Linking visual and stress wave grading of beech wood from the log to the sawmill product

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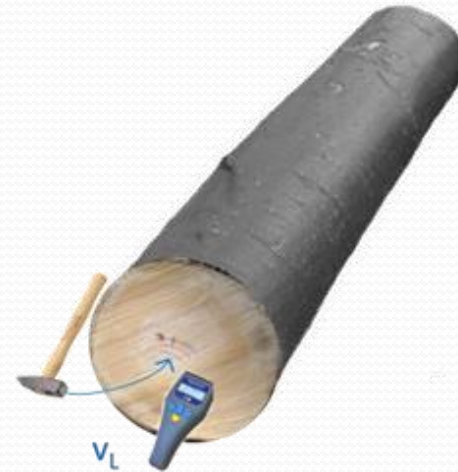
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$n_L = 27$

2.5 to 6.5 m

$n_T = 10$,
5 grades

EN 1316-1
EN 1310:
A, B, C, D class

MTG device (Brookhuis, NL)

$$v_L = 2 f_L L_L$$
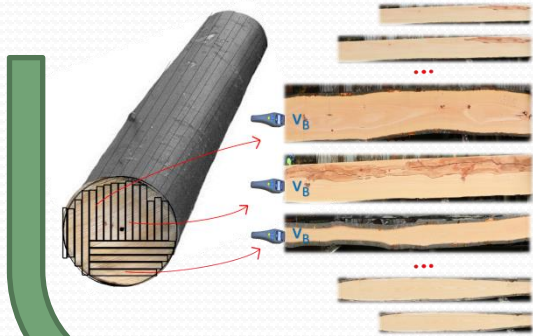
$n_B = 250$,
Thickness: 35 mm

Classification of European
Organisation of Sawmill
Industry (EOS):
EOS-A, EOS-B, EOS-C

MTG device (Brookhuis, NL)

$$v_B = 2f_B L_B$$

Figure 2. Distribution of longitudinal stress wave velocity (v_L) for logs of different quality grades [5]

Table 1. Proportion and distribution of boards according to quality (EOS -A, EOS -B, EOC-C) [15] within an individual quality class of logs (A, B, C) [5].
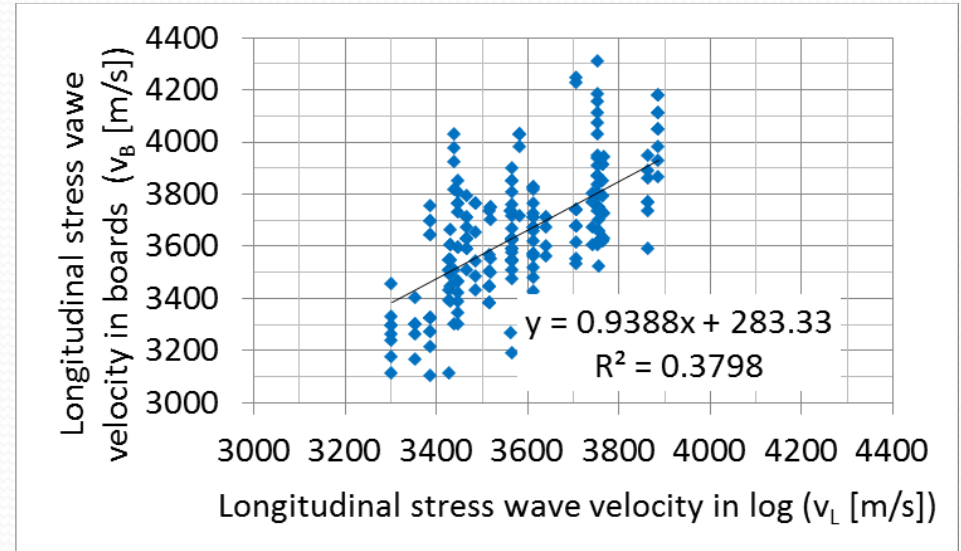
Log quality	Perc. of logs [%]	No. of boards	Perc. of boards [%]	EOS-A [%]	EOS-B [%]	EOS-C [%]	Unsorted [1] [%]
A	8.3	39	15.5	15.2	66.7	15.2	3.0
B	66.7	174	69.5	12.2	52.0	33.8	2.0
C	20.8	32	12.7	3.7	51.9	42.4	2.0
D	4.2	1	2.3	0.0	38.0	60.0	2.0
Sum	100.0	250	100.0				

[1] Boards that did not meet any quality grade
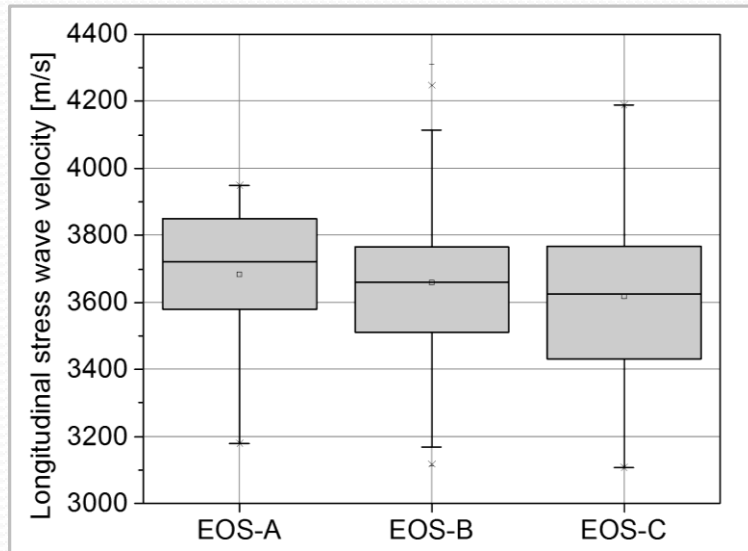
Figure 3. (**a**) Distribution of longitudinal stress wave velocity (v_B) for boards of different quality grades; (**b**) Relationship between longitudinal stress wave velocity of logs (v_L) and stress wave velocity of sawn boards (v_B).

Conclusions

- The significance of the relationship between the visually assessed beech log quality and stress wave velocity.

- Possibility to pre-sort beech logs for better classification and utilization of the sawn timber.

- The stress wave velocity in logs is related to the stress wave velocity in boards, which varies considerably, especially with low graded material.

- The relationship between sawnwood grade and stress wave velocity is not significant.