

**H. Poisel, S. Gabel, S. Schütz, A. Kist, A. Bachmann, M. Bloos, K. Hofbeck**  
 Polymer Optical Fiber Application Center, [www.pofac.de](http://www.pofac.de)

## Motivation

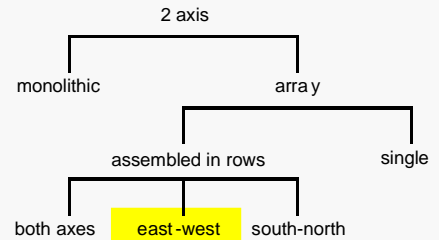
- An estimated 35% of electricity used in the United States is expended on lighting interior spaces in **daytime**
- A lot of power is needed for cooling buildings having windows

## Facts

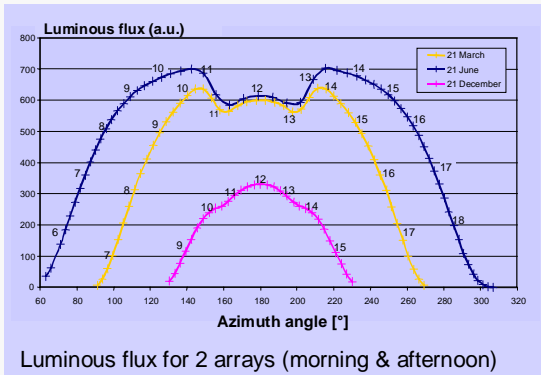
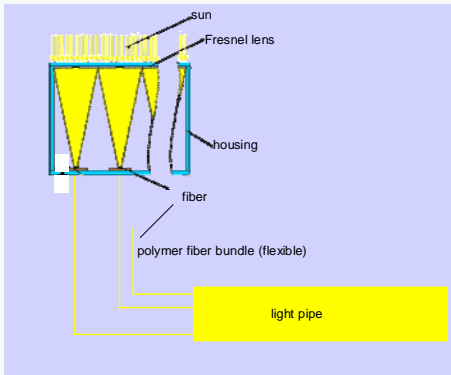
- Fact 1: Direct use of daylight saves energy costs
- Fact 2: Visible light is needed, but no heat
- Fact 3: Natural daylight increases human performance

## New Approach

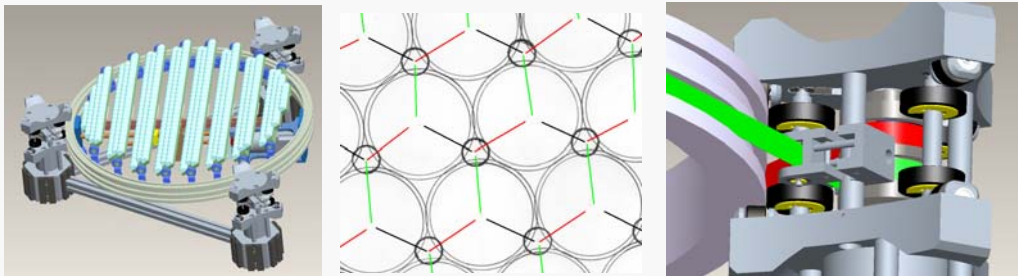
- Modular array → flat design
- Mounting on pitched roofs possible
- Sun - tracking
- Non-imaging concentrating optics
- Fibers where flexibility needed
- Hollow light pipes for longer distances



## Principle & Simulation



## Construction



## Further steps

- Fault tolerant design for non-imaging collection optics
- Higher concentration ratio
- Controlled sun tracking
- Low cost mechanics
- Hybrid pilot system