PhD in Wood Technology

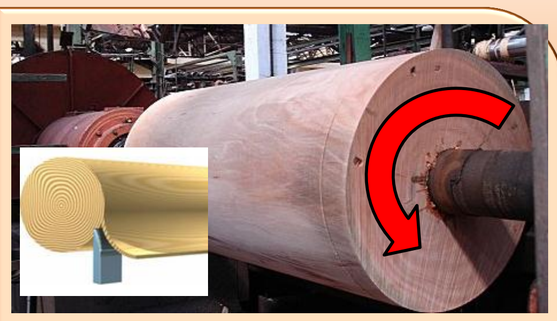
Infrared Heating: an alternative to soaking?

Thèse en Sciences du Bois: La chauffe infrarouge, une alternative à l'étuvage ?

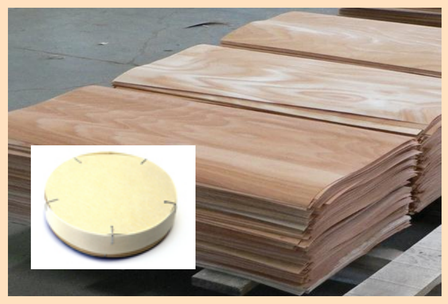
Current veneer manufacturing process to produce plywood

Mode de fabrication actuel de placages pour produire du contreplaqué

Heating logs by soaking
(immersion into hot water) followed by transportation from basins to the lathe.

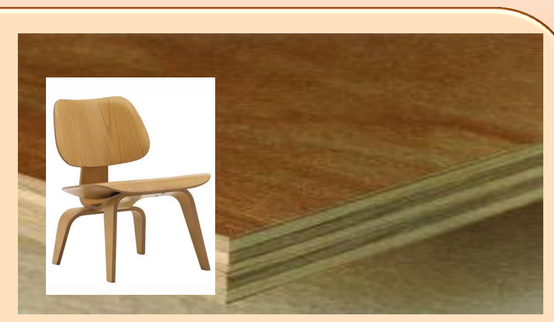


Peeling veneer
using knife cutting on a rotary peeling lathe.



Veneer
End uses: ex: plywood, cheese box

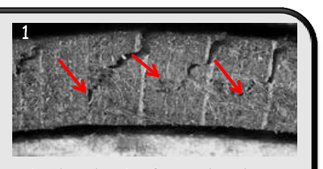
&



Plywood manufacturing
from dried, glued and pressed veneers
End uses: ex: furniture

Why heating?

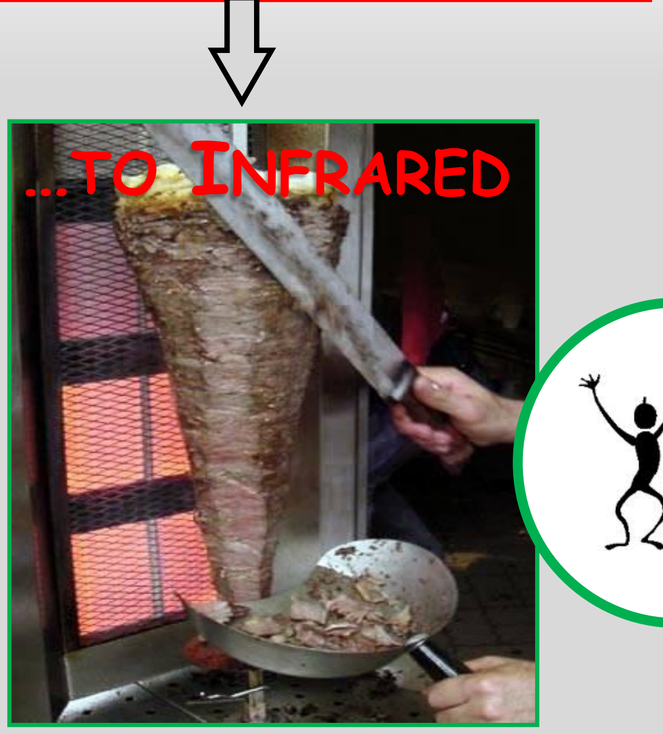
To soften wood prior to peeling it!
and increase its deformability under the cutting knife, lowering cutting efforts and improving veneer quality (reduced lathe checks formation).



Lathe checks formed under the action of the cutting knife.

Soaking disadvantages

- Time-consuming
- Empirical
- Environmentally costly



Infrared advantages

- Penetrates into green wood
- Fast heating
- Possible in-line implementation
- Flexible energy distribution

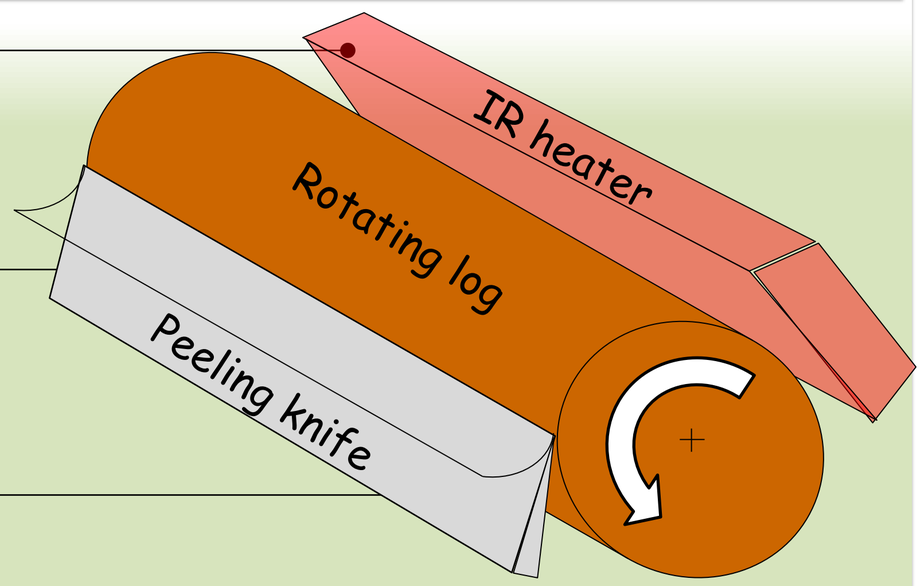
How?

Developing in-line Infrared heating system
the goal of this PhD is to build up a prototype of IR heating system on the lathe and compare veneer quality and cutting efforts compared with the soaking method.

Infrared heater

embedded in the peeling lathe

heating wood while rotating



1. Palubicki B. et al. (2010), A method of lathe checks measurement: Smof device and its software. *European Journal of Wood and Wood Products.*
2. Marchal R. et al. (2004), Technical feasibility of an embedded wood heating device on the slicer or the peeling lathe.

Thèse en co-tutelle internationale France-Finlande

ARTS ET MÉTIERS ParisTech Cluny
rue Porte de Paris
71250 Cluny - France

Aalto University
Otaniementie 9
02150 Espoo - Finland

by Anna Dupleix
anna.dupleix@ensam.eu