SkyTrough® DSP

The advanced baseload trough (top) compared to the SkyTrough® (middle) and the Nevada Solar One trough (bottom), shown inside a football stadium for scale.

SkyTrough®DSP for Dispatchable Solar Power

SkyFuel develops and markets high performance, cost reducing concentrating solar collector technology. SkyFuel's first parabolic trough collector, the 6 meter aperture width SkyTrough®, has been thoroughly tested and demonstrated in the lab and in the field.
A 1 MW thermal loop has been supplying heat to the SEGS II power plant for over two years, and continues to produce energy at the high performance level measured by the National Renewable Energy Lab (NREL).

The **SkyTrough®DSP** was developed as part of the US Department of Energy's initiative for concentrating solar power technology to hit the **goal of 9 US cents per KWh** on a lifecycle cost of energy (LCOE) basis. **Every aspect of the design has been optimized to reduce the cost of materials, installation, and operation.**

Technical Parameters

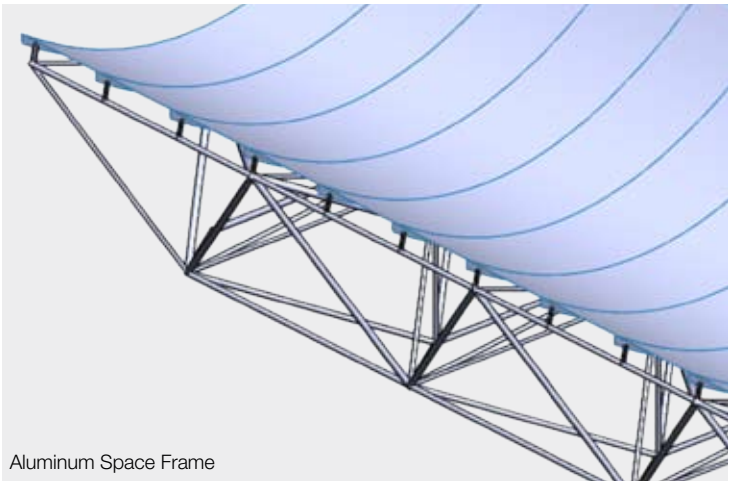
Mirror	ReflecTech®PLUS Film on Aluminum Sheet
Support	Extruded Aluminum Space Frame
Receiver	High Temperature Evacuated
Heat Transfer Fluid	Molten Salt or Thermal Oil
Drive	Rotary Hydraulic
Specular Reflectance	94 %
Aperture Width	8 Meters
Collector Length	150 Meters
Maximum Operating Temperature	550 °C

Description

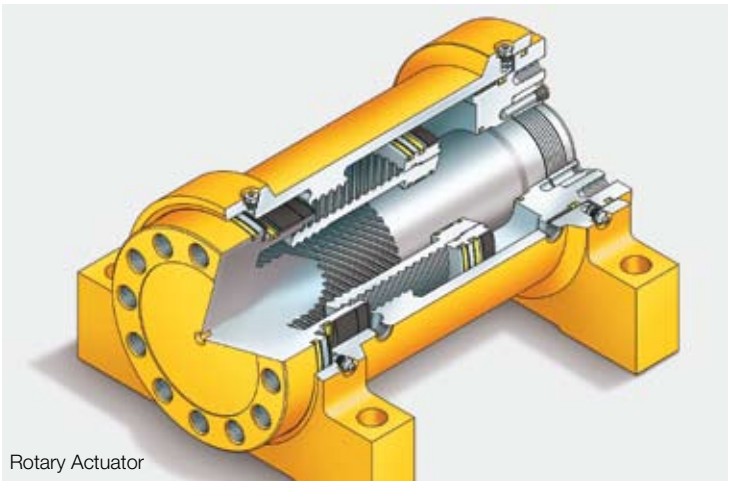
The SkyTough®DSP is a state-of-the-art, 8 meter aperture width parabolic trough concentrating solar collector. It features even greater sun concentration than the original SkyTrough®, which already presents a major improvement on traditional glass mirror-based technology. The design of SkyTrough®DSP builds on the innovative features pioneered and proven in the SkyTrough®, most notably the use of ReflecTech®PLUS mirror film in place of heavy glass mirrors. ReflecTech®PLUS makes monolithic mirror panels possible, and the resulting collector is more optically accurate than glass mirrors.

The new collector is designed to operate at higher temperatures, making thermal storage more cost effective for dispatchable electricity production after the sun sets. Most significantly, the SkyTrough®DSP will cut costs by 20% compared to the original low-cost SkyTrough®, the world's highest-performance parabolic trough.

Components



Aluminum Space Frame



Rotary Actuator

Structural Support

Like the SkyTrough®, the mirror panels of the SkyTrough®DSP are supported by an extruded aluminum space frame. Alternative options, including steel torque tube designs, were evaluated and found to be more costly due to increased fabrication tooling and labor expense, required specialized galvanization equipment, and slower field assembly. The aluminum is easily sourced in most countries, and is recyclable at the end of the project life.

Drive

Like the SkyTrough®, the SkyTrough®DSP is aimed at the sun by a helical, hydraulic, rotary actuator. The rotary actuator is extraordinarily rugged, resists very high back loads, and the system has been designed to provide very precise and reliable tracking operation. Tracking control is provided by SkyFuel's patented precision SkyTrakker™.

Receiver

The receiver is a steel tube with a spectrally selective, highly absorptive, low emissivity cermet coating, encapsulated within an anti-reflective evacuated glass envelope. Fewer receivers are required per unit area because of the larger trough width and higher concentration ratio.

For more information, please contact:
Info@SkyFuel.com
SkyFuel, Inc.
18300 West Highway 72, Arvada, CO 80007
303.330.0276
www.SkyFuel.com