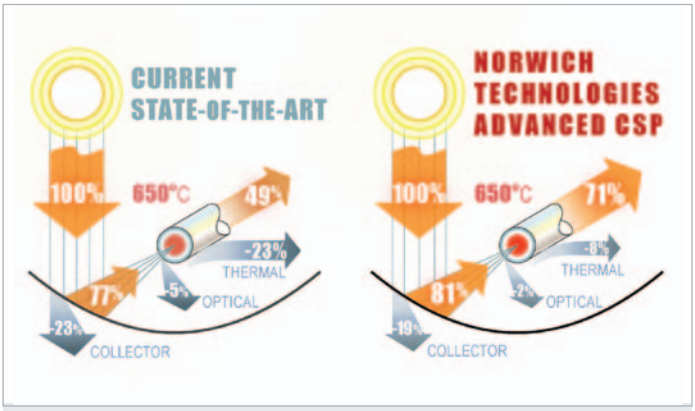
Advanced Low-Cost Receivers for Parabolic Troughs

NORWICH TECHNOLOGIES	NORWICH Technologies
PROGRAM:	SunShot CSP R&D 2012
TOPIC:	Advanced Receivers
LOCATION:	Norwich, Vermont
AWARD AMOUNT:	Up to $0.3 million
PROJECT TERM:	2012–2013



Norwich Technologies is developing an advanced receiver for parabolic trough concentrating solar power (CSP) systems that will outperform current linear vacuum receivers through significant performance improvements and reduced acquisition and operation and maintenance costs. *Illustration from Norwich Technologies*

CONTACTS

Project Leader:
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Partnering Organizations:
- Creare, Inc.
- ANSYS, Inc.

MOTIVATION

Numerous challenges exist with today's state-of-the-art linear vacuum receivers. Some of these drawbacks include expensive and technologically intensive absorption coatings, a 1%–5% annual failure rate for tubes due to vacuum degradation, and prohibitive radiation losses that prevent practical operation at elevated temperatures (>500ºC).

PROJECT DESCRIPTION

Norwich Technologies is designing a novel receiver that addresses these issues for parabolic trough concentrating solar power (CSP) systems. This advanced receiver aims to:

- Decrease acquisition costs by simplifying structural design and manufacturing
- Achieve higher optical-field efficiency without expensive coatings
- Increase reliability by eliminating vacuum-related failures
- Operate at higher temperatures by dramatically reducing radiative losses.

IMPACT

This technology represents significant operational and cost advances in the most trusted and broadly implemented form of CSP. In addition, it offers the prospect for rapid, widespread adoption in new and retrofitted installations. By significantly exceeding the trough cost-reduction targets for receivers, this innovative system provides a viable pathway to achieving SunShot's $0.06/kWh goal for utility-scale CSP systems.

For more information, visit the project page at: www.solar.energy.gov/sunshot/csp_sunshotrnd_norwich.html.

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