ROBOTIC WOOD CRAFTING

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TUNDRA
2075 - Canadian Tundra
“It is a fact, between 1984 and 2012, 30% of Canada became greener.”
EFFECTS

thaw & vegetation shift
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thaw & vegetation shift
OPEN_PIT MINES
pits in Canada and the U.S.
OPEN_PITS
100 largest Open Pit Mines
NETWORK
100 largest Open Pit Mines
SITE
64°29′38,89″N 110°14′34,95″E
DIAVIK_MINE
64°29'38,89"N 110°14'34,95"E
DIAVIK_MINE

64°29'38,89"N 110°14'34,95"E

radiation max. ~1100 kwh/m²(a)
temperature -40°C - 25°C (avg. -6°C)
wind 0 - 75 km/h (avg. 12 km/h)
rain/snow avg. 150 mm/year
day length 5h - 21h
next city Yellowknife (308 km)
crate width ~ 900 m
crate depth ~ 250 m
ECO TOURISM

„responsible travel to natural areas that conserves the environment […]”
AUTARKY
necessary ressources

- energy production
- (drinking) water supply
- food supply
CONDITIONS
wind turbines & runway
RESTORE NATURE
dismantling industrial plants
TOPOGRAPHY

diagram
RADIATION

analysis of the sun
VERTICAL GROWTH
agent based system studies
NETWORK
optimizing connectivity
NETWORK
optimizing connectivity
MATERIALISATION

optimizing connectivity
SITUATIONS
optimizing connectivity
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REFERENCES

INTERIOR
double curved CLT
GREENHOUSE SECTION
details 1:100
GREENHOUSE
0
details 1:100
SECTION 0

details 1:100
UNIT -2
details 1:100
ERGERGY CONCEPT
solar energy & ground storage
Canadian Wood

dark & white spruce; birch, aspen
PROTO-TYPING
freeform wood panels
TRADITIONAL CLT

CLT fabrication principle
FREEFORM CLT

double curved CLT
PROTOTYPE_01

double-curved & cross-laminated
MOLDING

double curved CLT
CONSTRUCTION

iterative subdivision
CONSTRUCTION

constructive elements

CLT floor

freeform beams
(main vertical structure)

CLT panels
(reinforcement)

combined result
FACADE

iterative subdivision
PROTOTYPE_02
riveted wood strips
SUBDIVISION

linear subdivision into strips
SUBDIVISION
linear subdivision into strips
WOOD STRIPS
parametric thickness
WOOD STRIPS

cross layering
WOOD
STRIPS
cross layering
UNIQUE STRIPS
complex bended wood
iterative subdivision
INTEGRATION INTO STRIPS

iterative subdivision
FABRICATION
robotic milling + steam bending
1 100mm CLT panel
   5 layer 12mm birch,
   weather sealed

2 360 mm wood fiber insulation
   $\lambda_p = 0.036$ [W/(m*K)]

3 vapour barrier

4 10 mm birch strips,
   riveted

5 beam, birch
   robotically cut

6 high insulation window,
   triple glazed
   wood framing

7 wind barrier
1:5
horizontal + vertical