

# Steam Let-Down Expander Power Generation System Overview



## C2 Technology's

Steam Let-Down Expander (SLDE)

power generation system is for businesses with a steam distribution network. SLDE power generation system can help them reduce their energy bills or even sell electricity to the grid, minimise their carbon footprint and improve their operational efficiency.

### What is a Steam Let-Down Expander Power Generation System?

The C2 Technology **SLDE** power generation system is a steam pressure to power (P2P) conversion system consisting of a backpressure turbogenerator, control & power subsystems, valves and ancillary equipment. The package has a compact plug and play design and is used to convert energy wasted during pressure reduction process into useful electricity.

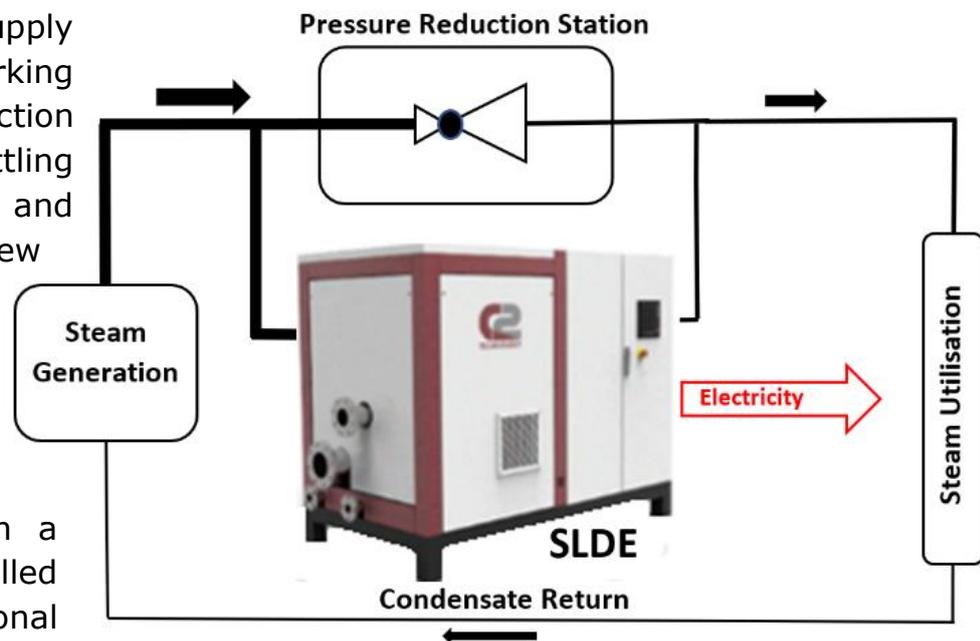
**SLDE** power generation system is a configuration of modular energy conversion system (**MECS**) suitable for retrofitting into many existing steam distribution networks and capable of generating 50kW or more of grid compliant electricity.

### Why Install a Steam Let-Down Expander Power Generation System?

Conventionally, the pressure of steam in distributed steam supply systems is lowered to a working pressure by a pressure reduction station comprising a throttling valve and associated controls and ancillaries. In recent years a new way to reduce pressure has become available to many steam-using organisations in the form of a single-stage backpressure turbogenerator.

Passing plant steam through a turbogenerator, typically installed in parallel to a conventional

pressure reduction station, enables operators to use the energy released by the resulting pressure drop to supplement their electricity supply internally or trade it out. Meanwhile, the outlet steam is used by downstream applications as in any conventional system.



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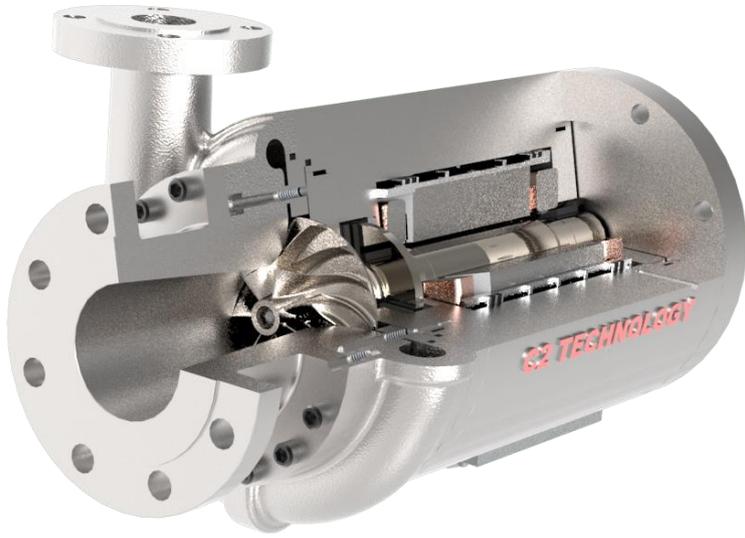
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## What Are the Benefits of a Steam Let-Down Expander?

- **Additional source of electricity.** Generate from 50kW of electricity from existing PRS for using it internally or selling to the grid
- **Reduced carbon footprint.** Eliminating energy waste will reduce total carbon emissions



- **Integrity of power supply.** Generating own electrical power means less reliance on external supply
- **Optimised plant efficiency.** Fully utilise steam system capacity to maximise overall plant efficiency
- **Low capital cost.** Fast return on investment with no reliance on subsidies
- **Automated control.** Maintains downstream pressure whilst generating optimal electrical output and maintaining safety and integrity of the system. Making it easy to use with little training

## How Does a Steam Let-Down Expander Work?

The core of the C2 Technology **SLDE** is a backpressure turbogenerator that expands saturated or super-heated steam. Shaft power is produced when a nozzle directs jets of high-pressure steam through a highly efficient condensing radial turbine. The turbine is integrated in one casing with a permanent magnet electrical generator. The power and control subsystems transform the generated electrical energy into a grid compliant form. The steam turbine does not consume the steam. It simply reduces the pressure that is subsequently exhausted downstream of the PRS for distribution to the consumer units. Thermodynamically, a **SLDE** package achieves isentropic efficiency greater than 65%, which is well in excess of the average electricity grid generating efficiency.

## Who Could Use C2 Technology's Steam Let-Down Expander?

Steam is used extensively throughout many different industries including paper, food and beverage, pharmaceuticals and many others for many different purposes. The C2 Technology **SLDE** package is ideally suited to all of the steam users with a PRS and a boiler larger than 1.5MW.

## How Can I Get a C2 Technology Steam Let-Down Expander?

C2 Technology supports each installation by a full set of expert services starting with a thorough analysis of the site and calculations of the projected savings from an **SLDE** installation.

**To arrange a free consultation please call or email us.**

Please visit our website  
or email us for more  
information

**C2 Technology Is Your Partner  
for Smart & Eco-friendly Solutions  
Bringing Tomorrow's Technology into Today**