- recovering the heat of gasification waste, eliminating the cooling radiators downstream;
- a greater economic return due to a greater combustion efficiency and the elimination of water cooling costs.

The ultimate challenge in developing this new drier will therefore be to finalize a plant capable of processing not only mineral aggregates, but other types for other uses, starting with those of greater economic and environmental interest.

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NOMENCLATURE

A_{tot}	effective area of heat exchange, m^2
A_{cam}	effective area screw, m^2
A_{alb}	effective area cilinder, m^2
A_{sp}	effective area of spires, m^2
c_m	specific heat of the dry material, $J .kg^{-1}. K^{-1}$
$h_{co,f}$	convective coefficient between the screw and fluid, $W. m^{-2}. K^{-1}$
$h_{co,m}$	convective coefficient between between the screw and the material, $W. m^{-2}. K^{-1}$
$h_{cam,f}$	convective coefficient between between shirt and fluid, $W. m^{-2}. K^{-1}$
$h_{cam,m}$	convective coefficient between between shirt and material, $W. m^{-2}. K^{-1}$
h_{ev}	coefficient of evaporative heat exchange, $W. m^{-2}. Pa^{-1}$
ℓ	length of the coils, m
G_m	volumetric flow rate of the dry material, $m^3. s^{-1}$
G_v	vapor content, $m^3. s^{-1}$
P_e	perimeter of the coils, m
$p_{v,air}$	partial pressure of air, Pa
$p_{v,sat}$	saturation pressure of air, Pa
Q_m	thermal power absorbed by the material, W
$Q_{m,sens}$	sensible power absorbed by the material, W
$Q_{m,lat}$	latent power absorbed by the material, W
s_{alb}	shaft of the cilinder, m
s_{cam}	thicknesses of the cilinder, m
S_c	contact surface between the sand and air, m^2
S_e	section of the coils, m^2
$t_{m,in}$	inlet temperatures of the solid, °C
$t_{m,out}$	outlet temperatures of the solid, °C
$t_{h,in}$	inlet temperatures of fluid, °C
$t_{h,out}$	outlet temperatures of fluid, °C
$T_{s,s}$	surface temperature sand contact, °C
U_t	global coefficient of heat exchange of the drier, $W. m^{-2}. K^{-1}$
U_{co}	coefficient of transmission of the drier jacket, $W. m^{-2}. K^{-1}$
U_{cam}	coefficient of transmission of the auger, $W. m^{-2}. K^{-1}$

Greek symbols

ΔT_{lm}	logarithmic temperature difference, °C
η_T	heat exchanger thermal efficiency
η_{sp}	efficiency factor
λ_{lat}	latent heat of vaporization of water, $J. K^{-1}$
λ_m	conductivity of the material, $W m^{-1}. K^{-1}$
λ_{alb}	conductivity of the shaft, $W m^{-1}. K^{-1}$
λ_{cam}	conductivity of drier jacket, $W m^{-1}. K^{-1}$
ρ_m	material density, $kg. m^{-3}$
ρ_v	density of water vapor, $kg. m^{-3}$
ϕ	relative air humidity, %