The beauty of parking

Solar panels and parking lots have teamed up for what some in the solar industry are calling extraordinary dual use. Typically, we associate solar panels with roofs, while turning a blind eye to the surrounding acres of paved parking surfaces. Shade structures over these sprawling heat traps could provide the foundation for large solar arrays.

San Diego-based Envision Solar, which was founded by architects and designers, has come up with a unique structure for parking lots that is both attractive and functional. The basic unit is called a Solar Tree that expands into a Solar Grove as needed. The single central support column, or trunk, allows for easy maneuverability in the parking area, and the tree canopy, composed of eight solar panels, absorbs sunlight and provides shade for up to 10 vehicles. Wiring beneath the ground, essentially the root system, allows the electricity to be used by the business or sold to the power grid.

The Solar Tree can also serve as a charging station for the increasing number of plug-in electric and hybrid vehicles. Each tree can re-charge two vehicles simultaneously and produce about 5300 KWH annually. The trees can be configured into groves for larger parking areas and customized to meet the needs of each facility.

This innovative concept provides a host of benefits. For the car owner, it offers the pleasure of a cool car on a torrid summer day. For the business or parking lot owner, it offers a reduced power bill. For utility companies and ultimately their paying customers, it offers cheaper electricity by eliminating the need to build acres of solar arrays in remote rural areas as well as expensive new transmission lines to get the power back to the cities and suburbs.

In 2008, Envision Solar completed eight parking projects for universities, healthcare facilities, and commercial developments, totaling more than 1.3 megawatts of solar power. In the words of one emotive engineer: "Parking can be beautiful."

For more information visit envisionsolar.com

Islands by design

If you have always wanted your own island, it is now possible to order one to your specifications. A modest island, say 25 square feet, carries a reasonable price tag usually less than $600. If you have grander plans, such as the 22,000-square-foot island requested by the U.S. Army Corps of Engineers, a rich uncle might come in handy.

Floating Islands International got its start in Bruce Kania's backyard in Shepherd, Montana. His dog took a dip in the pond and emerged covered in slime and emitting offensive odors. Kania, who is an idea guy, got to thinking about all the nutrient runoff from cultivated fields that was flowing into his pond as well as the nearby Yellowstone River. Based on his experience fishing in pristine Wisconsin lakes with floating islands, it occurred to him that islands might help solve his pond problem and others too.

Today, Kania constructs bio islands from a mesh fabric made from recycled plastic bottles. The material is arranged in layers and then injected with expanding foam that bonds the materials as it dries. Holes are cut into the mesh to insert plants and seeds, and the island is finished with topsoil and sod. Above the waterline, grasses, flowers, and green plants soak up sun while below, their roots grow down through the mesh to absorb water and nutrients.

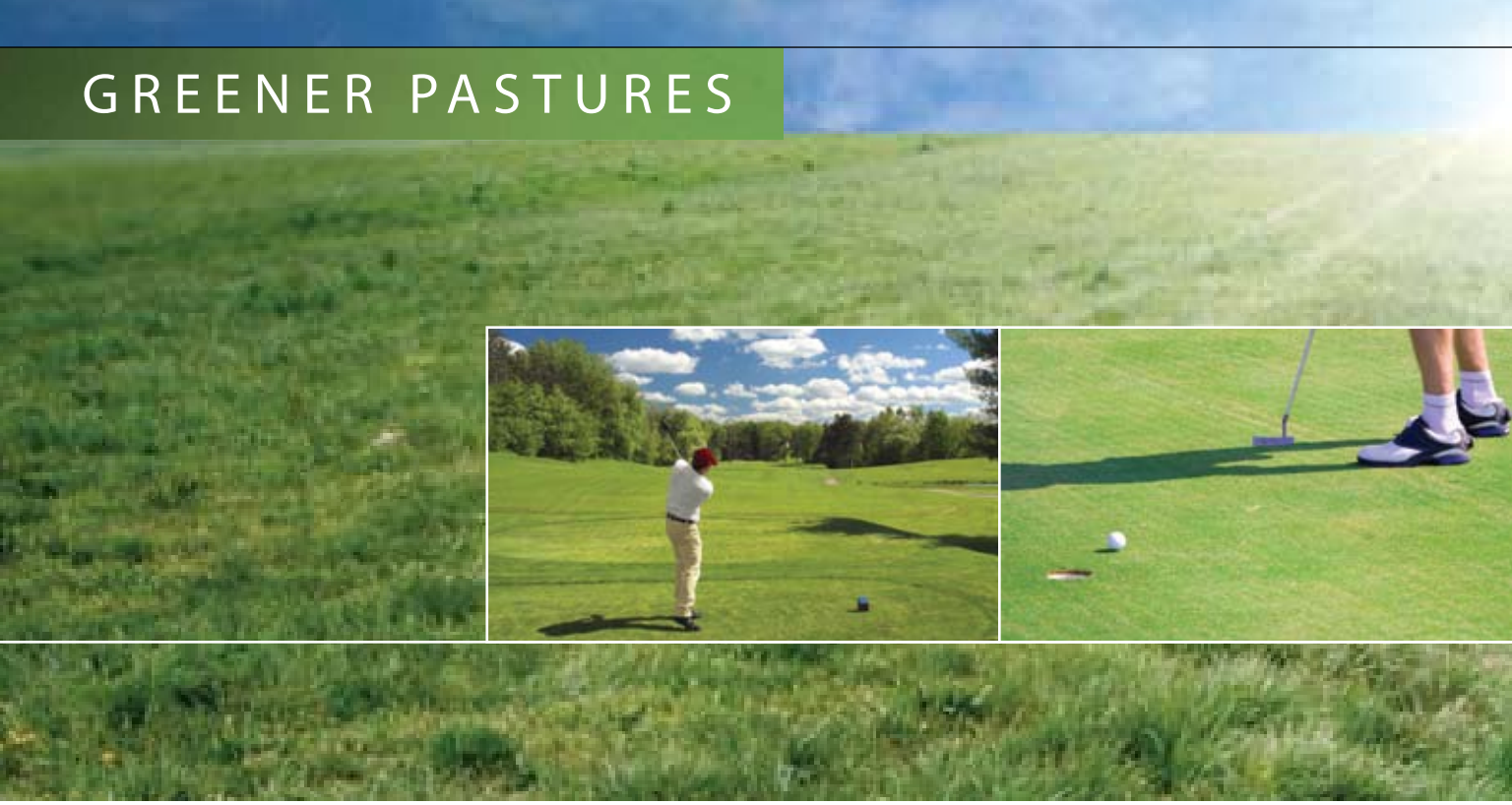
Ths islands provide a host of water treatment services at a fraction of the cost and with greater efficiency than more traditional methods. They outperform constructed wetlands by more than 200 percent, according to the company, removing nitrates, ammonia, and phosphates while also helping to sequester heavy metals such as zinc and copper. They have the added advantage of taking up no land and adapting to water level fluctuations.

The fact that the islands are a near perfect host for microbes is one of their greatest assets. These nutrient-hungry organisms perform a wide array of water-cleaning services that are hard to replicate through engineering. The matrix of fibers provides a vast surface where microbes can colonize. As they spread, they form a biofilm that works on the nutrients and even collects metal particles too tiny for mechanical filters.

The end results speak for themselves. Phosphates that create dead zones have been sucked out of waterways, algae has been eliminated from ponds, fish habitat has been cooled and cleaned, and the otter exhibit at a Montana zoo has been transformed into an island playground with sparkling clean water. On a larger scale, the Army Corps of Engineers has provided new habitat on an Oregon lake for the Caspian tern in an effort to relocate it away from Columbia River estuary where it gobbles up millions of young salmon every year.

Floating islands are also habitat for many types of birds, ducks, turtles and insects, and they provide food for fish, snails, and other aquatic life. They are deer-safe havens for vegetable gardens and offer the shore-bound viewer stunning displays of flowers as well as restful spots of greenery.

For more information visit biofloatingislands.com



Golf course makeover

Just a few years ago golf courses were considered an environmental abomination, wasting precious water, spewing runoff contaminated with fertilizers and insecticides, and replacing wild meadows and woodlands with monotonous manicured landscapes to serve the country club set.

These days, golf courses are often seen as an environmental asset. They provide communities with open space, greenscapes, and view sheds. Their rolling acres, waterways, and shade trees serve as wildlife habitat for animals escaping from the relentless march of housing developments, shopping centers, office parks, and malls.

Perhaps most surprising, golf course managers are now widely considered experts on water conservation and are frequently consulted by municipalities, state governments, industries, and non-profits. As water costs continued to rise in recent years and some 20 states reported long dry spells and crippling droughts, managers realized they had to rein in their water use.

New strategies to reduce water use range from the super high tech to tips from grandma's garden. Golf course managers have planted native grasses that require less water and replaced the flowering annuals with less thirsty perennials. Lawn mower blades are kept super sharp to avoid frayed grass, which requires more water to stay healthy, and, when possible, recycled effluent and surface water is used for irrigation rather than tapping into municipal fresh-water systems.

A huge advance in protecting water resources has come with the advent of wireless underground sensors. This reasonably priced technology monitors moisture, temperature, and salinity. The information can be fed to a desktop, laptop or handheld device. At golf courses from Pennsylvania to Florida and Arizona, managers report water savings of up to 10 percent, which translates into millions of gallons of water.

Golf courses still have their detractors and environmentalists continue to bristle at some management practices, but it is unlikely that this $76 billion industry that, according to a recent study, provides "economic, environmental, and recreational assets to local communities" is going away any time soon.

Meanwhile, golf course professionals have become valued community resources. During the recent drought in Georgia, Habitat for Humanity landscaped front yards with drought-tolerant plants recommended by golf course superintendents, and Marriott International adopted the lessons learned on their golf courses to all of their resort properties in other states. Government officials are also getting advice on how to reduce water use on public ball fields and parks.

Through it all, one water-saving technology has proven failsafe for the Atlanta Country Club. When the club's superintendent Mark Esoda finds dry spots on the greens, he sends the staff out with their trusty watering cans.