TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Forest, Geo and Hydro Sciences, Institute of Forest Utilization and Forest Engineering, Chair of Forest Engineering

Cost-effective short-wood logging cable way system for low land stands

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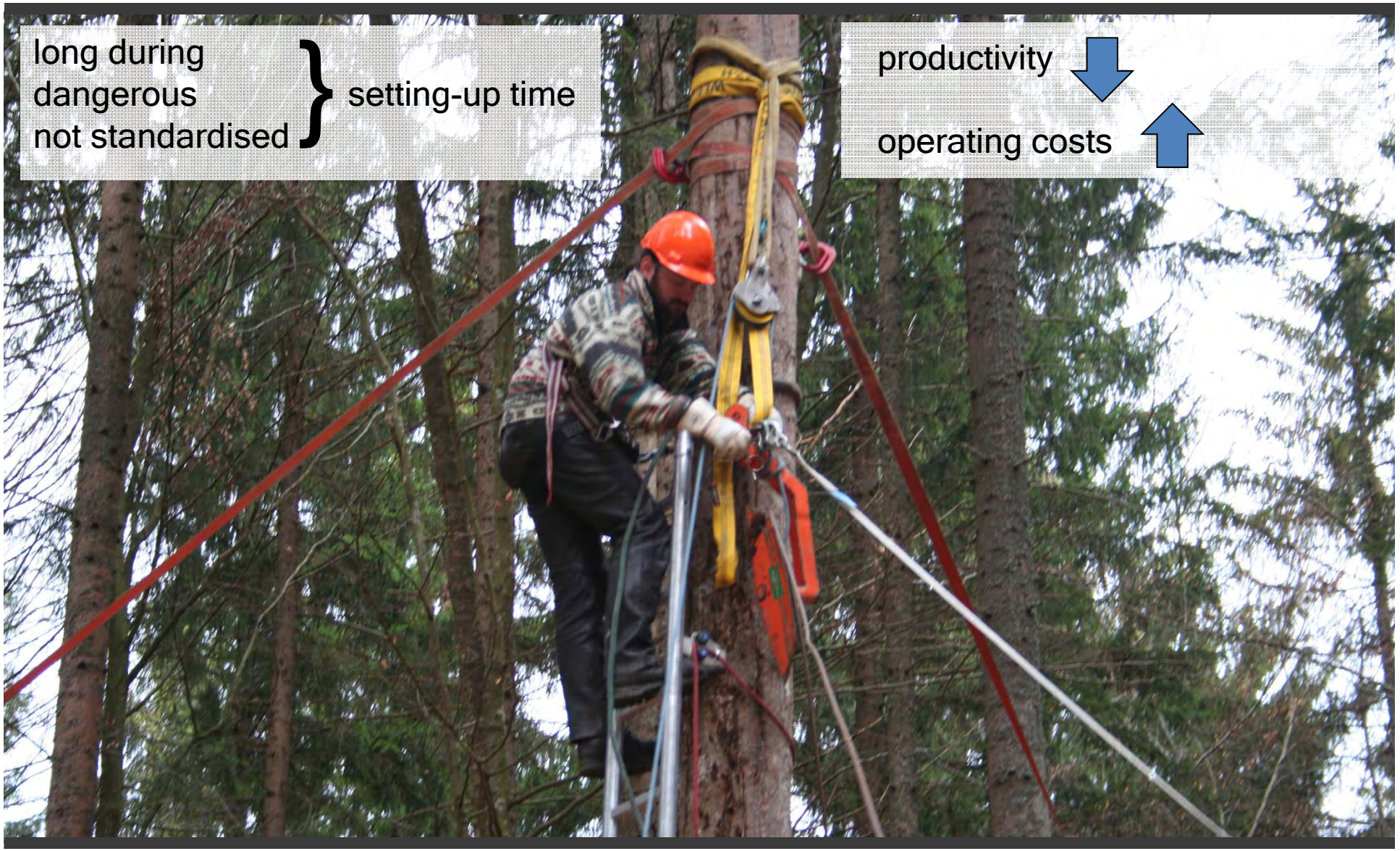
DRESDEN concept
Exzellenz aus Wissenschaft und Kultur

Egological valueable low land stands with sensitive forest soil

wheel based machines not applicable, cable way systems?

Tests with alpine equipment showed:
costs for harvesting > proceeds of wood.


long during
dangerous
not standardised
setting-up time
productivity
operating costs

Sliding transport of longwood causes damages on soil and forest stands

Quiet slow transport

dimished poductivity

Required anchor trees are commonly damaged, have to be cut

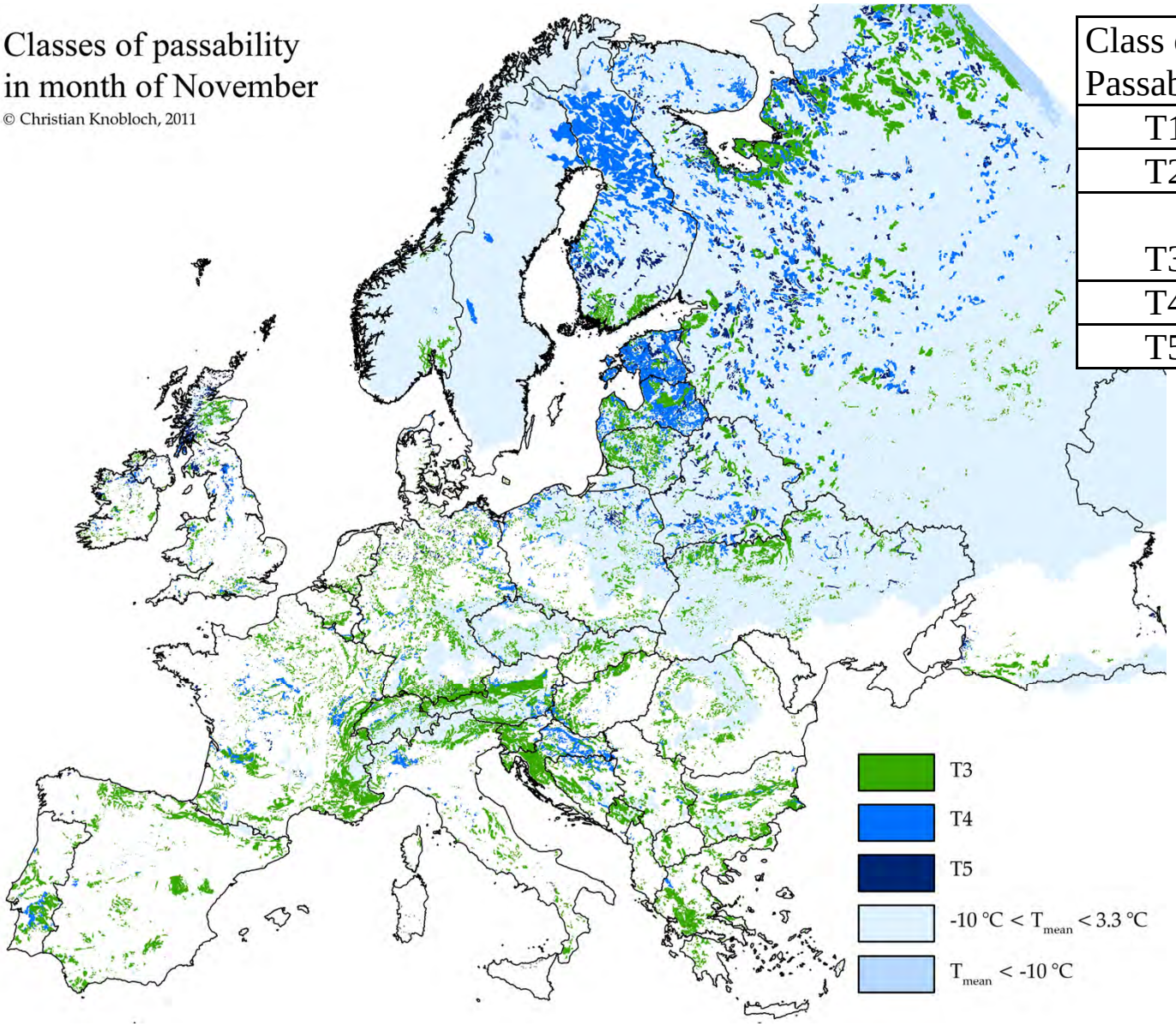
Positioning ist dependent from the existence of adequate anchor trees

Either the safety-factor of machines´s too huge, or hauled load is too small

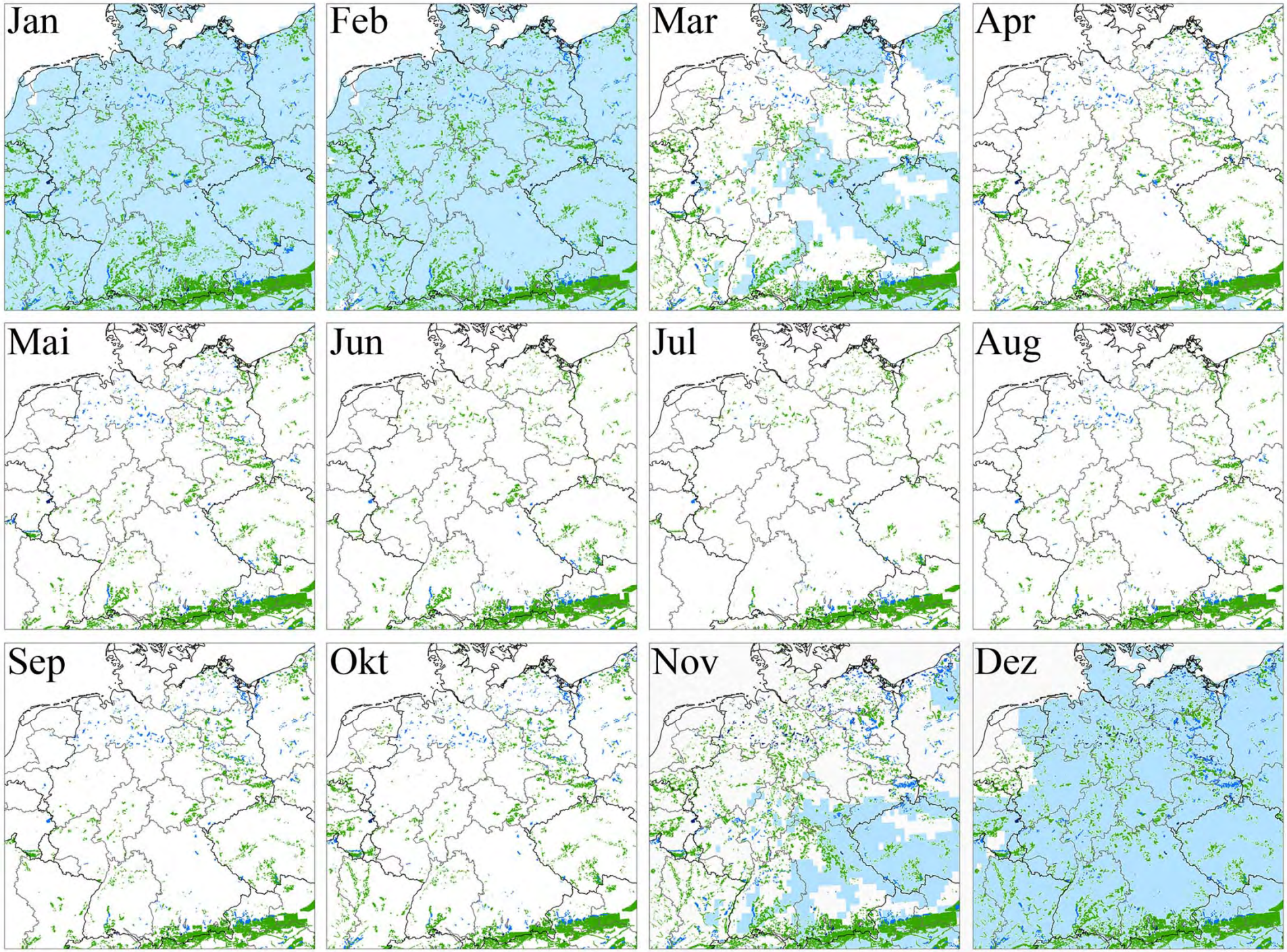
↓ Expensive machines

↓ low productivity, high operating costs

Special machines are too special, too expensive in purchasing and operation



Class of Passability	Description
T1	passable
T2	limited passability
T3	severely limited passability
T4	barely passable
T5	impassable

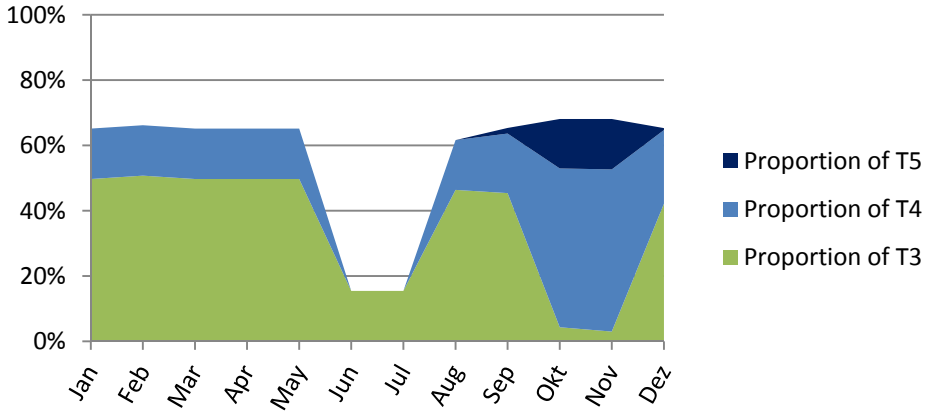

Jan
Feb
Mar
Apr
Mai
Jun
Jul
Aug
Sep
Okt
Nov
Dez

8.600.000 fm of wood
Maximum potential of units: 430

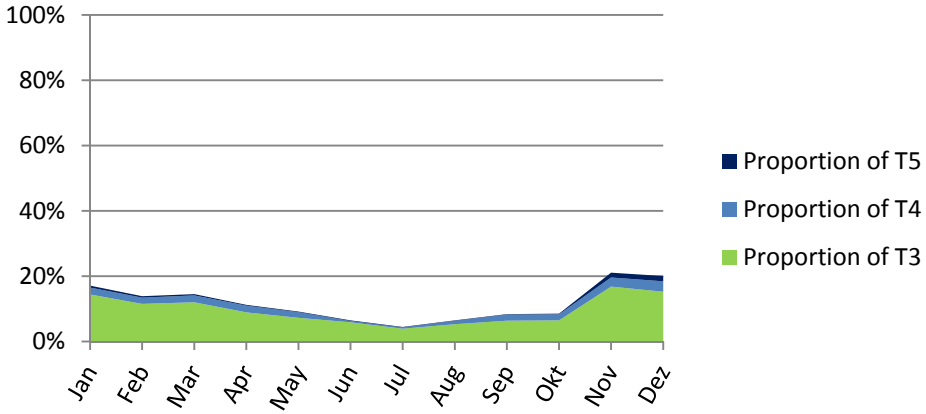
5.300.000 fm of wood
Maximum potential of units: 263

10.700.000 fm of wood
Maximum potential of units: 583

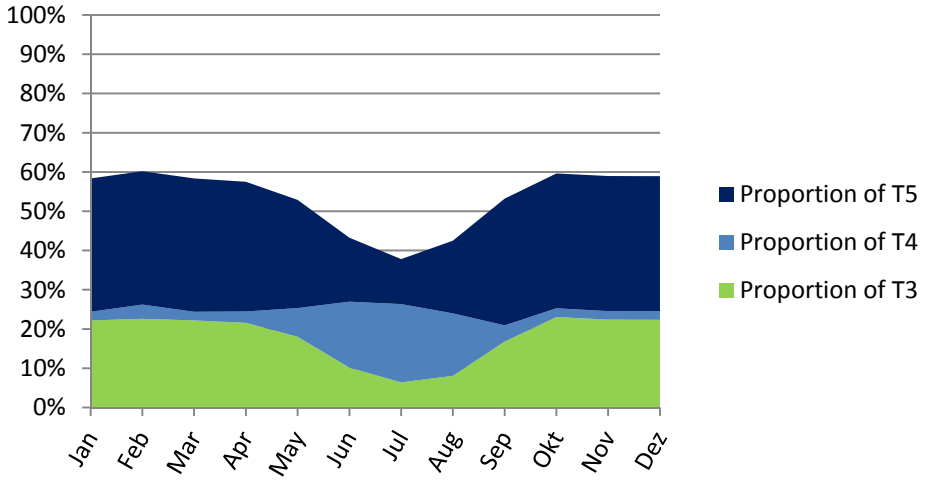
Estonia,
ca. 2.700.000 ha of forest



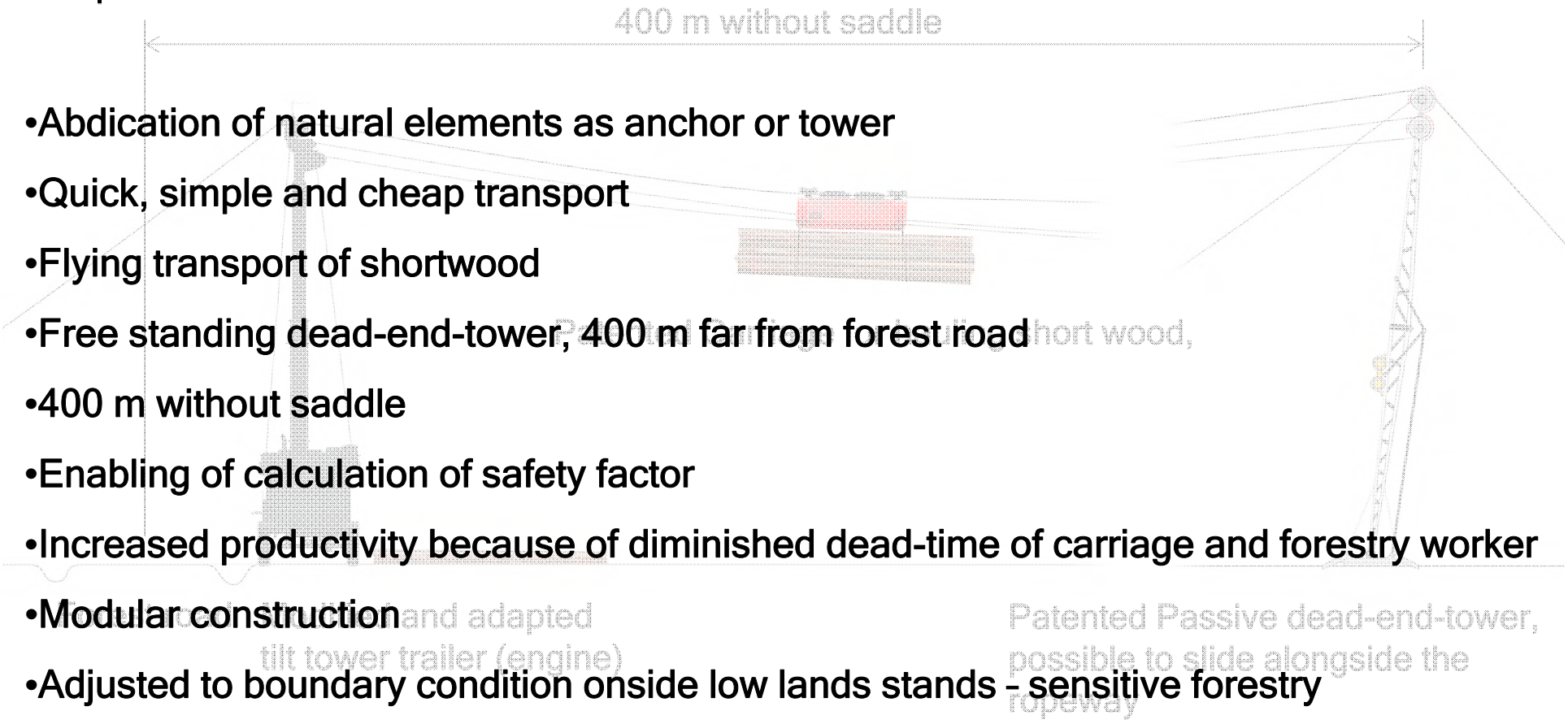
Germany,
ca. 11.200.000 ha of forest



Great Britains district of "Scotland",
ca. 1.000.000 ha of forest



- Conventional 3-rope-cable-way system
- 7 points of innovation with synergistic effects
- 4 patents



- Abdication of natural elements as anchor or tower
- Quick, simple and cheap transport
- Flying transport of shortwood
- Free standing dead-end-tower, 400 m far from forest road
- 400 m without saddle
- Enabling of calculation of safety factor
- Increased productivity because of diminished dead-time of carriage and forestry worker
- Modular construction
- Adjusted to boundary condition onside low lands stands - sensitive forestry

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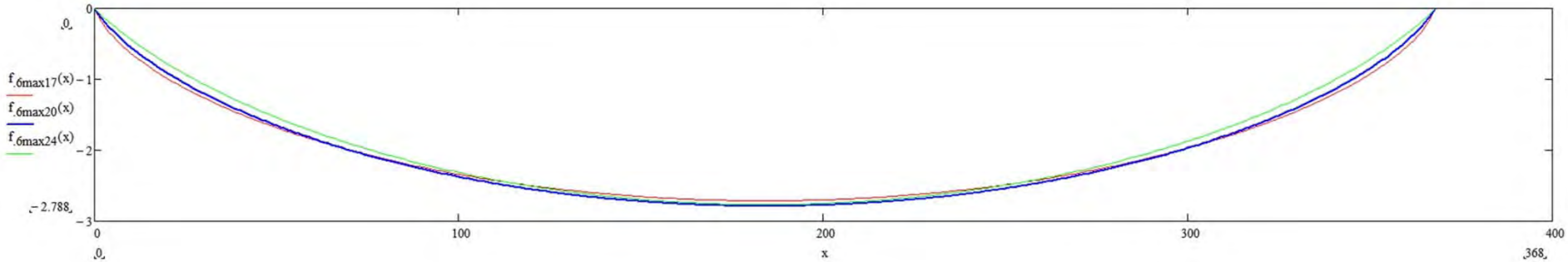
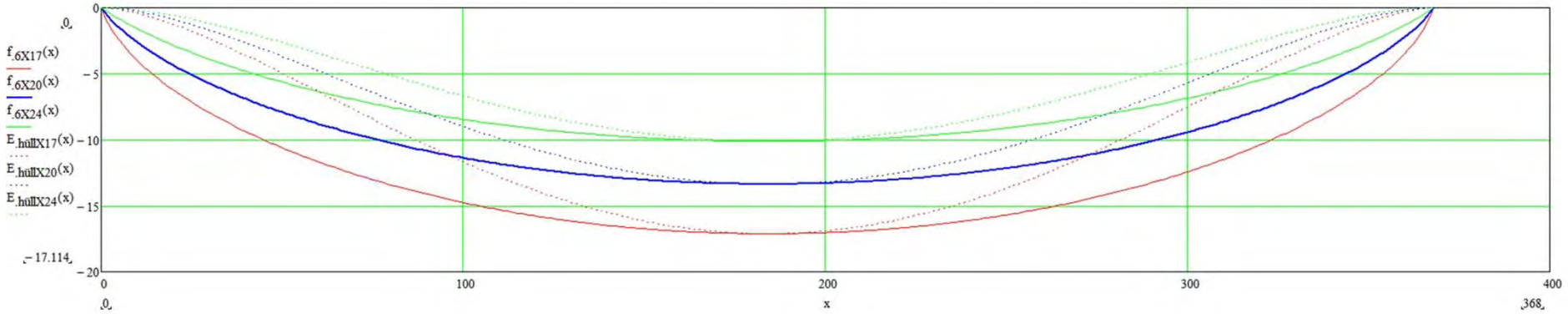
Tension of assembly



Sag of skyline



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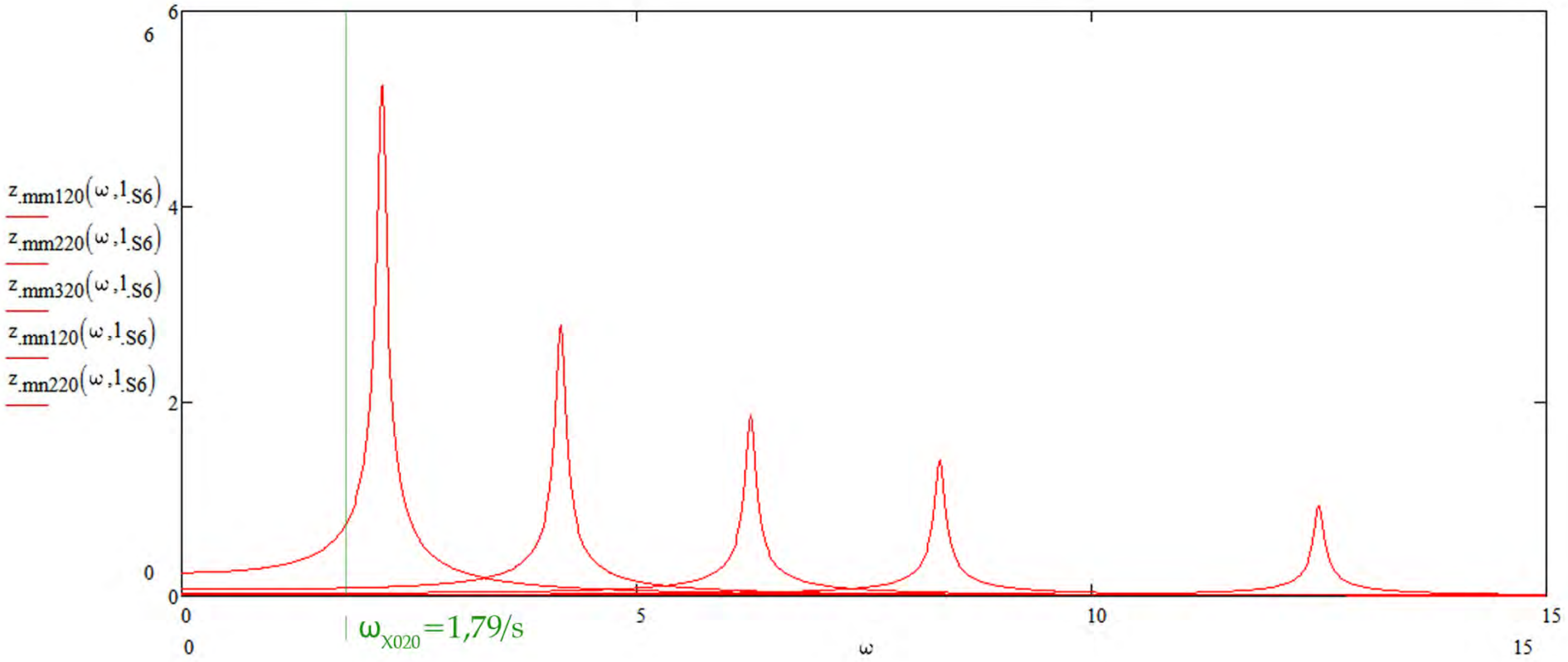
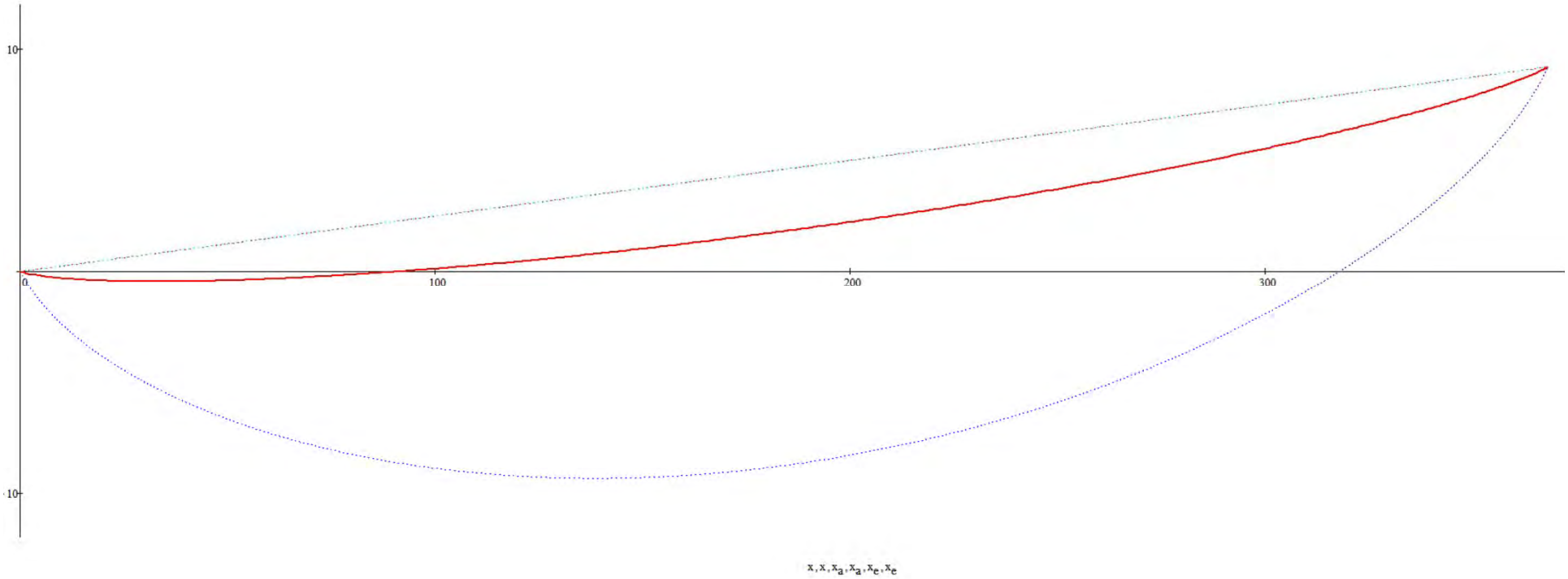
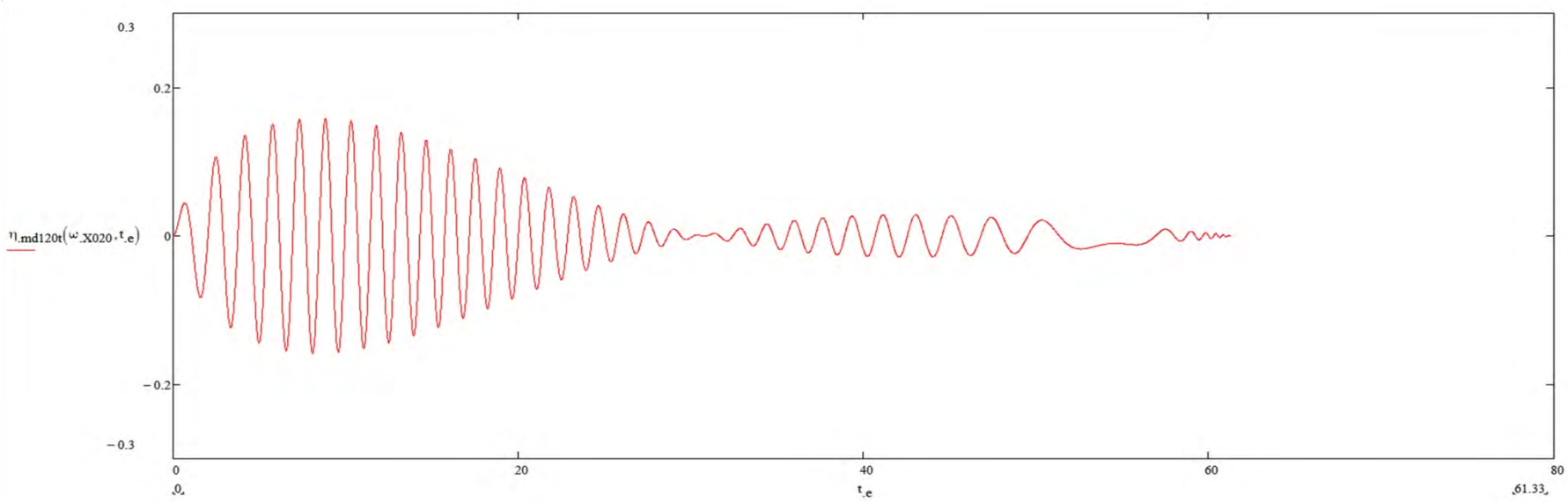
Dynamical analysis

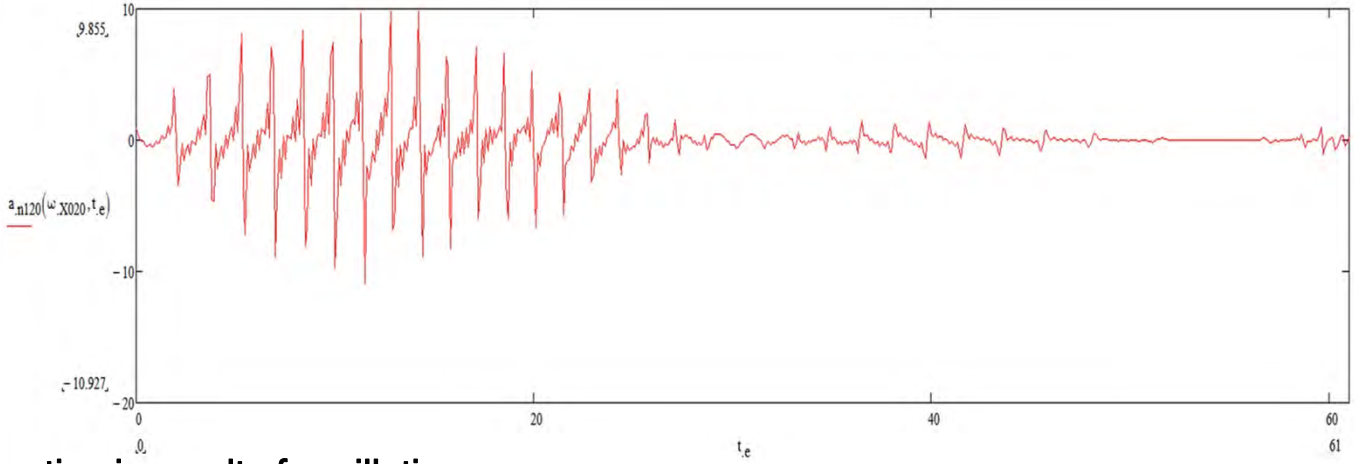


Antimetric and metric natural frequency of the cable way system and worst case in vibrational response


10
0
100
200
300
10
x, x, x_a, x_a, x_e, x_e

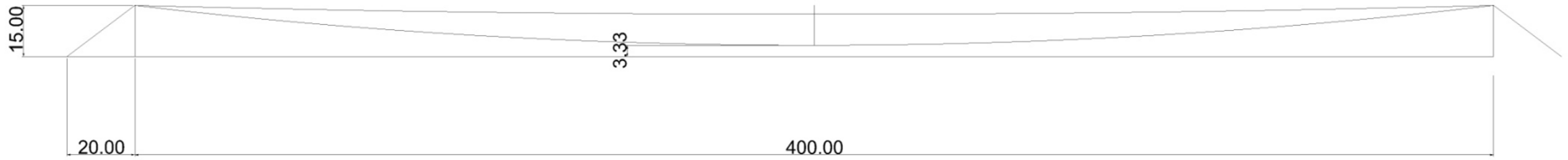


Deflection

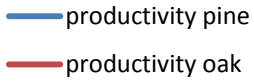


Acceleration in result of oscillation

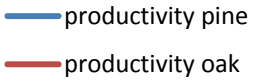
Proportional view, central maximum load



Maximum load and weigth of carriage = 1250 kg
Mass of skyline (D = 20 mm) = 716 kg
Tension of assembly = 78.3 kN
Maximum sag = 11.7 m
Sag of slack rope = 2.6 m



Maximum load



„normal“ load

•All at once: bundle of wood is hanging directly below the carriage AND avoiding of dead-times while hitching

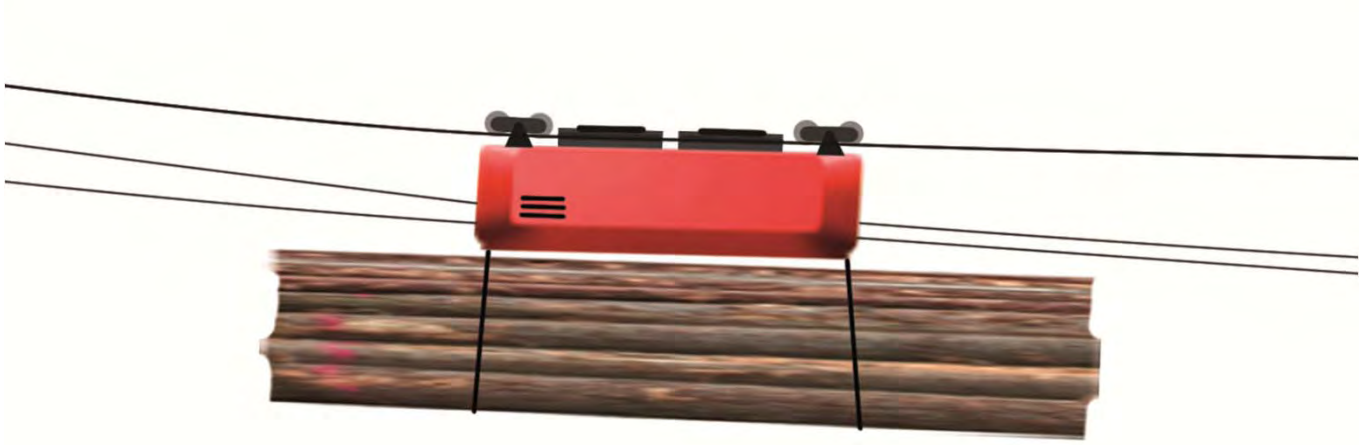
•No engine to spool-out, steering from the active tower

•Two stroke ropes

•passive and light

•Use of a minimum of ropes

•Adapted for the boundary conditions of low lands



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»Wissen schafft Brücken.«

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