min
H2 Pres: --- PSI
Status & Alarm

PEM Hydrogen Generator

Status
- Generate
- Alarm
- Power

F

Water level
- Full
- Med
- Low

Function Key to toggle between Pressure and Overflow

Decrease Set Value

LCD at normal mode

Line 1: **Winchester chrom technologie GmbH**

Line 2: **H2 generation flow (ml/min)**

Line 3: **H2 output pressure (PSI)**

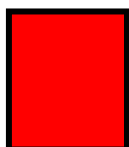Line 4: **Status of instrument and Alarm message**

LCD at set mode

Line 1: **OH=(operating hour in hour and minute) – WQ=Water Quality**

Line 2: **H2 generation over flow (ml/min) at set mode**

Line 3: **H2 output pressure (PSI) at set mode**

Line 4: **TH=Total H2 generated (M=cubic meter – L= litter – C = cc)**
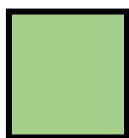
Generate Light: shows the hydrogen generation and intensity of LED light depend on amount of generation

Alarm Light: if blink it shows one alarm and beep began to sound every 10 second and the alarm message appear at line 4 LCD (refer to Alarm section)

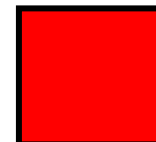**Power Light:** shows that instrument power is on

Status LED

Full Light: Shows the water tank is full and if LED Blink it shows that water tank is over and it must to empty until it stop blinking and alarm is removed

Med Light: shows water level is medium and good

Low Light: Shows the water tank level is low and distilled water must be add to water tank. If LED Blink the water tank is empty and generation stop and Alarm appear in LCD

Water Level LED

Alarm message

Line 4 LCD error list:

❖ Water empty error

Cause: the water tank is empty

Action: H2 generation stop, alarm Light blinks and buzzer sound every 10 second

Trouble shooting: fill water tank with distillated water

❖ Water over error

Cause: the water tank is over full

Action: H2 generation stop, alarm Light blinks and buzzer sound every 10 second

Trouble shooting: empty water tank until alarm disappear

❖ Pressure over error

Cause: H2 pressure is more than 90 PSI

Action: H2 generation stop, alarm Light blinks and buzzer sound every 10 second

Trouble shooting: Turn instrument power off and call to company service section

Attention!!!
Change water and clean water tank every 1 month (30 days)

科学材料站
SCI Materials Hub

Tel: +86 156 0553 2352
Fax: +86 553 7458 388
Email: contact@scimaterials.cn
Website: www.scimaterials.cn

Alarm message

❖ H2 leak error

Cause: There is leak or consumption of Hydrogen outside or inside of the instrument more than 300 ml/min for more than 12 minute

Action: H2 generation continue, alarm Light blinks and buzzer sound every 10 second

Trouble shooting: For checking internal leak turn instrument power off disconnect the output pipe and fix a blank nut and turn instrument power on and wait 15 minute and check for leak error again if no leak error then the leak is out of hydrogen generator and check the user instrument or connection of pipes

If steel the leak alarm exists check filter cap, it may be lose and if it was tight and no leak at filter cap then connect with maintenance section of company

Use only de ionized pure water less than 0.5 micro Siemens /cm or more than 2 Mega ohm/cm

PEM-HG maximum H2 generation is 300 ml/min and at continuous consumptions use 70% of maximum capacity 210 ml/min

科学材料站
SCI Materials Hub

Tel: +86 156 0553 2352
Fax: +86 553 7458 388
Email: contact@scimaterials.cn
Website: www.scimaterials.cn

Filter

There are 3 filters at output of electrolyses cell

1- **Water trap that automatically remove more water from produced hydrogen.**
2- **Silica gel filter with blue color that absorb more water vapor and it's color change to pink when it is saturated 60% (Pink color) must be regenerate in oven at 120 ° C for 60 ~ 120 minutes.**
3- **Molecular sieve 5 angstrom with dark yellow color that when saturated there is no color change and every 1 month it must be changed or regenerated in oven at 300° C for 120 ~ 240 minutes.**
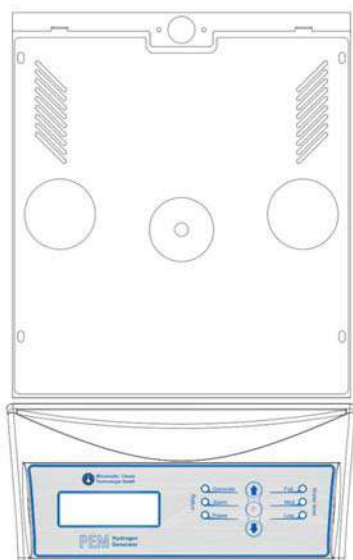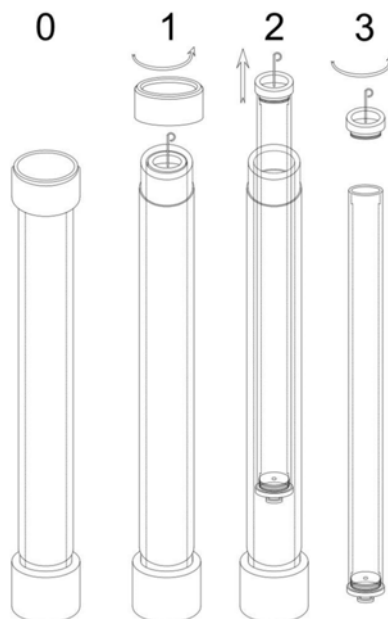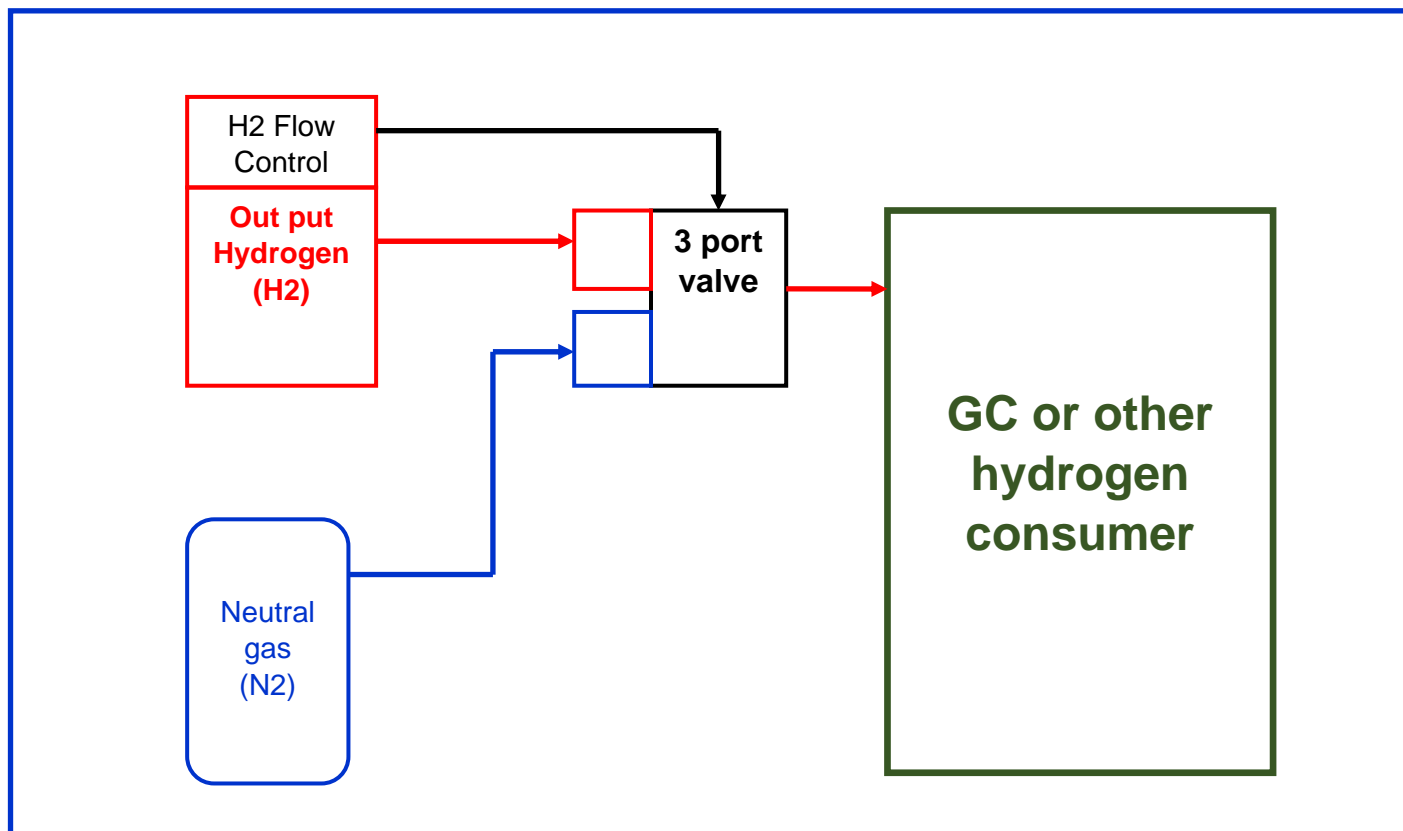
Fig – F1

Fig - F2

Filter content change or regeneration sequence

- **Turn instrument off**
- **Reduce H2 pressure to zero**
- **Open filter cap (2 side cap Fig – F1) as Fig – F2 /1**
- **Take out the inside filter (Fig – F2 /2) by pliers**
- **Open inside filter cap and change content or empty the content into clean glass vessel and regenerate in oven (Fig – F2 /3)**
- **Reassemble filter again and use instrument**

科学材料站
SCI Materials Hub

Tel: +86 156 0553 2352
Fax: +86 553 7458 388
Email: contact@scimaterials.cn
Website: www.scimaterials.cn

Optional security H2 overflow consumption control

H2 Flow Control

Out put Hydrogen (H2)

3 port valve

GC or other hydrogen consumer

Neutral gas (N2)

How does it work:

There is an event output that is controlled by SET Flow, when real flow exceed the set flow more than 60 second then system realize an overflow (it may be of broken column in GC oven or any other leak in the stream of hydrogen) and then the system stop generating hydrogen and activates a 3 port valve and purge the oven or any other chamber with neutral gas such as nitrogen (N2) and issue flowing error in error line 4 of LCD and sounds the alarm buzzer.
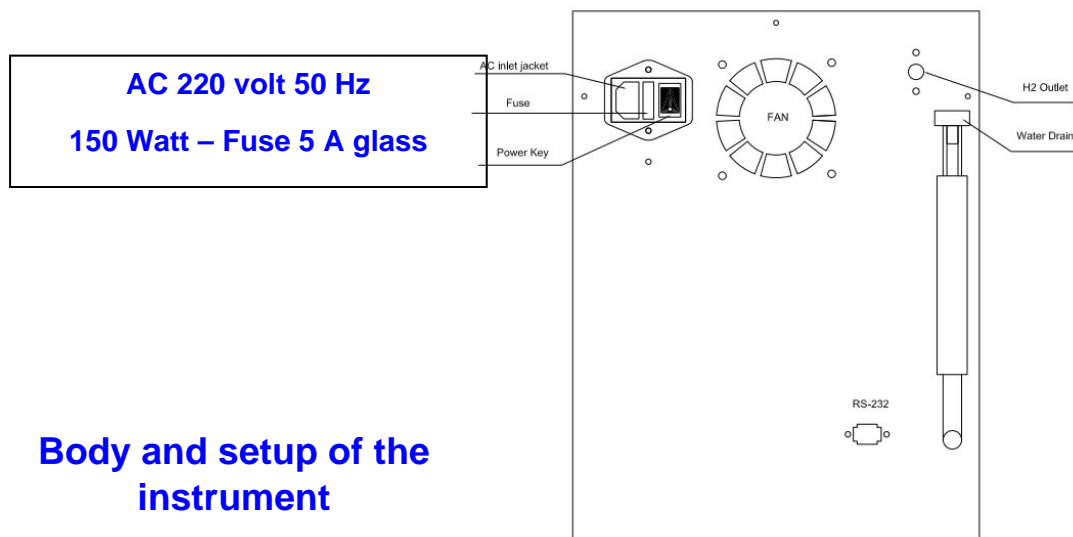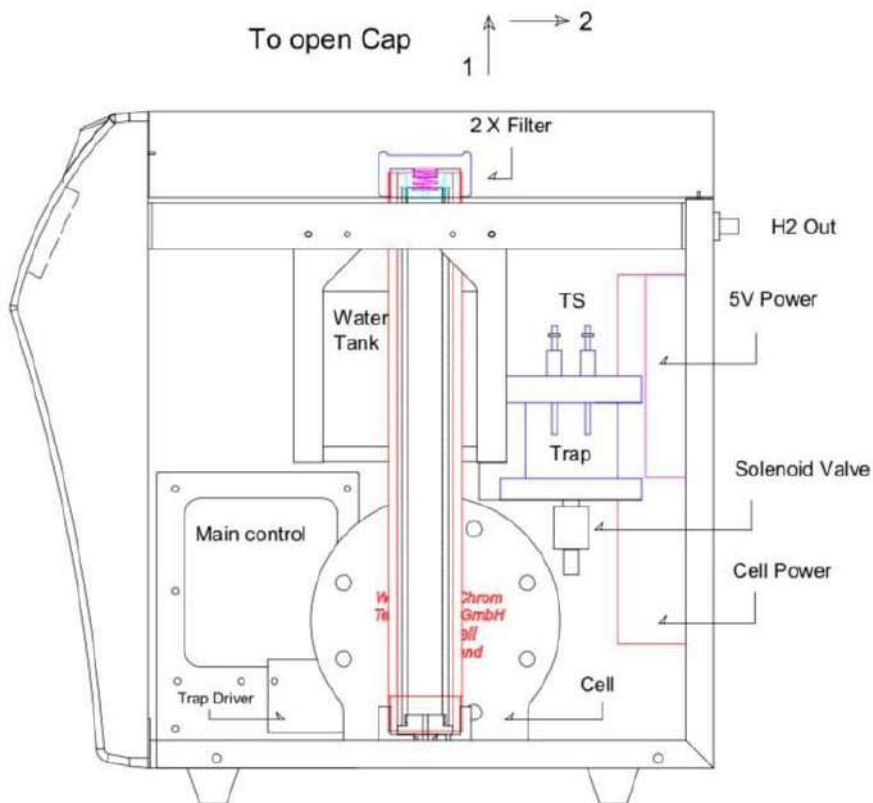
Over flow Error

AC 220 volt 50 Hz

150 Watt – Fuse 5 A glass

AC inlet jacket

Fuse

Power Key

FAN

H2 Outlet

Water Drain

RS-232

Body and setup of the instrument

To open Cap

2

1

2 X Filter

H2 Out

Water Tank

TS

5V Power

Trap

Solenoid Valve

Main control

Cell Power

Trap Driver

Cell

At following condition the guaranty service is not free of charge
- **users do not operate the generators according to the operational manual**
- **users disassemble parts by themselves**
- **users use more than generated capacity and use bad quality water**