

ABSTRACT

CELL WALL OR CELL MEMBRANE DISRUPTING DEVICE, AND
METHOD OF USING THE SAME

5 Provided is a cell wall or cell membrane disrupting device whereby cell walls and/or cell
membranes of microorganisms, algae and the like contained in organic sludge and the like are
disrupted, the device comprising a fixed disc, a rotating disc, a rotating shaft for driving of the
rotating disc, a pressure reducing means and a housing, wherein at least one pair of the fixed disc
and rotating disc are disposed facing each other, the center section of the fixed disc has a hollow
10 section that is larger than the outer diameter of the rotating shaft passing through the center
section, shearing force generated between the rotating disc and the fixed disc is applied to a
target fluid having a water content of 89% or higher that has been loaded into the device, and the
pressure inside the cell wall or cell membrane disrupting device is reduced to no greater than -
0.08 MPa by the pressure reducing means. The device can contribute to increasing biogas,
15 reducing sludge, culturing of algae, plant cultivation and culturing of marine products, and also
to separation of CH₄ and CO₂, for example, as resources.

Fig. 1