

Case Study

**Process heating with solar thermal in textile industry**

**Background**

Frontier Knitters Private Limited is a renowned export house established in Tirupur, India. With well-equipped manufacturing and quality facilities in-house, Frontier Knitters emphasises environmentally-friendly practices.

**Challenges**

As the next step in their journey to sustainable operations, Frontier Knitters was keen to explore the use of concentrated solar thermal technology to provide process heat required in their garmenting process. Their objectives were to reduce the fuel — high-speed diesel — consumed, and reduces carbon emissions from their processes in a cost-effective manner.



**Solution**

A study of the requirements of the operations at Frontier Knitters emphasised the important requirements of process uptime and reliability. Guided by these requirements and overall objectives, A.T.E. Solar recommended a process heating solution using Compound Parabolic Concentrator (CPC) technology. CPC technology is ideally suited for process applications that require heat in the range 80°C to 120°C.

An array of high-efficiency CPC modules has been mounted on the roof top of the factory in a closed loop with an expansion tank, pump and thermal storage of hot water. The storage is sized to meet the specific daily requirements of the operations at this factory. This system is integrated with the existing fuel-fired boiler that produces the steam necessary for the unit's ironing operations.

**Results**

The solar hot water heating solution based on CPC technology has reduced Frontier Knitters' dependence on conventional diesel-fired boilers. The daily savings of about 22 litres of diesel will reduce the factory's annual carbon emissions by more than 17 tonnes while simultaneously delivering an attractive payback period of less than 3 years.

