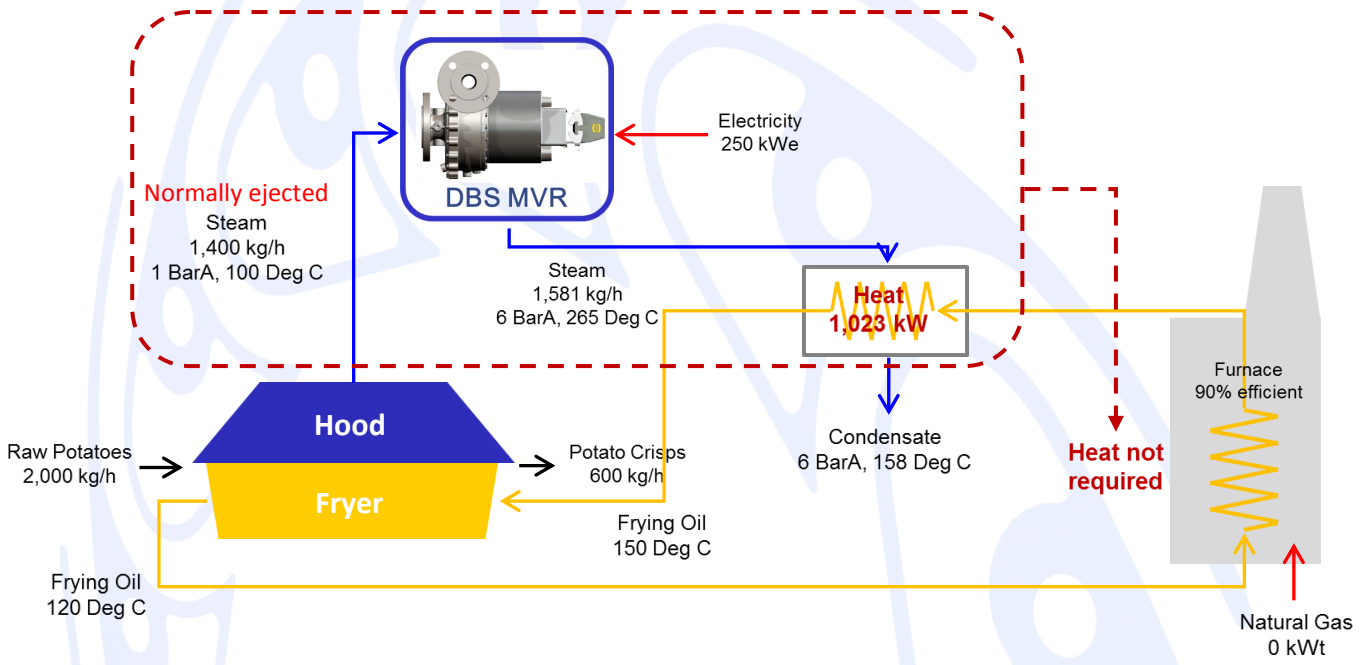


Steam Compressor Application: Chip fryer



Significant Annual Cost Savings of over GBP £95,000!



Raw potatoes consist of up to 80% moisture by weight. While frying, most of the energy is consumed in removing moisture from potatoes. The heat consumed in frying is ejected from the fryer in the form of low grade steam. A steam compressor can recover the latent heat in the steam and this energy is used to heat the oil, reducing the load on the furnace. In this example the furnace load is reduced to zero. The economic benefits of using DBS MVR steam compressor can be seen in the table below.

Oil Heating (without compressor)			Steam Compression		
Inlet Temp	°C	120	Inlet Pressure	Bar	1
Outlet Temp	°C	150	Inlet Temp	°C	100
Flow Rate	kg/s	20.1	Outlet Pressure	Bar	6
Specific Heat	kJ/kg K	1.67	Outlet Temp	°C	265
Heat Required	kW	1008	Electrical Power to MVR	kWe	250
Furnace Efficiency	%	90	Heat Recovered from Steam	kW	1023
Heat Delivered	kWt	1120	Cost of Operation	£/hr	2.74
Coefficient of Performance (CoP): 4					
Costing:					
Cost of electricity to drive the compressor for 8,000 hours: GBP £194,401 (€240,000)*					
Cost of natural gas to deliver heat directly for 8,000 hours: GBP £290,304 (€358,400)*					
Net savings per year: GBP £95,903 (€118400)					

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)

