DECLARATION

I, hereby declare that the work embodied in the dissertation entitled "***Feasibility Study of Solar Furnace as a Crematorium***" in partial fulfillment for awarding the degree of ***Master of Technology*** in "***Thermal Engineering***", is an original piece of work carried out by me. I have been working on this thesis under the supervision of Dr. J. P. Kesari, Associate Professor, Department of Mechanical Engineering, Delhi Technological University.

I also declare that the matter of this work either in full or in part have not been submitted to any other institution or University for the award of any other Degree or Diploma or any other purpose what so ever. All the literature sources which I have used are cited in the References.

Akhilesh Chandra Kashyap
M. Tech. (Thermal Engineering)
Roll No.: 2K11/THE/21

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

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CERTIFICATE

*It is to certify that the dissertation entitled "***Feasibility Study of Solar Furnace as a Crematorium***" submitted by Mr. "***Akhilesh Chandra Kashyap***", Roll No. "***2K11/THE/21***" in partial fulfilment for awarding the Degree of "***Master of Technology***" in "***Thermal Engineering***" is an authentic record of student's own work carried out by him under my guidance and supervision.*

It is also certified that this dissertation has not been submitted to any other Institute/University for the award of any degree or diploma.

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ABSTRACT

While cremation is an established Hindu ritual practice since ancient times and the **Hindu religion permits the cremation of dead body in day-time only, there is much more scope of solar crematorium in this ritual; as solar power is also available in day-time only**.

Between 500 and 600 kg of wood are used to cremate a dead body. Many trees are felled to meet this requirement. As a result we are significantly contributing in global warming and polluting the atmospheric air much more. Therefore today, the world is moving towards the sustainable energy sources which are renewable and biodegradable in nature. One of most sustainable energy source is sunlight that too is inexhaustible and available free of cost. The heat (energy) produced is very clean with no pollutants. So above environmental problems can be the addressed very well by using solar crematorium. Therefore **anyone can be a firm believer of world powered by solar energy**.

Since the **sunlight has very little part, only 20% of its energy as lighting effect and large portion, 80% as thermal effect, So energy of solar radiation can be utilized more in solar thermal power generation than in solar photo-voltaic** (which utilizes only lighting effect of sunlight) for power generation. In this report, the most recent developments are described to build a Solar Crematorium in India. A special **scheffler reflector** has been designed for this purpose. Its **speciality is a flexible surface curvature and simultaneously a non-moving focal area**.

CONTENTS

LIST OF FIGURES

LIST OF CHARTS

NOMENCLATURES

A	:	Area
A_a	:	Aperture Area
A_r	:	Receiver/Absorber Area
CASE	:	Commission For Additional Sources Of Energy
CEA	:	Central Electricity Authority
CR	:	Concentration Ratio
CR_o	:	Optical Concentration Ratio
CSE	:	Centre for Science and Environment
DNI	:	Direct Normal Irradiance
E	:	Irradiance
E	:	Total Energy
$E_d\downarrow$	:	Diffuse Solar Irradiance
$E_g\downarrow$	:	Global Solar Irradiance
EIA	:	Energy Information Administration
$E_r\uparrow$	:	Reflected Solar Irradiance
FDI	:	Foreign Direct Investment
FIIA	:	Foreign Investment Implementation Authority
FIPB	:	Foreign Investment Promotion Board
GEDA	:	Gujarat Energy Development Agency
GEDA	:	Gujarat Energy Development Agency
GERMI	:	Gujarat Energy Research & Management Institute
GHI	:	Global Horizontal Irradiance
H	:	Radiant Exposure

I	:	Radiant Intensity
ICNEER	:	International Center for Networking, Ecology, Education & Reintegration
IEA	:	International Energy Agency
IREDA	:	Indian Renewable Energy Development Agency
IRENA	:	International Renewable Energy Agency
JNNSM	:	Jawaharlal Nehru National Solar Mission
JREDA	:	Jharkhand Renewable Energy Development Agency
K	:	Kelvin Temperature
kwh	:	Kilo Watt Hour
L	:	Radiance
M	:	Radiant Exitance
MNES	:	Ministry For Non-Conventional Energy Sources
MNRE	:	Ministry of New And Renewable Energy
mtoe	:	Million Tonnes of Oil Equivalent
MW	:	Mega Watt
P	:	Power
Q	:	Radiant Energy
RBI	:	Reserve Bank Of India
RE	:	Renewable Energy
RET	:	Renewable Energy Technologies
S	:	Direct Solar Irradiance
S_o	:	Solar Constant
SOP	:	Standard Operation Procedure
UNDP	:	United Nations Development Programmes
α	:	Absorptance
ε	:	Emittance

θ	:	Angle of Incidence
ρ	:	Reflectance
T	:	Transmittance
Φ	:	Radiant Flux Density