



# AUTOMATION AND SOFTWARE FOR SAWMILLS

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LOG ACCOUNTING

---

LOG SORTING CONTROL

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SAWLINE CONTROL AND OPTIMIZATION

---

BOARD SORTING CONTROL

---

DRYING KILNS AUTOMATION

# AVTOMATIKA-VEKTOR

Automation&Software

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[www.a-vektor.ru](http://www.a-vektor.ru)

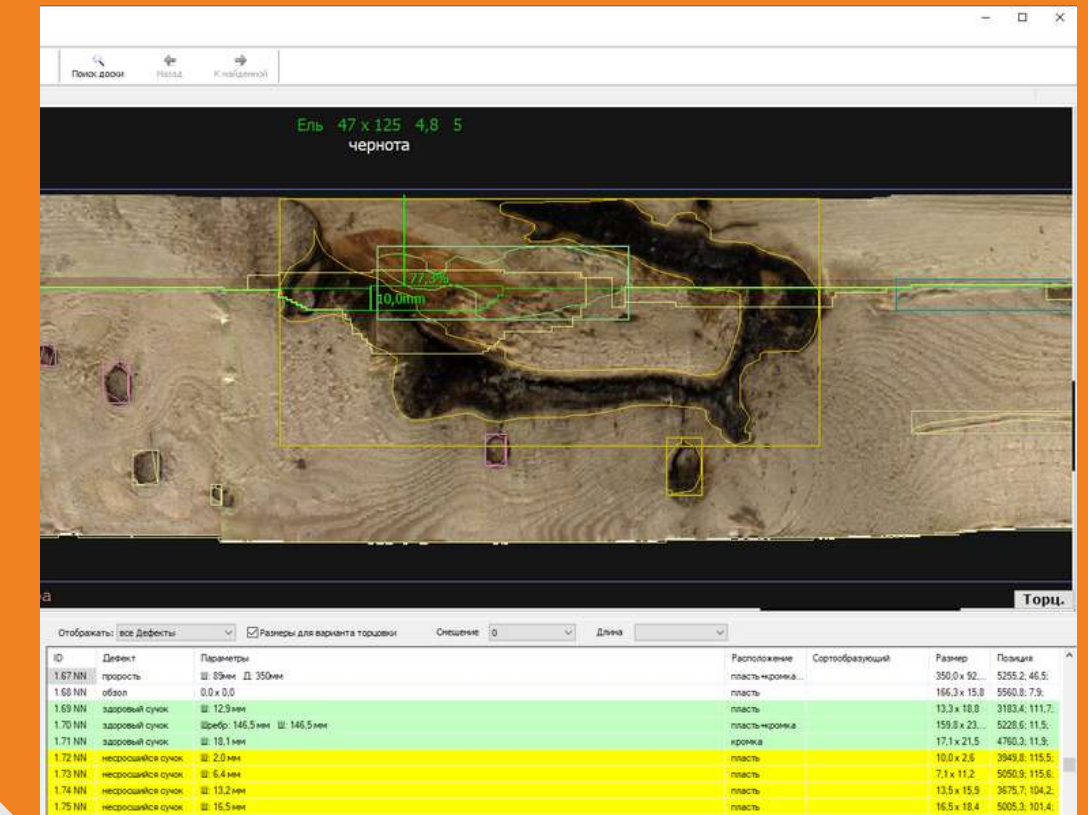
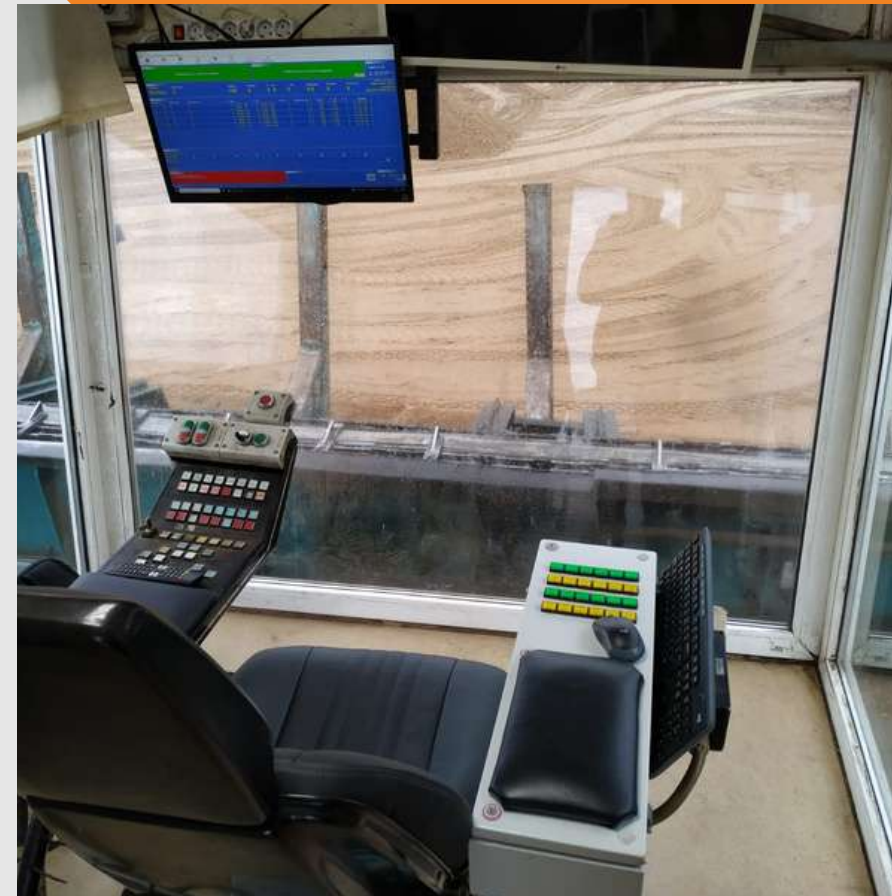


# ABOUT US

**AVTOMATIKA-VEKTOR** was organized by a group of engineers and programmers in 2009.

**We work in the field of** timber industry enterprises automation.

**We help our clients** to minimize downtime periods and non-production costs caused by them, to reduce raw material consumption and **to optimize enterprise control.**



- ✓ **40+ professionals** in the team
- ✓ **25+ years experience** in this field
- ✓ **200+ projects** in Russia and abroad
- ✓ **patented software and certified equipment**



# SAWMILL AUTOMATION

ALL PROJECTS ARE PERFORMED INDIVIDUALLY WITH CUSTOMER'S REQUIREMENTS TAKEN INTO ACCOUNT



DESIGN



SOFTWARE  
DEVELOPMENT



PRODUCTION



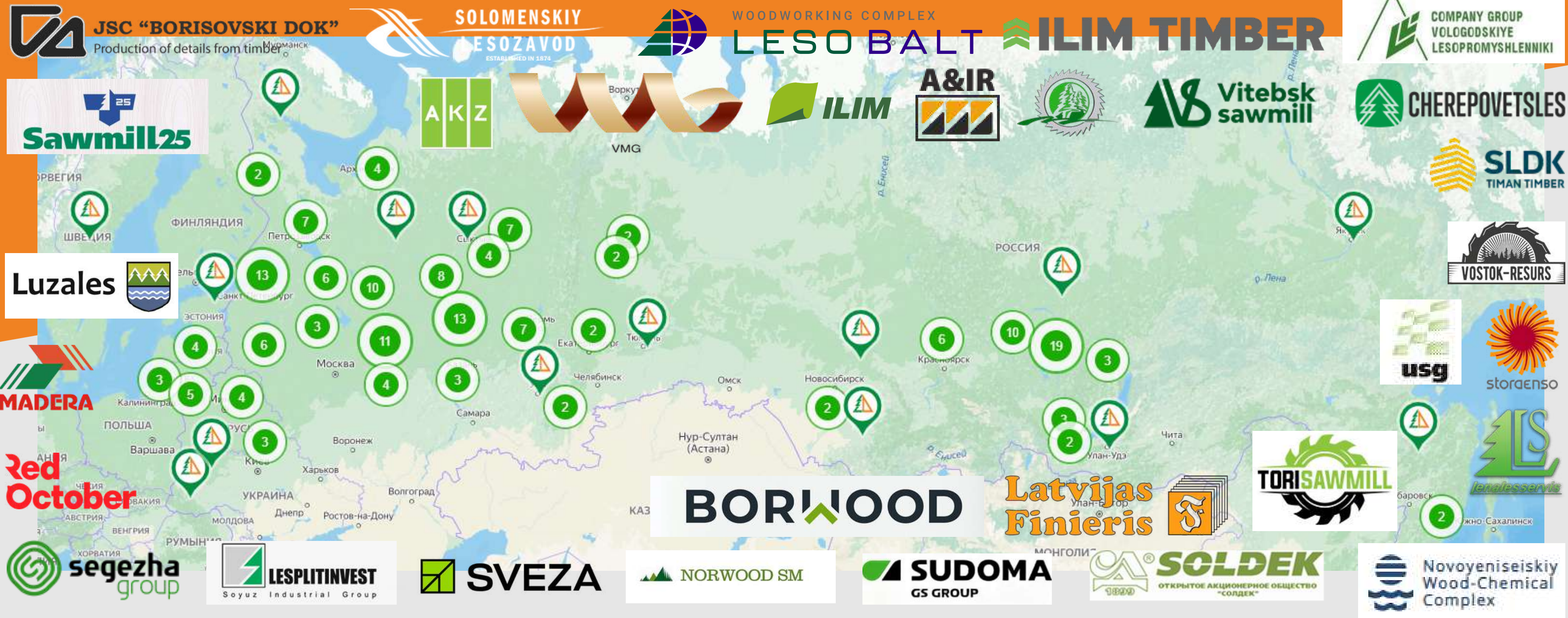
COMMISSION



TECHNICAL  
SUPPORT



# REFERENCES





# TRUCK INSPECTOR

SYSTEM FOR AUTOMATIC MEASUREMENT  
OF TIMBER VOLUME ON TIMBER TRUCKS


## Functions

- cargo detection with filtering of the external parts of the truck (racks, manipulator, etc.)
- determination of the average diameter in a stack of logs with correction by taper
- report generation (per period and per truck)

## Advantages:

- high accuracy and repeatability of measurements regardless of weather conditions and time of day
- full automation of the measurement process without timber truck stop and the constant presence of the operator
- objectivity of measurement results due to the absence of a human factor

Файл Настройки Измерение объема Справка

 АВТОМАТИКА - ВЕКТОР  
Automation and software  
TrucksMeasurement  
Version: 1.1.22.0  
Запуск: 2021.11.15 03:33:38

Данные по автомобилю

Скорость, км/ч: 6,0

Длина, м: 17,2

Ширина, м: 3,0

Высота, м: 4,0

гос. номер: А802ТМ196

Данные по грузу

Наличие: да

Объем LVM, м3: 71,06

Объем ТМ, м3: 57,62

Информация о грузовых частях

1 2

Высота гр. платф., см: 164,6

Высота штабеля, см: 203,1

Ширина, см: 238,4


Длина, см: 630,0

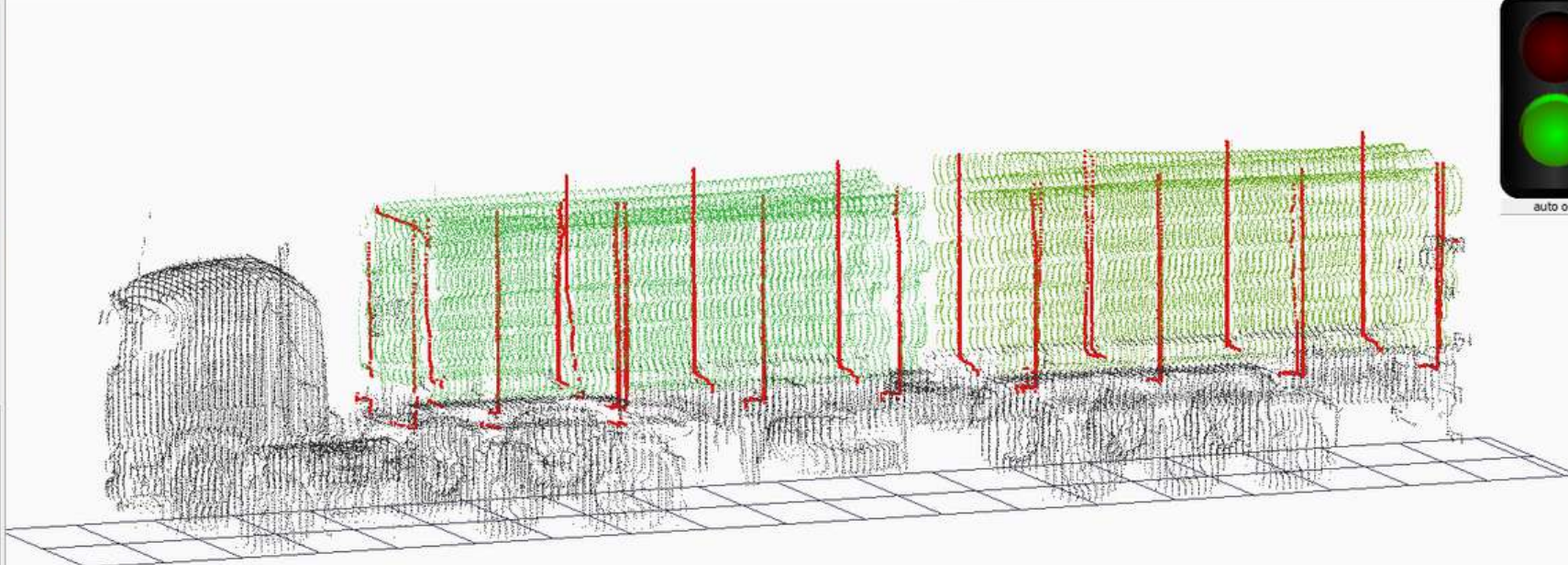
Манипулятор: нет

Объем гр. бокса, м3: 30,5

Сред. D, мм: 279,4

Вид спереди





auto on

Id	Время	Водитель	Номер	Объем	Ско...
1	14.11.2021 17:20:43	-	-	-	4,7
2	15.11.2021 10:21:20	-	-	-	7,1
3	15.11.2021 16:28:40	-	-	-	6,0
4	15.11.2021 17:52:41	-	-	-	12,6
5	15.11.2021 17:58:20	-	-	-	15,0

В: Connected ANPR: FrPerSec: 16 Anpr: 2 Buff: 2 cTime: 0 OK BPh: FrPerSec: 15 PhCnt: 4 OK PLC: 51032 OK FS: Cnt: 333 Deleted: 0 Received: 4 Time: 0 OK LVM: OK PS ON

# ROUND TIMBER ACCOUNTING

Учет бревен

admin Выход русский

Главная Отчеты Настройка Справка

Главная » Текущая смена

Текущая смена

Дата смены: 13.04.2010  
Номер: № 2  
Мастер: Петров В.В.  
Начало: 15:30  
Окончание: 14.04.2010 00:10

Обновить Новый постав Мастер Отчет

Все потоки

- Поток 1
  - 20-22, Ель
- Поток 2
  - постав 18-20, Ель
- Поток 3
  - постав 24-26, Ель

Поток	Количество, шт	Объем, м3
Поток 1	0	0.0000
Поток 2	0	0.0000
Поток 3	0	0.0000
Σ	0	0.0000

Поток	Дата/время	Диаметр, см	Длина, м
Поток 2	01.04.2010 16:15:03	24 [248]	5.00 [519]
Поток 3	01.04.2010 16:15:09	24 [230]	6.00 [622]
Поток 3	01.04.2010 16:15:18	30 [306]	5.00 [543]
Поток 3	01.04.2010 16:15:27	22 [217]	5.00 [550]
Поток 3	01.04.2010 16:15:34	28 [285]	4.00 [405]

- Prompt, accurate and objective information on number, volume, quality and dimensions of the raw material being processed or in production.
- VECTOR log measurer allows to registrate, accumulate and store information **in real time** with minimum subjective factors when determining the geometric dimensions of logs .
- As an additional option, it is possible to connect a **data display** to the accounting system. It will show online information on the quantity and volume of roundwood received for a certain period.



# LOG SORTING CONTROL SYSTEM



## Delivery set:

- VECTOR log measurer
- control chair and operator's PC
- automation cabinets
- power equipment
- specialized software

LSort v7.18.2

Оператор | Отчеты | Настройка | Тест | Справка | Язык

Начать смену F3

Закрыть смену

Партия F4

Отчеты F5

Таблица сортировки F6

Дистанция F7

Сбросить F12

Обновить список

Смена

Дата: 11.01.2022

Смена: 1

Оператор: Староселец В.С.

Начало: 11.01.2022 06:56:16

357,45 m3

1946

Отчет

Партия

Поставщик: Шумилинский лесхоз

Накладная: 0128829

Транспорт: Вагон - 0610-2

Начало: 11.01.2022 17:32:31

Пульт оператора

Порода

Качество

Кора, %

Регистр

Сосна

Сорт С

100

1

Карман

Порода

Качество

D, mm

L, sm

Сбег

Кривизна

Dmax

V, m3

1 ( 3 ) Сосна Сорт С 141 (148) 14 484 (484) 480 6 0,5 170 0,092

6 ( 11 ) Сосна Сорт С 191 (199) 20 493 (493) 480 -9 0,2 259 0,183

1 ( 4 ) Сосна Сорт С 156 (163) 16 492 (492) 480 -7 0,6 200 0,118

8 ( 8 ) Сосна Сорт С 188 (196) 18 496 (496) 480 -4 0,2 217 0,150

15 ( 18 ) Сосна Сорт С 203 (211) 20 489 (489) 480 -7 0,4 247 0,183

24 ( 6 ) Сосна Сорт С 164 (171) 16 487 (487) 480 6 0,5 200 0,118

6 ( 11 ) Сосна Сорт С 197 (205) 20 491 (491) 480 6 0,2 233 0,183

24 ( 7 ) Сосна Сорт С 183 (191) 18 494 (494) 480 -9 0,8 248 0,150

8 ( 8 ) Сосна Сорт С 179 (186) 18 491 (491) 480 9 0,2 268 0,150

24 ( 7 ) Сосна Сорт С 167 (174) 16 490 (490) 480 -10 1,1 229 0,118

1 ( 3 ) Сосна Сорт С 141 (148) 14 491 (491) 480 -6 0,3 172 0,092

24 ( 6 ) Сосна Сорт С 152 (159) 16 490 (490) 480 7 0,5 189 0,118

15 ( 18 ) Сосна Сорт С 204 (212) 20 491 (491) 480 -6 0,4 239 0,183

6 ( 12 ) Сосна Сорт С 215 (223) 22 492 (492) 480 -6 0,6 251 0,220

Транспортер

Скорость: 1,9 м/с

dmts: 61602

index: 0 -> 0

Key code: 0

2 4 6 8 10 12 14 16 18 20

6 15 24 24

1 3 5 7 9 11 13 15 17 19

Регистр: 1

Ошибки

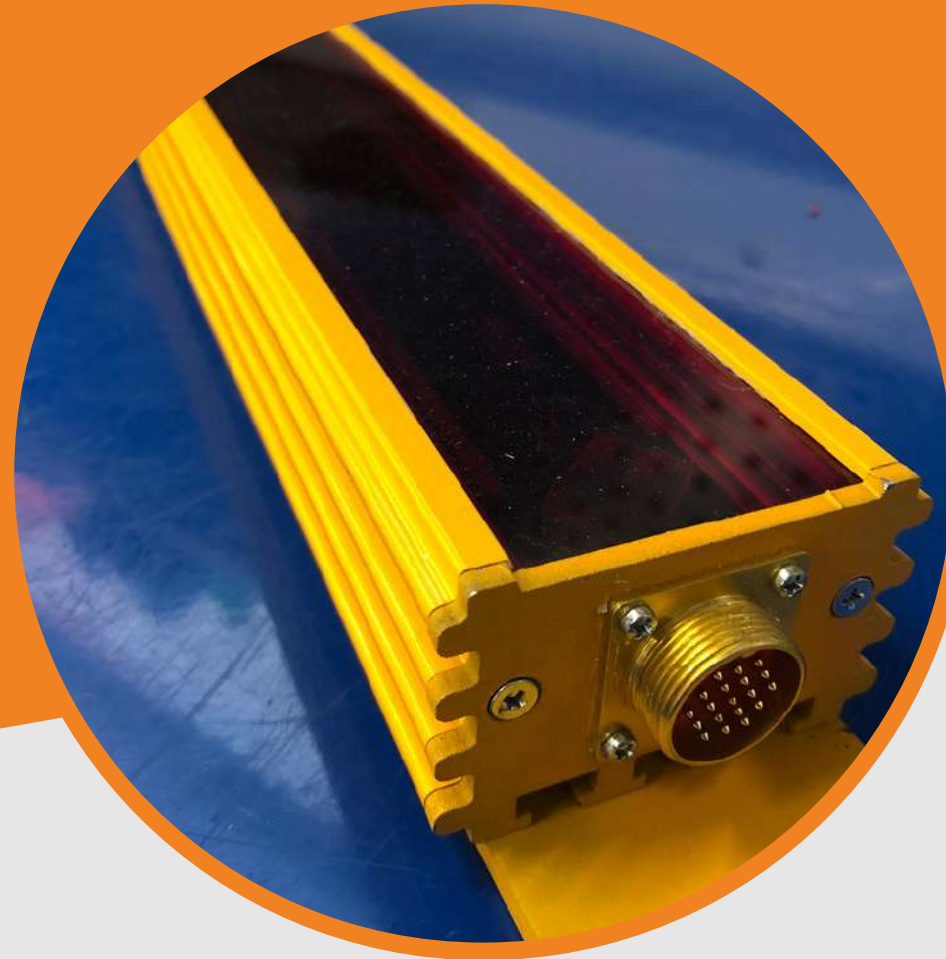
Простои

База данных: 2239 / 19 ОК

PLC: 4086598

Automation for all line units, process visualization, sorting accuracy improvement, advanced reporting system.

# VECTOR LOG SCANNERS



## VECTOR-1D

measuring logs in one plane

**Main application:** round timber accounting when feeding to sawing or peeling, and automation for "butt/top" log rotation.




## VECTOR-3D


3D-scanner for logs

**Used as a part of** round timber sorting lines, sawmill control and optimization system, and for round timber accounting.





According to data obtained  
from open sources, log scanners  
Vector-1D and Vector-3D measured  
**more than 35 million sq. m.  
of round timber** during 2019



The “VECTOR” system measures  
**EACH SECOND SQUARE METER**  
of sawlog in Russia



# SAWLINE CONTROL SYSTEM

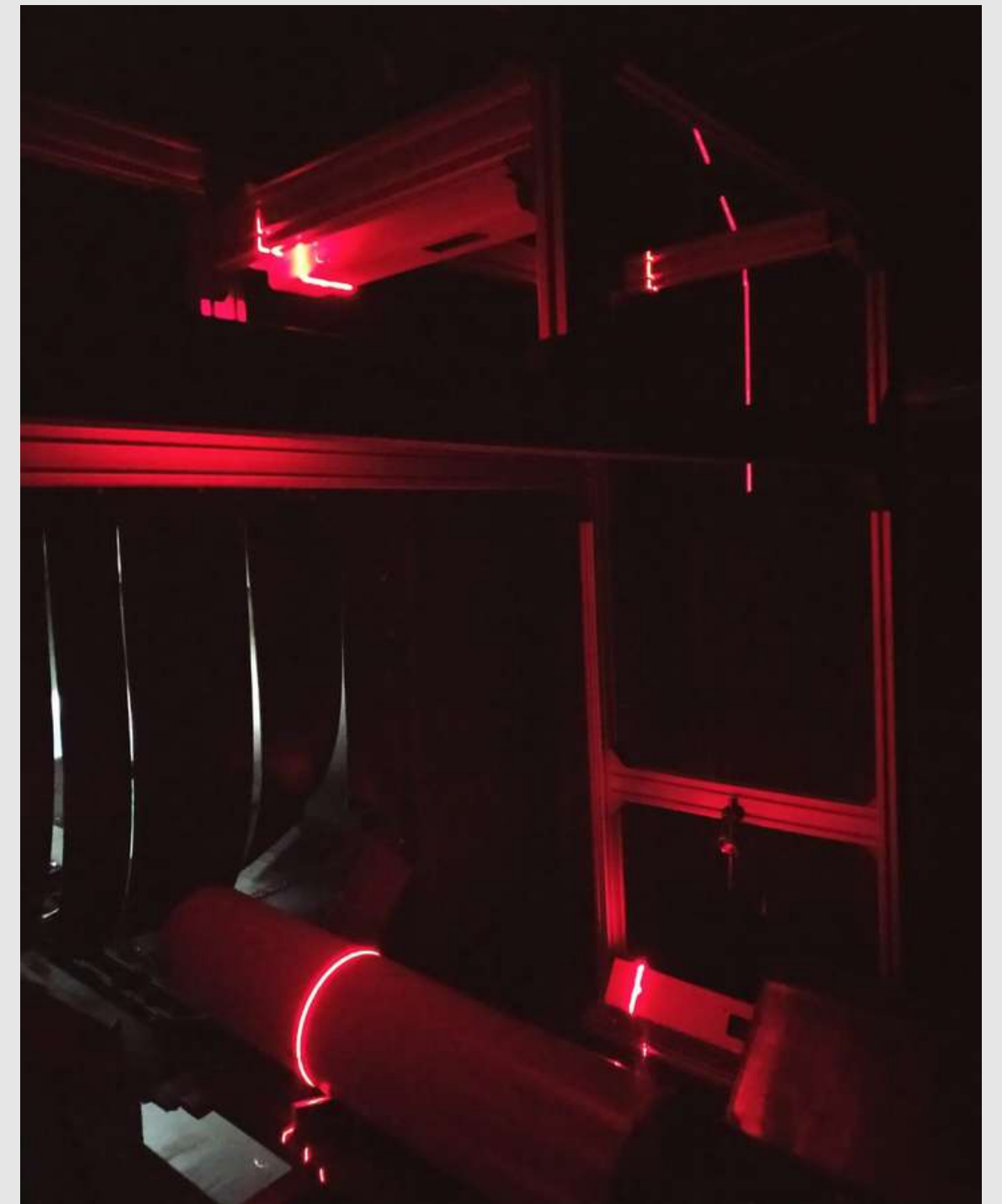
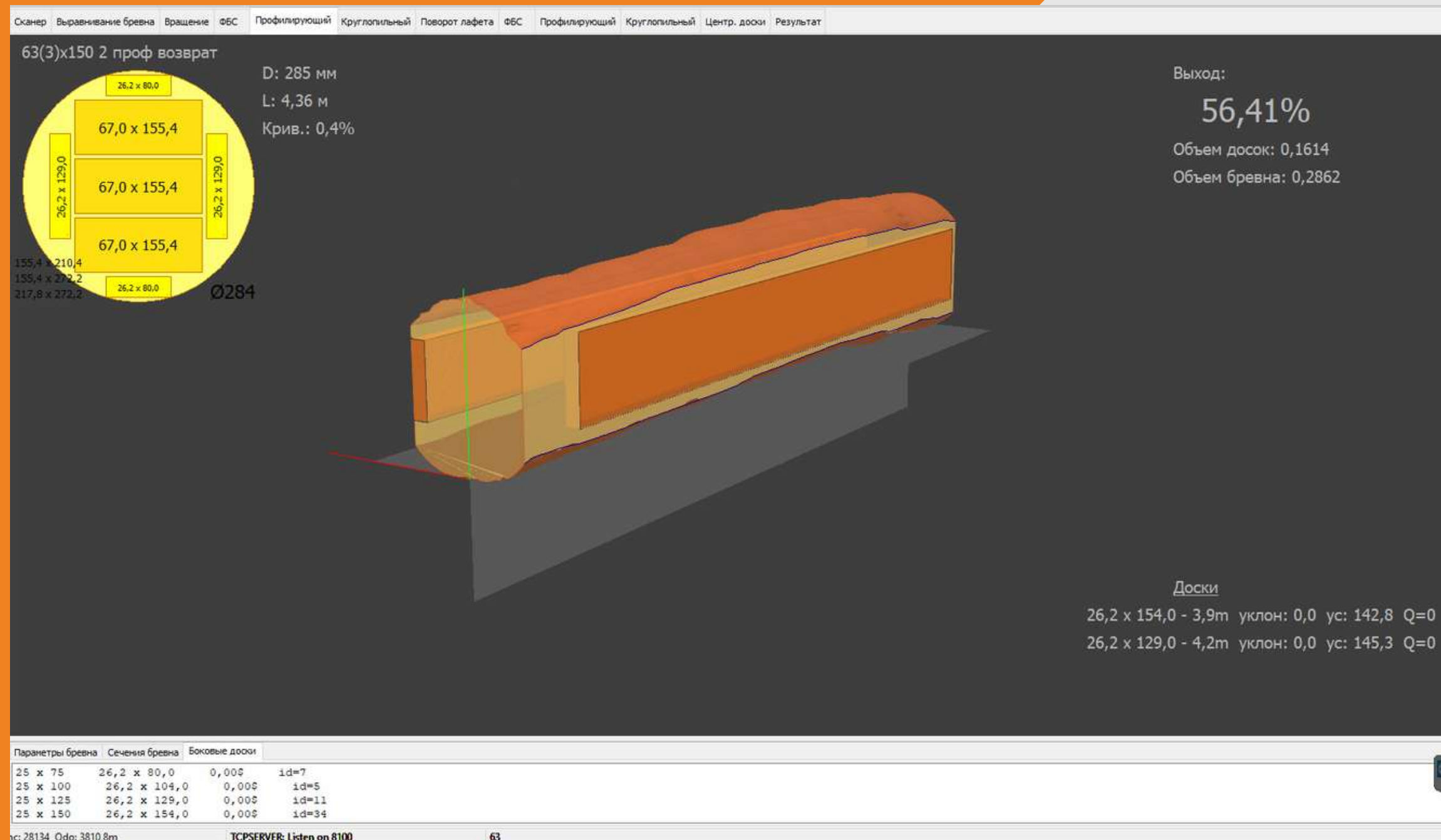


- **The Vector-3D log scanner** is mounted on the line. **The operator's place** is equipped with one or two process visualization displays, video surveillance monitors, a panel with the main controls and alarms.
- From here operator can **control all sawline units**, perform saws positioning, track the logs and boards position on the conveyor, block emergencies .
- **Specialize software** allows to get the maximum possible yield of lumber by calculating the optimal angle of log rotation by its curvature and optimal side boards widths.



# SMARTSAW PROGRAM

The **Vector-3D log measurer** gives a 3D log model, which is analyzed by the **SmartSaw optimization program**





# SAWING OPTIMIZATION SOFTWARE

SawsOptimization program is created for sawmill production technologists and planners

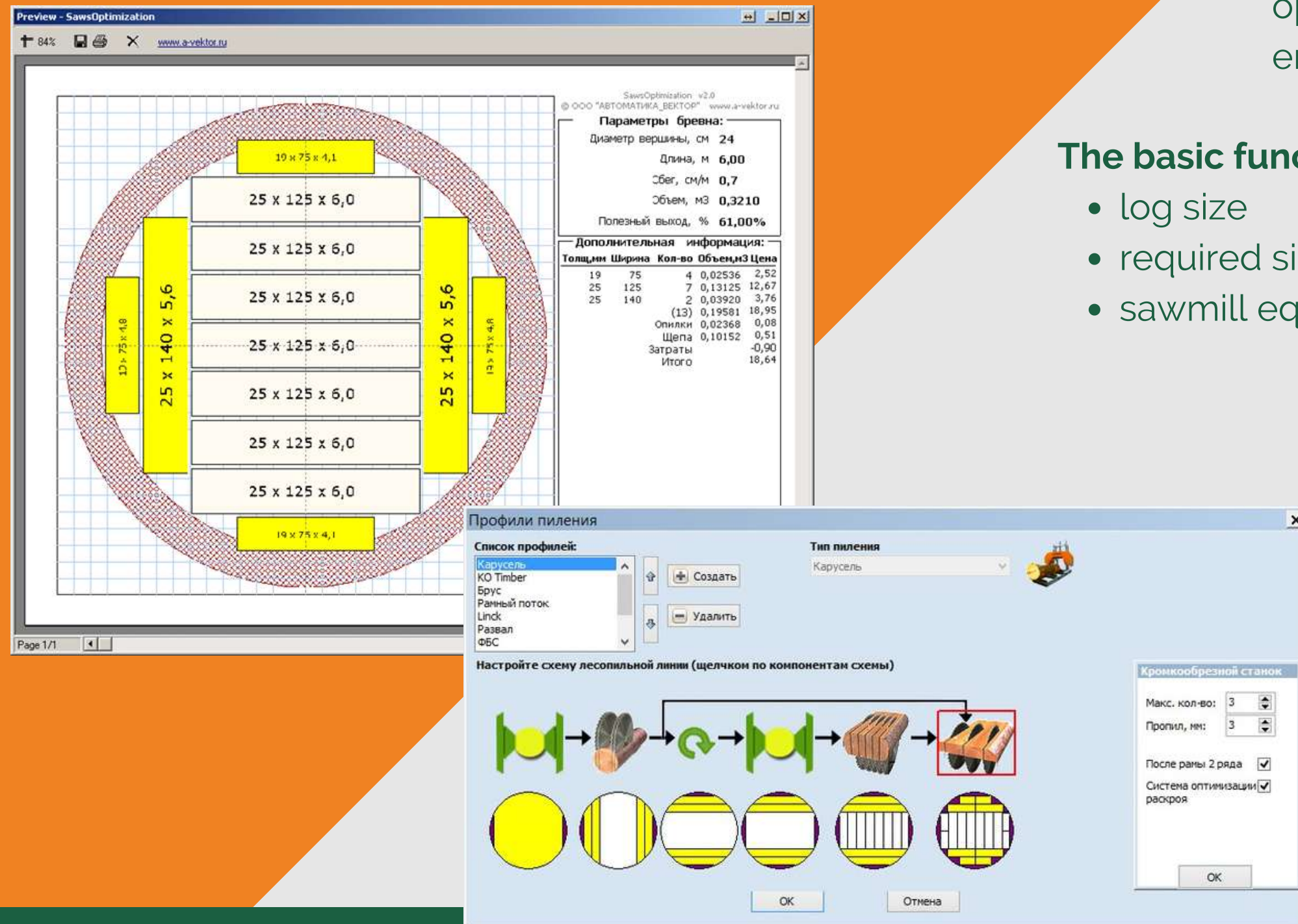
There are several versions from the simplest one, which gives optimal cutting plans, to more complex ones, designed for large enterprises

The basic function is to calculate the optimal sawing schedules based on:

- log size
- required size of lumber and its price
- sawmill equipment characteristics

Additional features in the professional version:

- functions for planning engineers (e.g. group optimization for logs of different diameters)
- optimization by the log curvature
- optimization of log sorting by sawing schedules for achieving the maximum product output
- integration with the smart log sorting OptiGrade and the SmartSaw optimizer





# SAWING OPTIMIZATION SOFTWARE - WEB VERSION

What is the difference between  
SawsOptimization and SawsOptimization Web?

The screenshot displays the SawsOptimization Web application interface. The top navigation bar includes a menu icon, the logo, and the text "SAWSOPTIMIZATION WEB". The main interface is divided into several sections:

- Left Sidebar:** Contains navigation links such as "Библиотека поставов", "Библиотека 3D моделей", "Справочники", "Администрирование", "Параметры", "Моя учетная запись", "Моя подписка", "Примеры использования", and "Контактная информация".
- Top Bar:** Includes icons for "ВЫБРАТЬ СЕЧЕНИЯ", "РАССЧИТАТЬ", "СОХРАНИТЬ", "ЭКСПОРТ", "ПЕЧАТЬ", "3D", and "ИСТОРИЯ".
- Main Content Area:**
  - Parameters:** "Размеры бревна" (Log dimensions) with sliders for "Диаметр вершины, мм" (200), "Длина, м" (5), and "Сбор, мм/м" (8). "Порода" (Species) is set to "Ель" (Spruce).
  - 3D Model:** A central 3D visualization of a log with internal sawing patterns. Dimensions shown include "16 x 75 x 4.0", "25 x 125 x 5.0", and "50 x 150 x 5.0".
  - Summary:** "Порода: Ель", "Цена: 13.29", "Выход: 44.59%", "Объем бревна: 0.29570 м³", "Диаметр вершины: 220 мм", "Диаметр комля: 270 мм", "Длина: 6.00 м".
  - Tables:**
    - Центральные доски (Central boards):** A table with columns "Сечение" (Cross-section), "Длина, м" (Length, m), and "Цена за м³" (Price per m³). Rows include various board sizes like "30 x 100", "44 x 125", "50 x 150", etc.
    - Боковые доски (Side boards):** A table with columns "Сечение", "Длина, м", and "Цена за м³". Rows include "16 x 100", "16 x 100", "16 x 75", etc.
    - Summary Table:** A table with columns "Сечение", "Длина, м", "Кол-во" (Quantity), "Объем, м³" (Volume, m³), and "Цена". Rows include "50 x 150", "16 x 100", "16 x 75", "25 x 125", "Опилки" (Sawdust), "Щепа" (Shavings), "Сырье" (Raw material), "Затраты" (Costs), and "Итого" (Total).
  - Right Panel:** "По объему" (By volume) section showing a list of outputs with percentages: "1. Выход: 47.35%", "2. Выход: 46.70%", "3. Выход: 44.59%", "4. Выход: 42.70%", "5. Выход: 41.93%", "6. Выход: 41.27%", "7. Выход: 40.87%". Below it are dropdowns for "По цене" (By price) and "По ширине бруса" (By beam width).

## SawsOptimization Web

- is not bound to a specific computer: data is stored on the server
- allows to connect any number of users - all depends from type of your subscription
- provides all program updates immediately



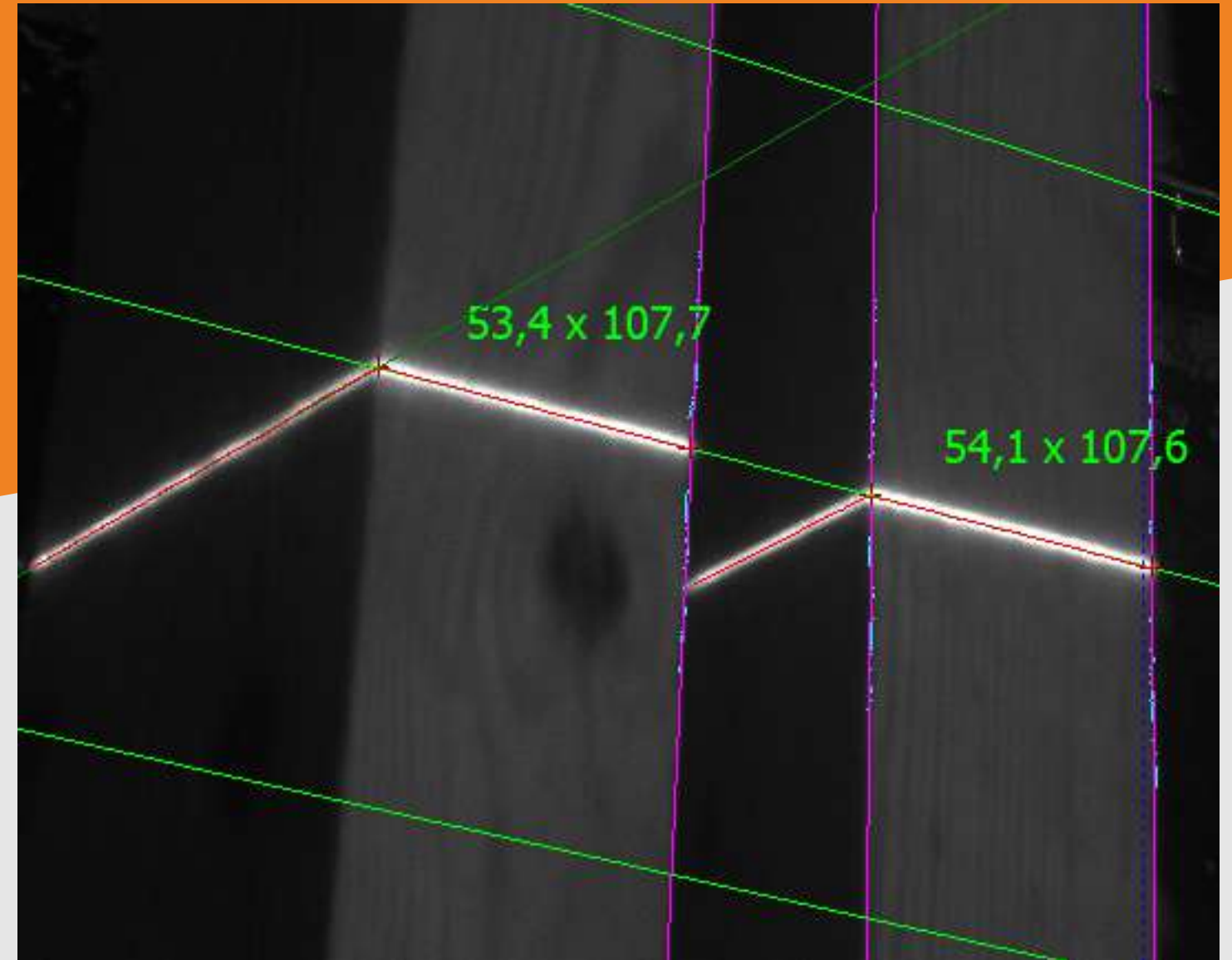
# BOARD SORTING CONTROL SYSTEM



- All line actuators operation control
- Implementation of automated systems for quality and wane detection
- All lumber geomteric allowances control
- Productivity increase



# SAWLINE INSPECTOR



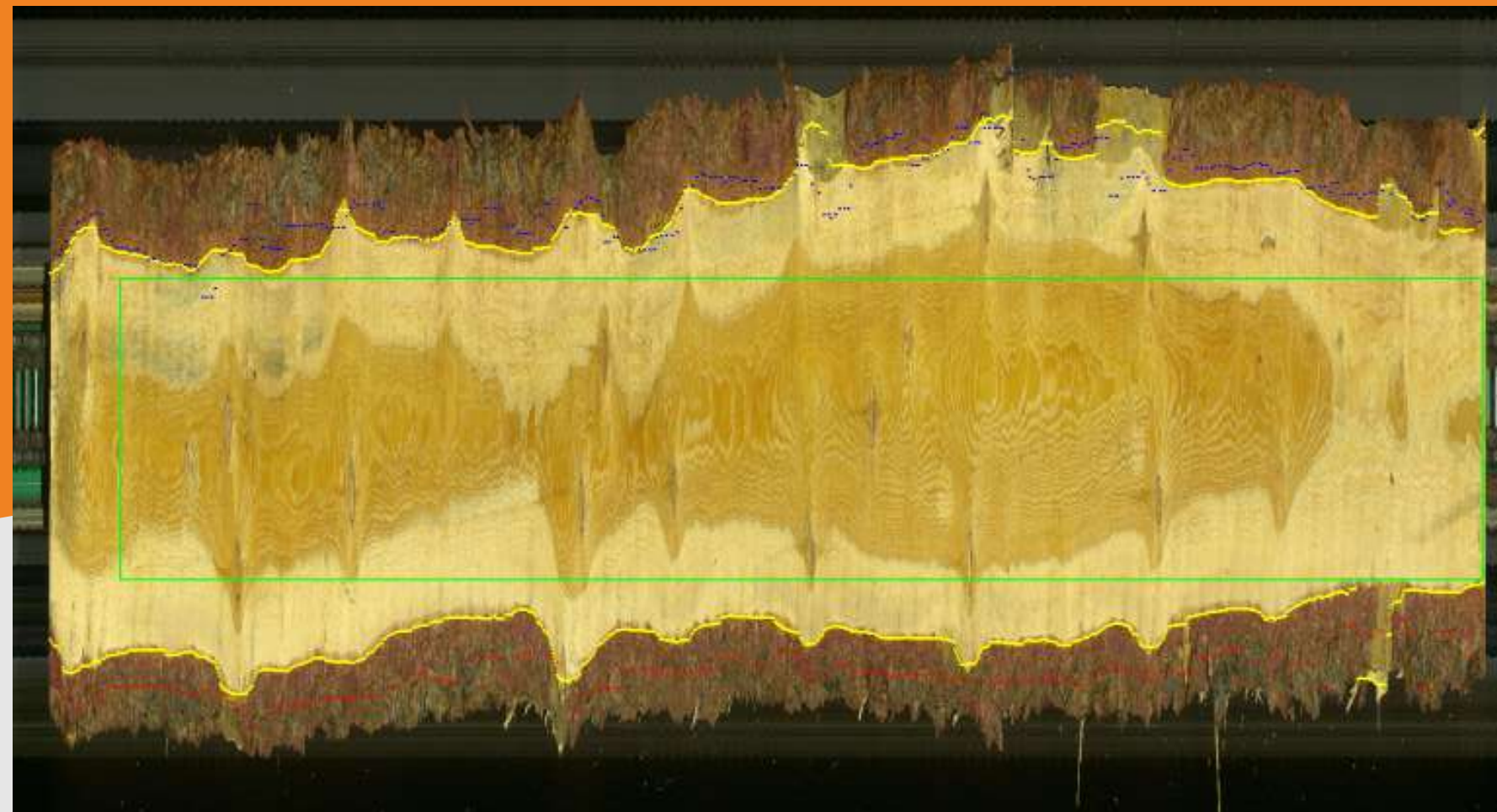
## System for lumber sizes online control

based on the Vector-3D scanning modules and specialized software.

**Measurement accuracy:** +/- 0,5 mm by width and thickness.



# EDGER OPTIMIZER



- Efficient edger control
- Calculation of the optimal trimming by clear face area or finished product cost
- Coloured board scanning for exact determination of the clear face



# RUSCAN 2.0

LUMBER QUALITY SCANNER  
WITH RUSCAN EXPERT SOFTWARE  
BASED ON NEURAL NETWORK



## Functions

- defect geometry search and measurement
- type of lumber assignment
- wood species determination
- trimming optimization

## Advantages:

- patented method for lumber defects detection
- 16+ board images for analyses
- Expert software based on neural network
- detection of the main lumber defects with probability from 85 to 97 %
- served by one operator
- convenient reporting system viewing via any browser
- integration with the other company products





# SOFTWARE SOLUTIONS FOR EFFICIENT SAWMILL PRODUCTION CONTROL





# CONTACTS



## Location

Novgorodsky prospekt 32, build. 4  
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## Web-page

[www.a-vektor.ru](http://www.a-vektor.ru)





# SOCIAL NETWORKS



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