



SDI-EASY

Instruments for SDI analysis
Model: SDI-Easy

Instruments for SDI analysis

The overall performance of the reverse osmosis plant is not only dependent on good and sound engineering practice but also for a significant portion based on a good estimate of fouling parameters of the membranes. Particulate and colloidal matter, contained into the feed water, can foul membrane surfaces seriously, causing lower productivity and increasing energy costs. Sometime, this fouling can be of irreversible character, which obviously leads to the substitution of the membranes and oblige to modify the pre-treatment.



To determine the rate at which particulate and colloid matter will foul membranes, the widely accepted method Silt Density Index (SDI) is used. The simple test comprises a short filtration cycle on a 0.45 μm microfiltration (MF) membrane resulting in a indexed number. A drawback of SDI test is the fact that it is difficult to obtain an accurate SDI value using manual instruments.








The most important known sources of error are:

- Variable MF membrane properties: pore size , porosity, hydrophilicity and surface roughness;
- Varying testing conditions: feed temperature and pressure (1 $^{\circ}\text{C}$ changes SDI value with 0.13);
- Artefact causing parameters such as air bubbles, filter holder or operator errors;








The instrument SDI-Easy

The instrument **SDI-Easy** is composed by a plastic handbag that contains the following components:

-  47 mm diameter membrane filter support;
-  47 mm diameter membrane filters 0.45 µm pore size (kit 25 membranes);
-  1 to 2,5 bar manometer;
-  Pressure regulator;
-  Needle valve for pressure adjustment;
-  Timer;
-  Pipes and fittings.

The analysis procedure is very simple:

-  Place the membrane filter on its support, bleed water pressure on carefully, tighten the O-ring seal and fix the support vertically
-  Adjust feed pressure to 2.1 bar (30 PSI) and measure initial time, t_0 , necessary to filter 500 ml of sample water (feed pressure to be kept constant by continuous adjustment).
-  Keep filter in operation for 15 minutes under 2.1 bar (30 PSI) feed pressure.
-  After 15 minutes measure again time, t_1 , necessary to filter 500 ml. Membrane filter should be kept for further analysis.
-  Calculation $SDI = ((1 - t_0 / t_1) \times 100) / 15$ When t_1 , is four times as long as t_0 , the resulting SDI is 5. A water sample that totally blocks the membrane filter has an SDI value of 6.7.

*The instrument **SDI-Easy** (manual) allows to do low cost precise measurements.*

The instrument SDI-Easy

All the membrane manufacturers have adopted the SDI as fundamental value and use it, amongst other chemical/physical parameters, as basis for their guarantee conditions.

It is obvious that the daily measurement and registration of the SDI value is fundamental for a reverse osmosis plant to:

- Design properly the pre-treatment;
- Check the performances;
- Supply to the plant manufacturer and to the membrane producer all the information to understand the origin of the possible fouling on the membrane.



On each reverse osmosis plant the measurement and registration of the SDI must be done:

- Daily;
- Every time when there is an increase or decrease of 10% of the fundamental parameters (inlet/outlet flow rate, inlet/outlet pressure, inlet/outlet conductivity).

All the reverse osmosis plants must have an SDI instrument.



More Info



Data Sheet
SDI-Easy



Operating Manual
SDI-Easy



Contact Us



Everblue

Via Alberto Zanrè, 16 - Loc. Gotra 43051 Albareto (PR)

www.everblue.it

[+39 0525-1920100](tel:+3905251920100)

info@everblue.it

