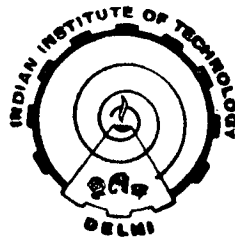


INVESTIGATIONS ON EROSION AND TRANSPORT PROPERTIES IN MHD GENERATORS

by

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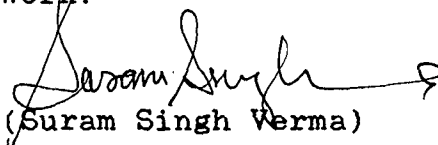
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(Suram Singh Verma)

NOTATION

English Letter Symbols:

A	:	Cross-sectional area
b	:	Spacing between probes
B	:	Magnetic field
C _p	:	Specific heat at constant pressure
C _{pf}	:	Diffuser recovery coefficient
C _v	:	Specific heat at constant volume
d	:	Density of the probe material
E	:	Induced electrical field
e	:	Electronic charge
G	:	Geometrical factor
I	:	Current
J	:	Current density
k	:	Boltzmann's constant
k _{ito}	:	Equilibrium constants
k ₁₇		
K	:	kelvin
K _L	:	Load factor
M	:	Mach number
M _{av}	:	Average molecular weight
m	:	Electron mass
\dot{m}	:	Mass flow rate
N	:	Neutral particle density
n _e	:	Electron density
P	:	Pressure
P _L	:	Power out put per unit length
P _V	:	Power out put per unit volume
p's	:	Partial pressures
Q _{o to}	:	Heat contents
Q ₃		
Q ₈	:	Heat contents at stack
R	:	Universal gas constant
T	:	Temperature
T ₁₁	:	Temperature at the exit of compressor
T _M	:	Temperature at which the superconductivity of the magnetic coils is maintained
T _R	:	Room temperature
T _{R'}	:	Temperature at which heat is rejected
u	:	Electron energy
v	:	Fluid velocity
V	:	Electron velocity
V _e	:	Voltage
W ₉₀	:	Mass eroded
W _C	:	Work done by the copressor
W _T	:	Work done by the steam turbine
x	:	Duct length

Greek Letter Symbols

α_o	:	Heat transfer coefficient
γ	:	Ratio of specific heats
δ	:	Exponent of pressure in power law
ϵ	:	Exponent of temperature in power law
E	:	Kinetic energy which must be absorbed to cause an erosion of a unit mass of the material
$E(\lambda, T)$:	Emissivity
μ	:	Electron mobility
η	:	Efficiency of
η_c	:	Compressor efficiency
η_{ci}	:	Stage polytropic efficiency of compressor
η_M	:	MHD generator efficiency
η_m	:	A.C.-D.C. inverter efficiency
ρ	:	Fluid density
σ	:	Electrical conductivity
ν_{en}	:	Electron-neutral particle collision frequency
ν_{ei}	:	Electron-ion particle collision frequency
ν_t	:	Total collision frequency

Subscripts

o	Stagnation, combustor
1	Nozzle exit, duct inlet
2	Duct exit, diffuser inlet
3	Diffuser exit
4	Exhaust

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