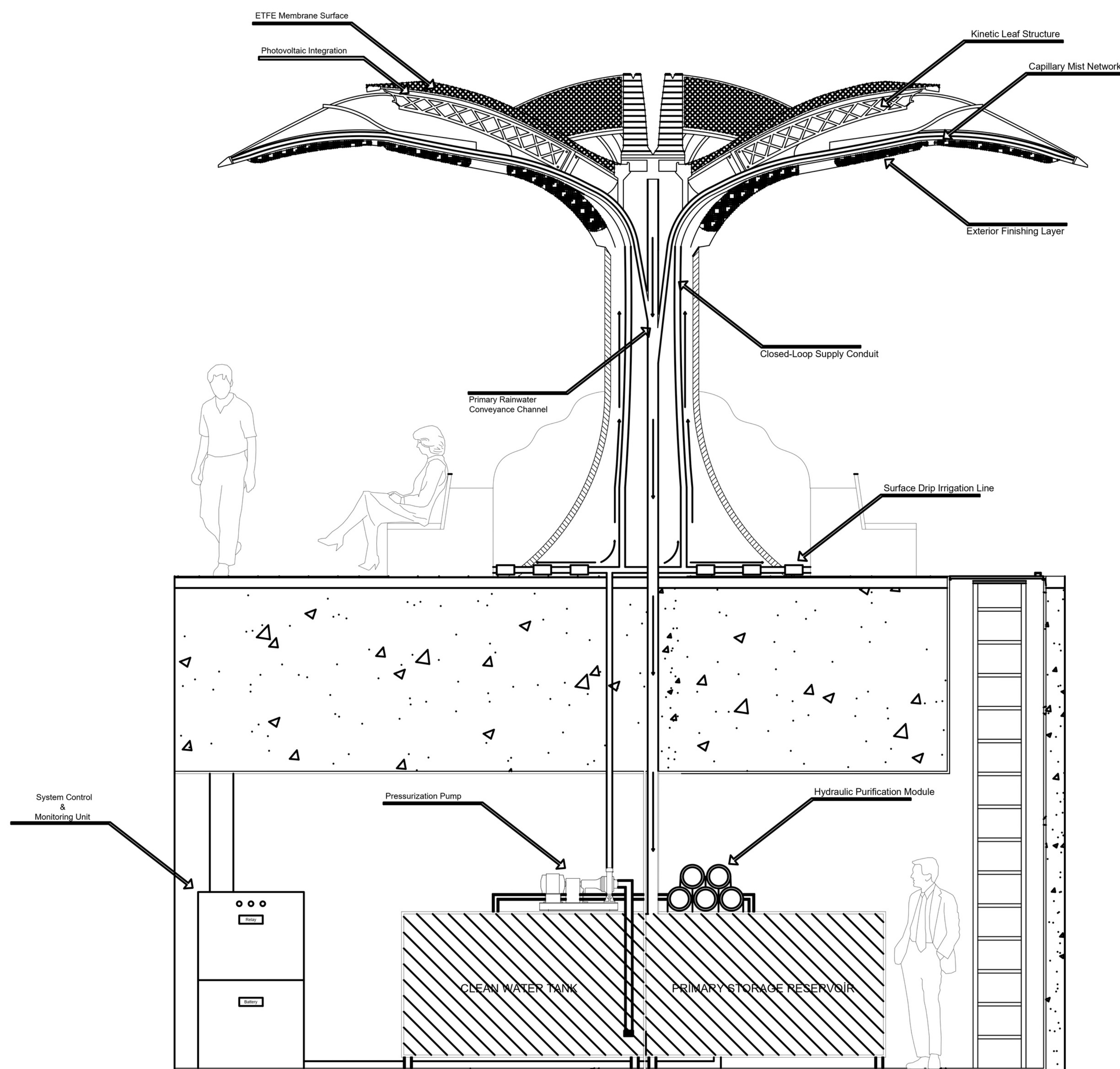


PHYTOSIS

An Adaptive Bio-Responsive Architectural System



Energy Capture & Harvesting:

- **Solar Integration:** The ETFE membrane canopy is embedded with thin-film photovoltaic (PV) cells that convert solar radiation into electrical energy. This energy is stored to power the pump, sensors, and control electronics, ensuring the system remains completely off-grid.
- **Water Collection:** The geometry of the canopy serves as a catchment area, directing ambient precipitation and humidity into the primary intake system.

Active Environmental Modulation:

- **Pressurized Distribution:** A High-Pressure Circulation Pump draws the purified water from the clean tank and drives it through the internal plumbing network.
- **Misting & Cooling:** The water is released through micro-nozzle arrays embedded within the furniture structure, creating a cooling mist that lowers the local ambient temperature and creates a comfortable, biophilic micro-climate for the user.

Purification & Processing:

- **Sedimentation & Filtration:** Collected raw water flows into the Primary Storage Reservoir, where sedimentation occurs.
- **Hydraulic Purification:** The water then passes through the Hydraulic Purification Module, where multi-stage filtration removes impurities, ensuring the water is safe for misting.

Otonom Cycle & Control:

- **System Intelligence:** The System Control & Monitoring Unit continuously tracks water levels, filter status, and pressure.
- **Adaptive Regulation:** The system automatically regulates the misting frequency based on the user's presence and real-time environmental data, ensuring zero water waste and high efficiency.

Phytosis moves beyond pure functionality to foster a deeper human-nature connection within sterile interior environments. By actively creating a localized, refreshing micro-climate, it enhances the physical and mental well-being of the user, turning the act of sitting into a restorative, multi-sensory experience. This project posits that furniture can act as a catalyst for environmental awareness, reminding the user of the critical importance of water and resource conservation in our evolving urban landscape.

Systems Integration: Energy Harvesting and Hydrological Cycles

The system operates through a high-precision integration of renewable energy and fluid dynamics.

- **Photovoltaic Canopy:** The upper ETFE membrane is embedded with flexible, thin-film photovoltaic cells that harness solar radiation to power the entire system, ensuring energy autonomy.
- **Hydrological Cycle:** Harvested rainwater is routed to a primary reservoir and processed through a multi-stage Hydraulic Purification Module.
- **High-Pressure Misting Network:** A High-Pressure Circulation Pump drives the purified water to micro-nozzle arrays, generating a fine mist that facilitates passive cooling and creates a localized micro-climate for the user. This energy-positive approach ensures that the system is not only regenerative but also entirely independent of external utility grids.

Phytosis: A Bio-Adaptive Ecosystem for Interior Environments

Phytosis bridges the gap between nature and interior architecture by treating furniture as a living, adaptive machine. Inspired by the evaporative cooling and moisture-collection mechanisms of desert flora, the system functions as a self-contained ecosystem. It does not merely serve as an object; it actively modulates the interior climate through a synergy of biomimetic geometry, solar energy capture, and closed-loop hydraulic management. By transitioning from passive design to active environmental regeneration, Phytosis challenges traditional furniture typologies, proposing a future where interior elements actively contribute to the sustainability of the built environment.



Hand-drawn image

