Single use bioreactors

Applikon offers several types of single-use bioreactors: AppliFlex, rocking bioreactors from 10 to 50 liter, HyClone SUB stirred tank bioreactors in the range of 66 to 2,700 liter total volume, ATMI PAD square bioreactors in the range of 25 to 2,500 liter total volume and ATMI iCellis Nano bioreactors for cultivating anchorage dependable cells. All systems are unique in their accurate measurement and control of key process parameters.

The systems can be controlled using the Applikon ez-Control, i-Control or my-Control. Most systems can be equipped with re-usable sensors as well as fluorophor pH and Dissolved Oxygen sensors. All systems are supplied turnkey and fully documented. All systems go through standard IQ/OQ and FAT procedures before they are delivered and installed at the customers site. The qualified Applikon technical support team can take care of the installation and will be your first point of contact for any questions. Our delivery includes the bioreactor, the controller, sensors, actuators, temperature control system, supervisory software and validation documentation. Our well trained sales consultants are able to advise you on the complete configuration of your single use bioreactor system.

AppliFlex

The AppliFlex bioreactor range consists of a 10 liter, 20 liter and 50 liter bioreactor bag. The control system (pH, Dissolved Oxygen, temperature, mixing) is the standard Applikon ez-Control. The rocking motion offers gentle mixing. The same rocker can be used for the 10 (2x), 20 and 50 Liter bioreactor bags. The AppliFlex bioreactors are an easy scale-up to the HyClone bioreactors; the bags are made of the same materials which eases validation.
HyClone® S.U.B.

The HyClone® S.U.B. provides all the advantages of single-use bioprocessing in a classical stirred tank bioreactor system design. The critical design parameters of the S.U.B., such as height to diameter ratios, mixer design and location and typical control system interfaces, have been maintained. The S.U.B. is available with new optimized standard BioProcess Containers with improved dual sparge capability. Open pipe and frit sparging systems are included to provide a wider range of operating conditions. A key element to the single-use design is the plastic (polyethylene) impeller with a bearing/seal assembly linked to an external mixer drive. The range includes units with maximum working volumes of 50, 100, 250, 500, 1,000 and 2,000 L.
ATMI iCELLis™ Nano

The ATMI iCELLis™ Nano system, is designed to simplify your process by combining the advantages of single-use technologies with the benefits of a fixed-bed system. Central to the iCELLis bioreactor technology is the use of a compact fixed-bed, filled with macrocarriers. This matrix is made of medical grade polyester microfibers and provides up to 4 m² available area for cell growth in only 200 ml volume. This is the surface-equivalent of 47 roller bottles. The iCELLis bioreactor is provided with pre-packed macrocarriers. Evenly-distributed media circulation is achieved by a built-in magnetic drive impeller, ensuring low shear stress and high cell viability. The cell culture medium flows through the fixed-bed from the bottom to the top. At the top, the medium falls down the outer wall as a thin film where it takes up O₂ to maintain high k_La in the bioreactor.

- iCELLis nano Fixed-bed height 10 cm
- Fixed-Bed Volume 0.2 L
- Culture Surface Area 4 m²
- Equivalent CS10 (6,300 cm²) 6
- Equivalent RB (850 cm²) 47

ATMI PadReactor

The ATMI PadReactor system is perfectly suited to laboratory environments, process development centers, clinical material supply and flexible GMP manufacturing. The square bioreactor vessel, which offers comparable functionality to classical stirred tank bioreactors, is a single-use bag integrating an internal paddle mixing and sparger system. The sparger is integrated in the paddle mixer to enhance oxygen transfer rates. The innovative bag design improves mixing at low shear forces and allows a non-invasive stirrer connection to the system. The paddle is enclosed in a medical grade ULDPE sleeve, made from the same contact material as the bag itself, and is coupled on top of the vessel with the mechanical mixing head. The PadReactor is available in total volumes of 25L, 50L, 250L, 600L, 1200L and has been used successfully in cultivation of anchorage dependent and suspension cells.
Features & Applications

- Simple operation
- OPC compliant controller
- Accurate process control
- Classic and single-use (fluorophor) sensors for measurement of pH, Dissolved Oxygen
- Accurate control of pH, DO, temperature, mixing
- Data logging & SCADA (21CFR part 11) available
- Turn-key delivery
- IQ/OQ/FAT and SAT for the complete system
- Fully documented delivery eases validation
- One point of contact for the complete system
- Qualified support and service
- Cell culture
- Batch
- Fed Batch
- Perfusion
- Suspension cells
- Anchorage dependent cells