



GmbH

Bench Electrodialysis Pump Unit

PCCell BED 1 - 2

and

PCCell BED 1 - 3



Technical Data



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1. General

The laboratory electro dialysis pump unit PCCell BED 1-2 and PCCell BED 1-3 are used in laboratory electro dialysis processes to remove ions from one solution (diluate). The ions are collected in another solution (concentrate). It allows with an electro dialysis unit (like the PCCell ED 64 0 02, PCCell ED 64 0 04 or PCCell ED 200) to carry out different types of experiments for a variety of applications, to examine the characteristics of ion exchange membranes in use. It is conceived as an easy-to-manage laboratory cell.

2. Function

The bench electro dialysis pump units PCCell BED 1-2 and PCCell BED 1-3 provide 3 (4) Electrolytic circuits: 2 (3) external circuits and one internal circuit with flow-through meters (10-100 l/h) and a 9 l internal electrolyte container. They are designed to work in combination with an ED cell to set up a variety of experiments like desalination.

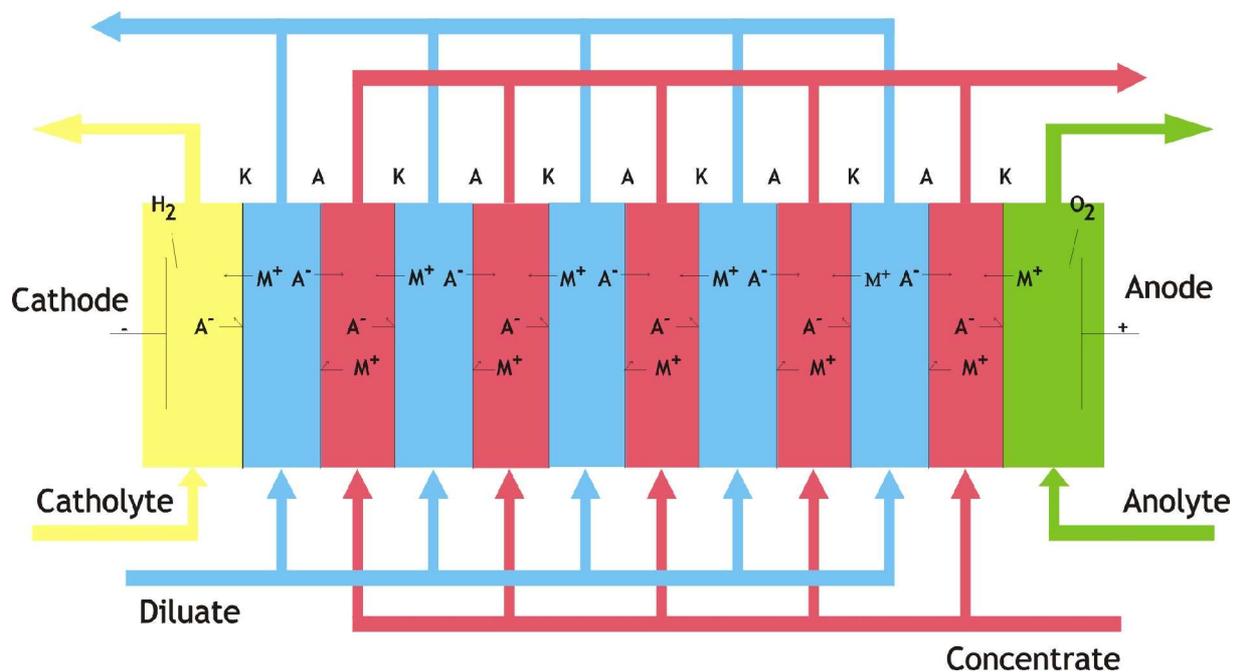


Fig. 1: Functional setup of an ED stack. Salts are removed in cells called "Diluate" and are collected in the Concentrate. Beside this, the electrodes need a solution, the Catholyte and the Anolyte.

An ED cell like the PCCell ED 64 can be used to run a standard ED. The ED stack provides n cell pairs (typically $n = 5, 10, 50$ or even 100), which are formed by $n+1$ cation exchange membranes, n anion exchange membranes and $2n$ spacers. At the shown polarity (Fig. 1), one of the cell systems is the diluate (where the ions are removed) and the other one is the concentrate in which the ions are collected. If the polarity is changed, the function of the cell system changes accordingly.

A complete ED System is set up by this ED Cell in combination with this ED pump unit and the external solvent tanks (Fig. 2).

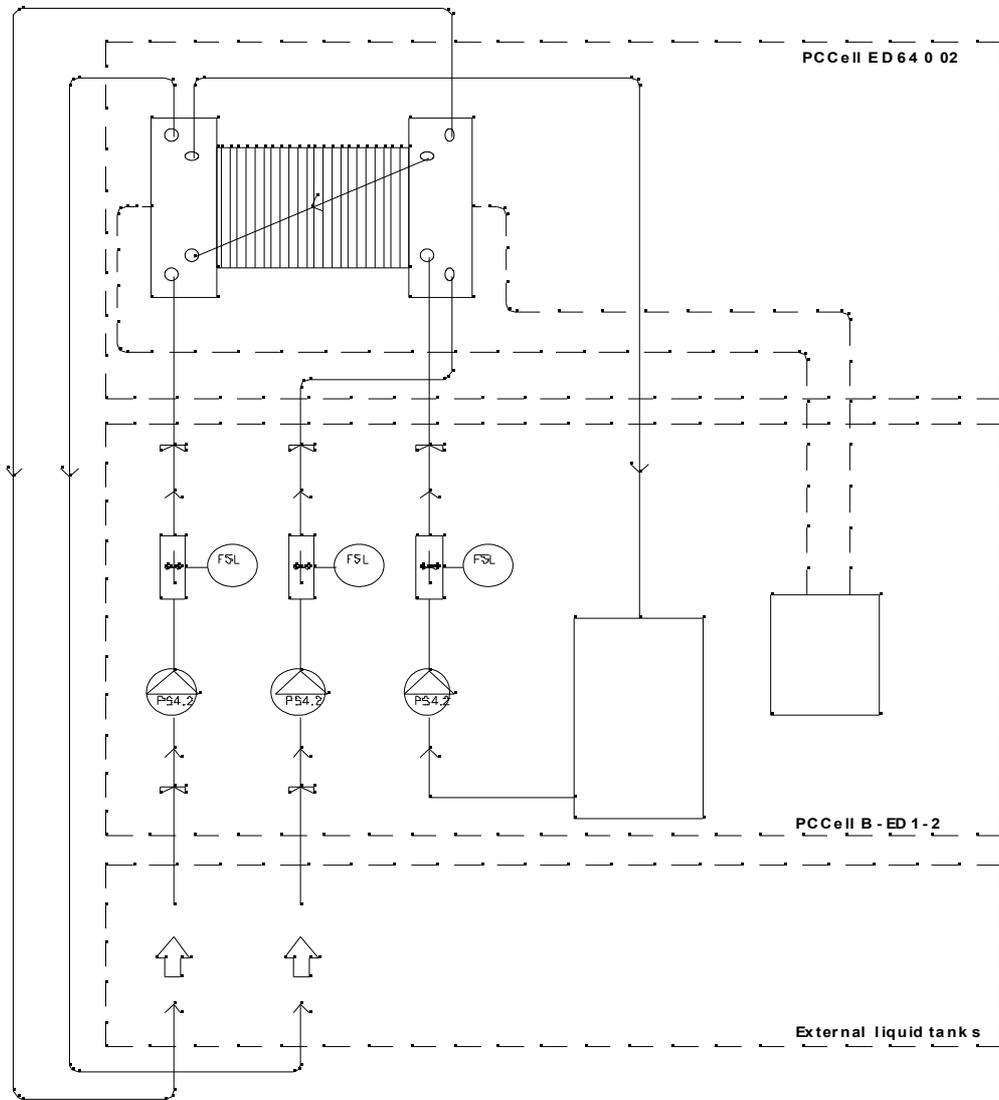


Fig. 2: A complete ED setup: it consists of the stack (upper dotted rectangle), the ED pump unit (middle) and the external electrolyte containers (below).

3. Components of the PCCell B-ED System

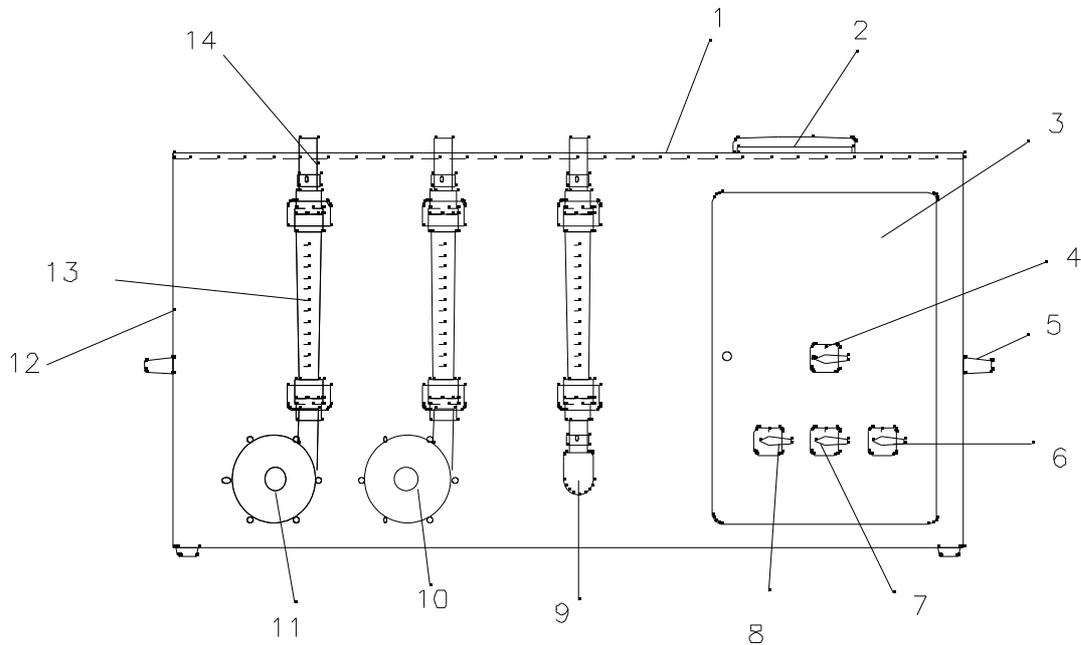


Fig. 3: PCCell B-ED 1 setup and functional parts.

#	Description
1	Working plate with waterproof beading
2	Electrolyte container screw top cap
3	Control box
4	Main switch
5	Movement
6	Electrolyte pump switch
7	Pump II switch
8	Pump I switch
9	Electrolyte solution circuit and flow meter
10	Pump II with flow meter
11	Pump I with flow meter
12	Power supply
13	Flow meter of circuit I
14	Outlet of circuit I



Fig. 4: The power supply and position of electrolyte container in PCCell B-ED 1.

#	Description
1	Main switch
2	Minus pole of output power
3	Plus pole of output power
4	Potentiometer to adjust the maximum output amperage
5	Potentiometer to adjust the maximum output voltage
6	Screw cap of the electrolyte container

4. Technical Data

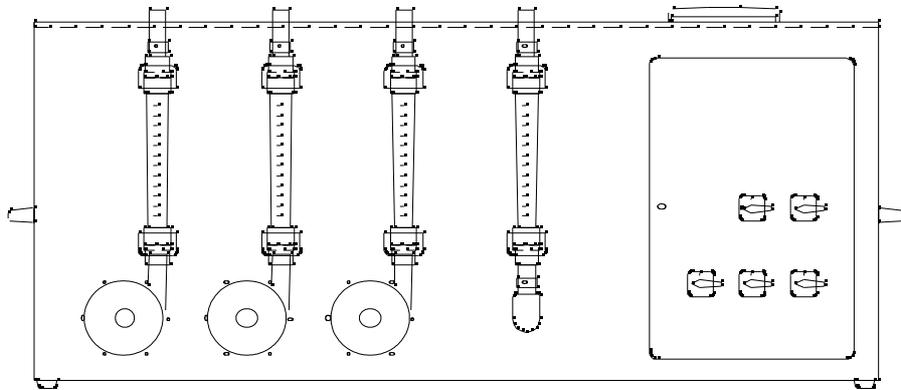


Fig. 5: PCCell B-ED 1-3: Front view.

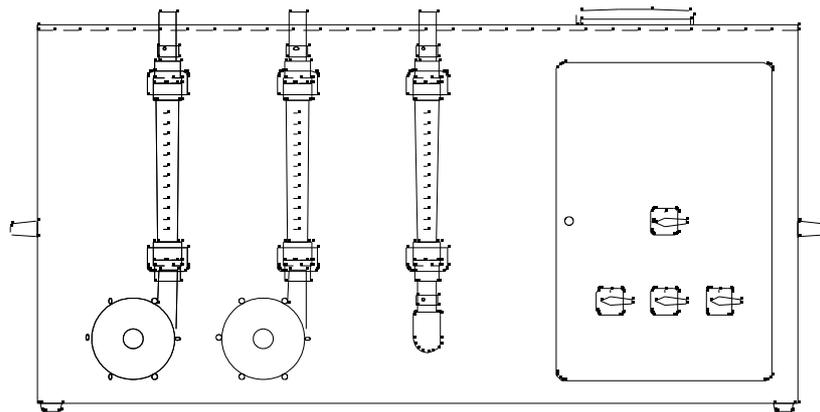


Fig. 6: PCCell B-ED 1-2: Front view.

Dimensions and Weight

	B-ED 1-2	B-ED 1-3
Width / mm	755	825
Height / mm	380	380
Depth / mm	410	410
Weight / kg	26	28

Electrical Connecting data

Input Voltage 230 V 50/60 Hz
 Protection Class IP 42
 Output Voltage max. 24 V
 Output Amperage max. 5 A

Medium Contacting Materials

Housing	polypropylene
Pumps	polyethylene
Electrolyte container	polypropylene
Sealing	EPDM

Power Supply Specification

Output Voltage	max. 24 V
Output Amperage	max. 6 A (short time) 4,5 A (continuous)

Pump Specification

	External circuit pumps
Max. output	25 l / min
Max. pumping height	4,2 m
Max. system pressure	1,4 bar
Temperature range*	5 - 50 °C

*Max. pump temperature is 85 °C. Rotameter are max. 50 °C

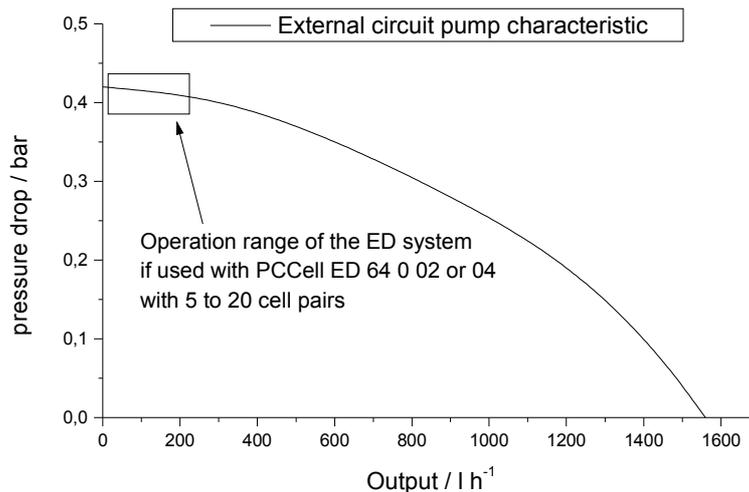


Fig. 7: Pump Characteristic for the pumps driving the inner solvent circuits of the electro dialysis stack.

5. Warranty

ED Cells and Ion Exchange Membranes are offered for sale and warranted, as indicated below.

All information included herein falls within the normal range of product properties and is based on technical data that PCCell believes to be reliable. This information should not be used to establish specification limits, nor used alone as the basis of design. It is the user's responsibility to determine the suitability of the product described in this bulletin and that the user's particular conditions of use present no health or safety hazards. Product samples are routinely offered by PCCell to establish suitability and conditions of use, both of which are the sole obligation of the user.

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In the event of a claim under the foregoing warranty, PCCell's sole obligation shall be to replace any product or part thereof that proves defective in material or workmanship provided the customer notifies us of any such defect within 30 days of delivery. The membrane in question must be returned to PCCell for review and testing only with prior authorization. PCCell shall not be liable for consequential,

incidental or any other damages resulting from economic loss or property damages sustained by user from the use of its products.

6. Further Information / Contact Address

For further information, visit our web site www.electrodialysis.info. In case of any technical questions, please contact

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Note:

The information in this handling instructions is presented in good faith, and all recommendations or suggestions are made without guarantee. The products are intended for use by persons having technical skill, at their own discretion and risk. PCCell is not responsible for any risks or liabilities which may result from the use of its products.