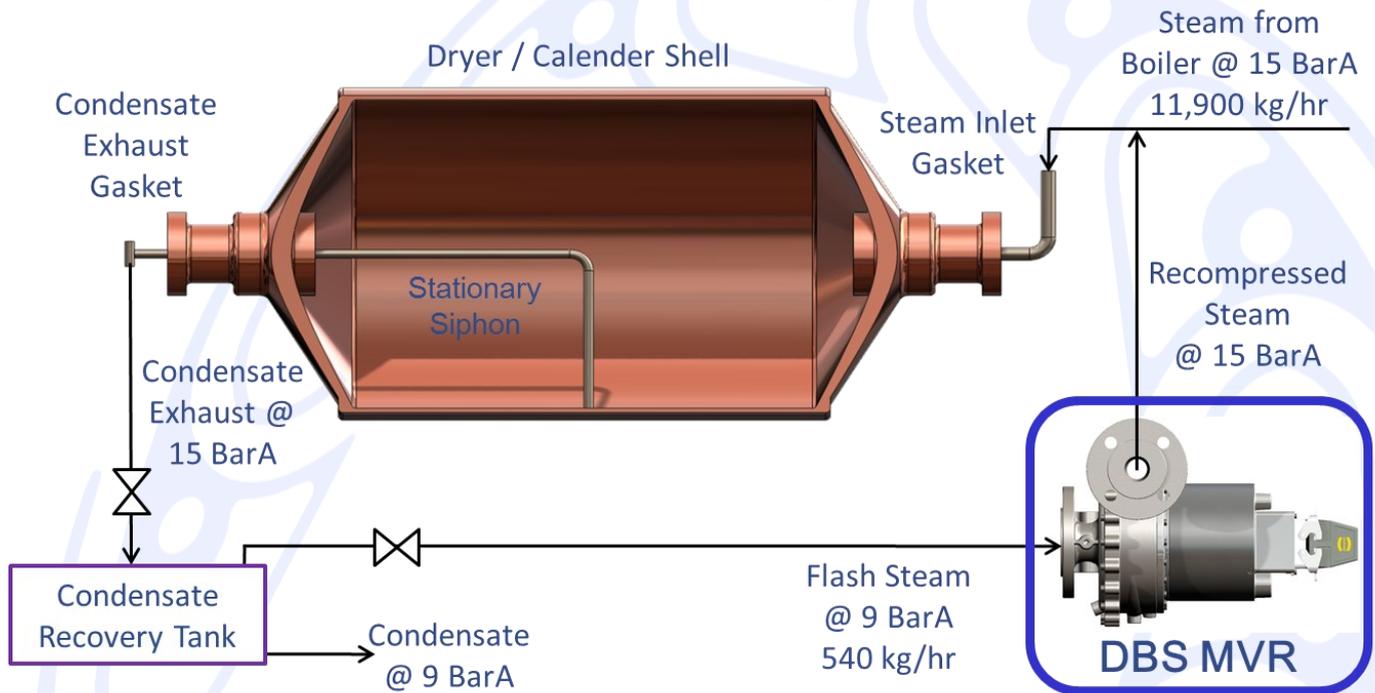


# Steam Compressor Application: Paper and Cardboard Manufacturing



**Significant Annual Cost Savings of over GBP £50,000!**



Paper and cardboard manufacturing utilises high pressure steam for heating and drying purposes. The steam is injected, condensed and then expelled from a calender as hot condensate. Flash steam generated from this condensate can be recompressed to line pressure using a DBS MVR system. The effect is to reduce the demand on the boiler for steam, which results in a significant reduction in operational costs. A schematic of the paper calender steam loop is illustrated in the above image. The economic benefits of utilising DBS MVR-2-100-25.3-001 steam compressor can be seen in the table below.

Compressor Side			Calender (process) Side		
Inlet Pressure	Bar	9	Inlet Pressure	Bar	15
Inlet Temp	°C	175	Inlet Temp	°C	254
Outlet Pressure	Bar	15	Inlet Enthalpy	kJ/kg	2,934
Outlet Temp	°C	254	Outlet Temp (condensate)	°C	198
Flow Rate	kg/h	550	Outlet Enthalpy	kJ/kg	845
Electrical Power	kWh	29	Change in Enthalpy	kJ/kg	2,089
Cost of Operation	£/hr	2.74	Heat Delivered	kWh	319
<b>Coefficient of Performance (CoP) 11.01</b>					
<b>Costing:</b>					
Cost of electricity to drive the compressor for 8,000 hours: <b>GBP £21,947 (€ 27,095)</b>					
Cost of natural gas to deliver 319 kWh of heat per hour for 8,000 hrs: <b>GBP £72,937 (€ 90,046)</b>					
Net savings per year: <b>GBP £50,990 (€ 62,951)</b>					

Notes: Cost of electricity: 0.0946 £/kWh\*. Cost of natural gas: 0.02856 £/kWh\* These costs are based on report published by the UK Department of Energy & Climate Change (Q2, 2013)

