Pulse Backflow Membrane Filter Systems

ABSTRACT

A membrane filter system either in dead-end or in cross-flow arrangement is equipped with a discharge valve (8) connected to the concentrate chamber (3) and pressure buffering mechanism (5) in the permeate chamber (4) of the filter. When a pulse electric current is sent to the discharge valve (8) and drives it open, the pressure in the concentrate chamber (3) drops instantly to a value lower than that in the permeate chamber (4) for a very short time of the pulse width, resulting in limited movement of the membrane (2) towards the concentrate chamber and limited amount of backflow of permeate into the concentrate chamber (3). The foulant is thus loosen and removed stepwise by the cross-flow. The polarization layer near the membrane surface is thus disturbed and the scaling tendency is reduced. Such cleaning process is frequently carried out in the course of permeate production or in the intermittence of permeate usage. With the buffering mechanism in the permeate chamber, the pressure drop downstream the permeate is minimised.

Fig 1 accompanies the abstract.