A CSR Initiative by

kotak Kotak Mahindra Bank

Case Study on Thermal Insulation in Plastic Industry

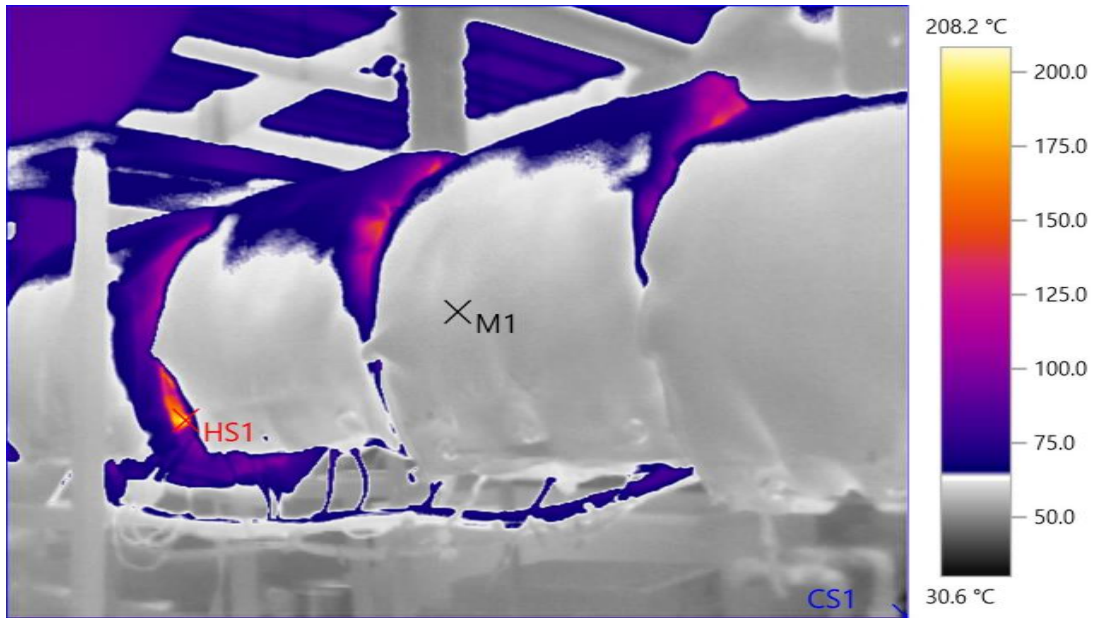
KISEM-IIT Ropar

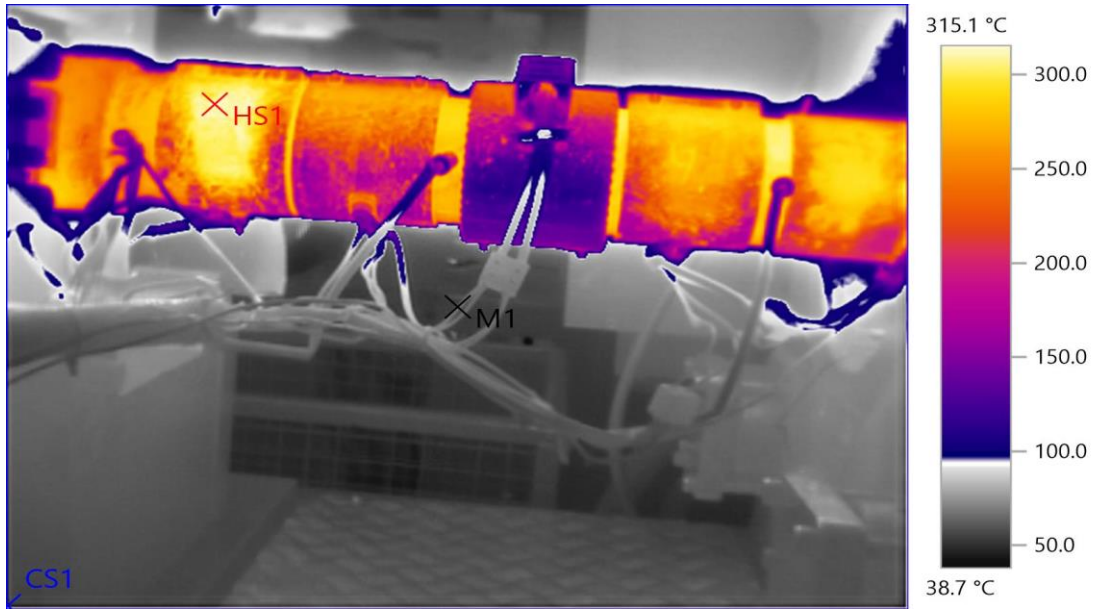
Moulding Machine

Barrel with Insulation

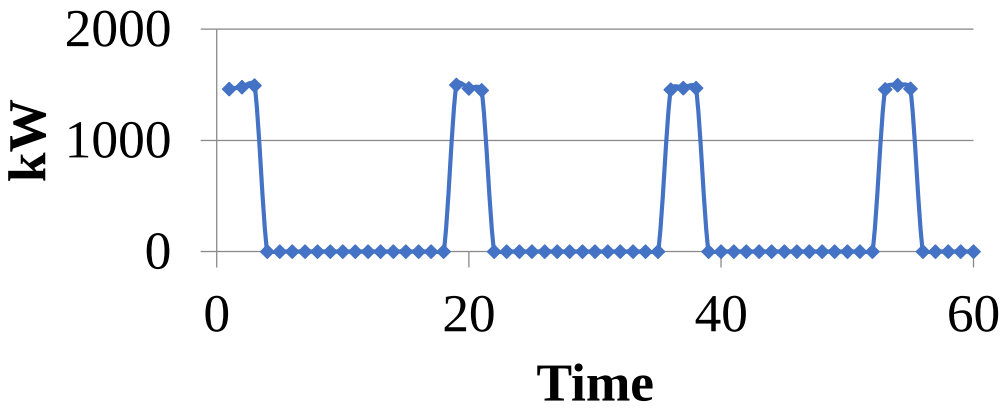
Barrel with out Insulation

Temperature Profile

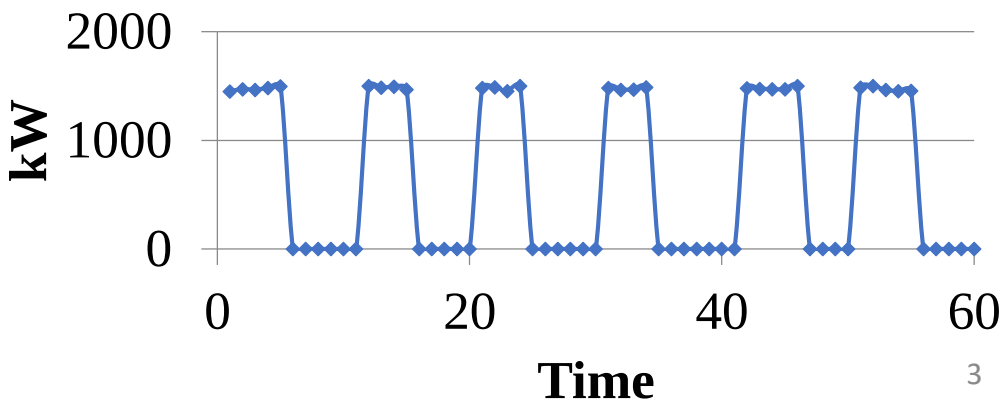




With insulation



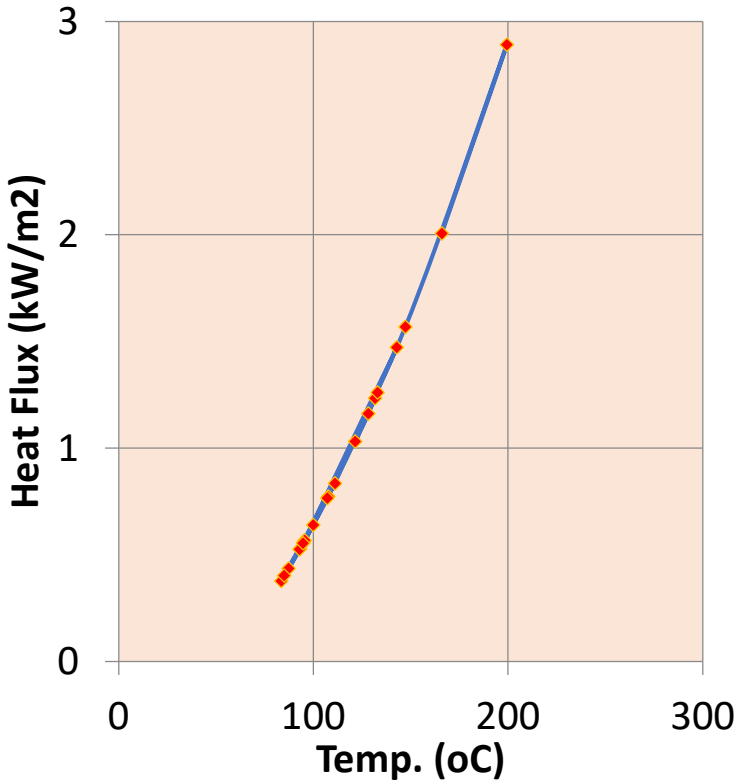
Without insulation



Cost Saving with Thermal Insulation

Name of Machine	Area (m^2)	Average Surface Temperature (°C)	Heat Loss from surface (kWh/year)	Annual Cost Savings with Insulation (Rs)
Moulding Machine 1	0.339035	166.0	4491.0	35,928
Moulding Machine 2	0.151035	199.4	2882.2	23,058
Moulding Machine 3	0.171035	147.3	1770.6	14,165
Moulding Machine 4	0.451035	94.9	1656.6	13,253
Moulding Machine 5	0.162435	142.9	1578.4	12,627
Moulding Machine 6	0.279	107.7	1425.7	11,406
Moulding Machine 7	0.166035	131.7	1352.1	10,817
Moulding Machine 8	0.186435	121.6	1270.2	10,162
Moulding Machine 9	0.1457	128.2	1118.1	8,945
Moulding Machine 10	0.291035	95.3	1081.5	8,652

Summary



Parameter	Value	Unit
Total number of Moulding Machines	40	Nos.
Annual Radiation Heat Loss from Surface	51,902	kWh/Year
Annual Monetary Saving with Insulation @ Rs. 9/kWh	4,67,118	Rs
Investment	2,00,000	Rs
Simple payback period	5	Months

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IEAC

KISEM

Case Study on Ladle Pre-Heating with LPG in Foundry

KISEM-IIT Ropar

Ladle

- Ladles are used to carry molten steel from the melting furnace to the casting operation.
- These ladles must be preheated to minimize thermal shock and damage to the refractory lining and to reduce temperature drop in the ladle.
- Using molten metal to pre-heat ladle is quite energy intensive and expensive.

LPG Preheater

Parameter	Value	Unit
Total Electricity required for ladle preheating (with molten metal)	88.5	kWh/day
Total heat required for ladle preheating (@ 50% Efficient Furnace)	38,055	kCal/day
LPG Required for ladle preheating	3.71	kg/day
Cost of LPG	115	Rs/kg
Cost of LPG for ladle Preheating	427	Rs/day
Cost of Electricity for ladle Preheating	708	Rs/day
Annual Monetary Saving @ 350 heating per year	98,510	Rs
Investment	5,00,000	Rs
Simple payback period	5	Years

Thank You