The Digital Test Bench-
All-in-One-Solution for Technical Monitoring of Smart Buildings

Over the last years, buildings have become complex technical systems...

TU Brunswick (sixties)

Stiebel Eltron Energy Campus

- No automation
- Temperature controlled by users
- Simple but large heat generation units
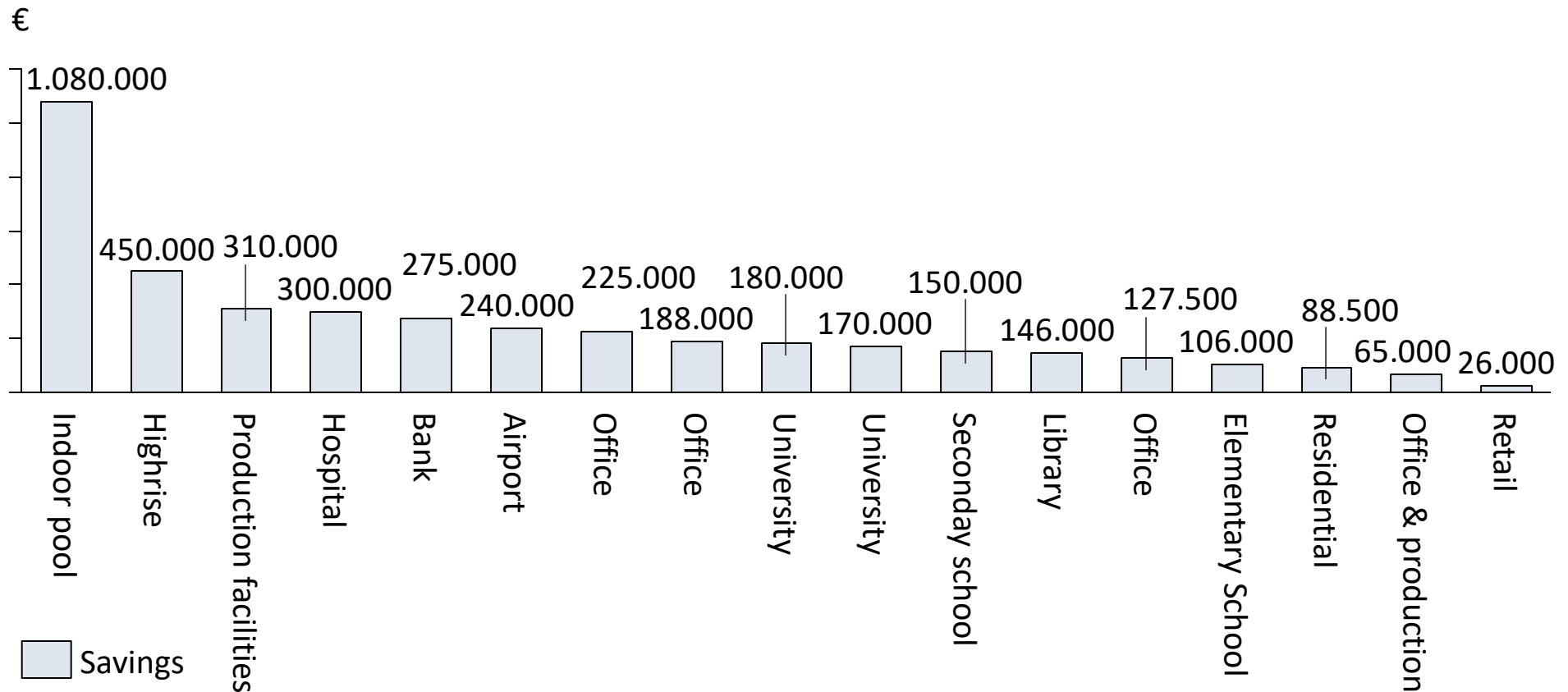
- High degree of automation
- Windows are integrated in the climate concept of the building
- Complex orchestration of heating and cooling units necessary

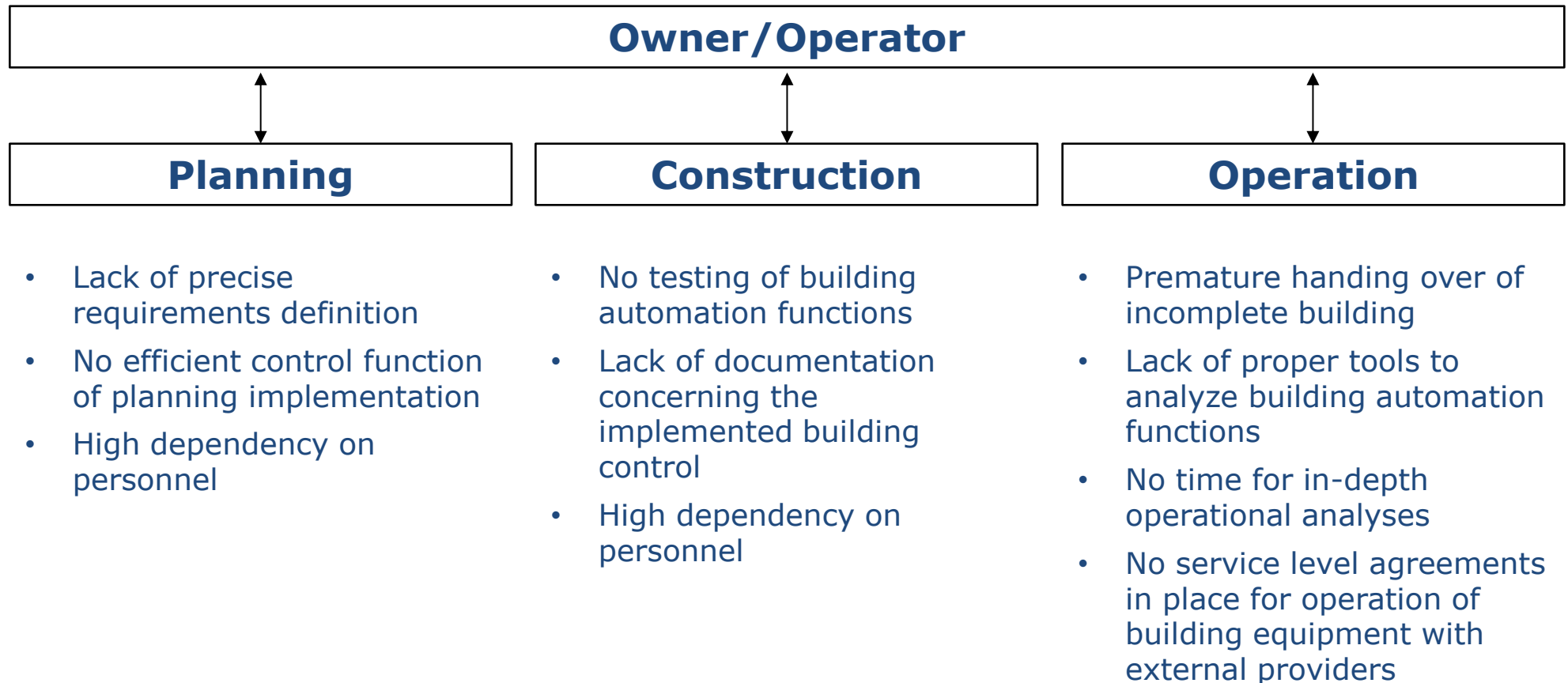# ...resulting in significant optimization potential in terms of energy consumption, climate and maintenance

Identified savings potential by building[1,2]

€

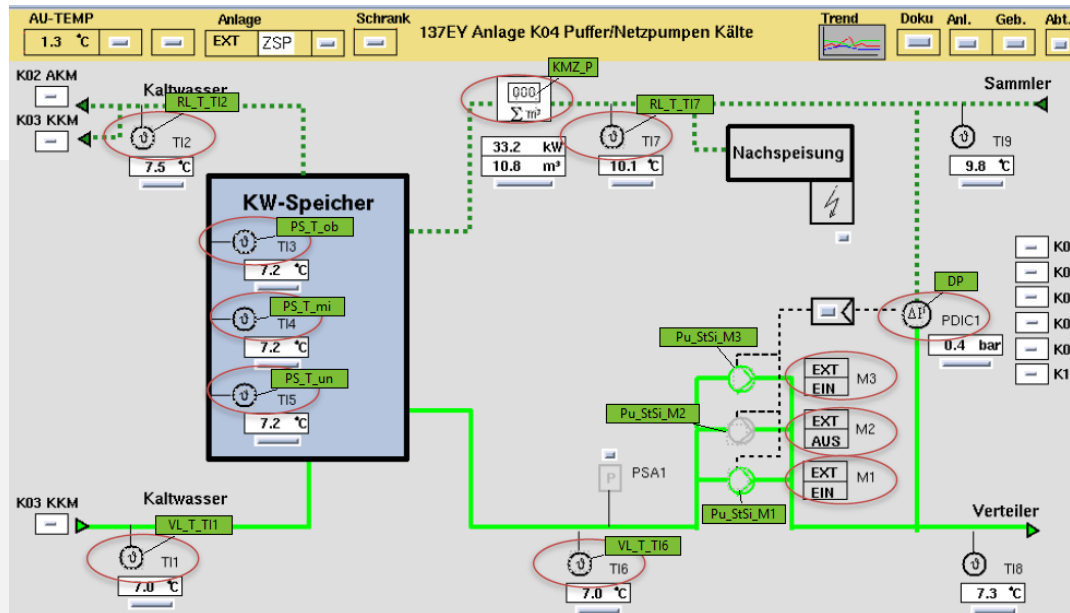| Building	Savings (€)
Indoor pool	1.080.000
Highrise	450.000
Production facilities	310.000
Hospital	300.000
Bank	275.000
Airport	240.000
Office	225.000
Office	188.000
University	180.000
University	170.000
Seconday school	150.000
Library	146.000
Office	127.500
Elementary School	106.000
Residential	88.500
Office & production	65.000
Retail	26.000

☐ Savings

1) Cumulative lifecycle savings over 15 years
2) Savings consist of less energy consumption and depreciation

Challenges for buildings' performance

Owner/Operator

Planning	**Construction**	**Operation**

Planning
- Lack of precise requirements definition
- No efficient control function of planning implementation
- High dependency on personnel

Construction
- No testing of building automation functions
- Lack of documentation concerning the implemented building control
- High dependency on personnel

Operation
- Premature handing over of incomplete building
- Lack of proper tools to analyze building automation functions
- No time for in-depth operational analyses
- No service level agreements in place for operation of building equipment with external providers

Limitations of building management systems

- Shows only current system status

- No continuous evaluation of performance

- Alarms/signals are programmed only for static limits not for functions
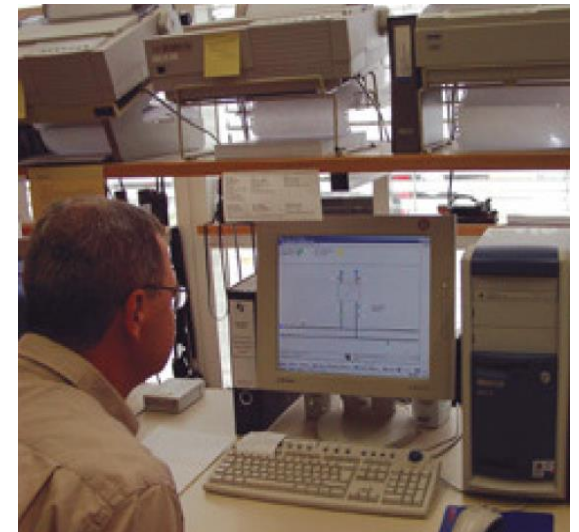
- Typically not available during the commissioning phase

Time consuming, manual analysis requiring extensive expert know-how

The challenge…
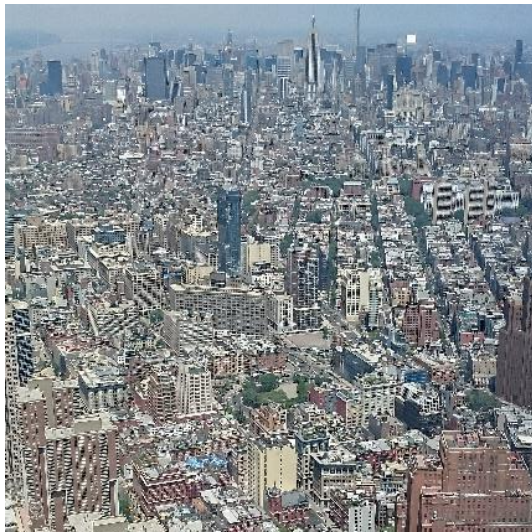
Many buildings
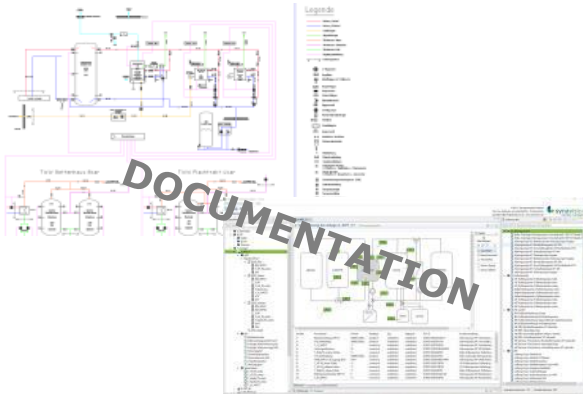
Few experts

…The solution: Digitalization

Our product: the worldwide first software (SaaS) for specification and testing of building automation functions

1 **Digital Engineering**

Fast functional specification on the level of actors and sensors through templates

2 **Analyses**

System-independent data import-plugins for maximum compatibility and automated mass data analysis
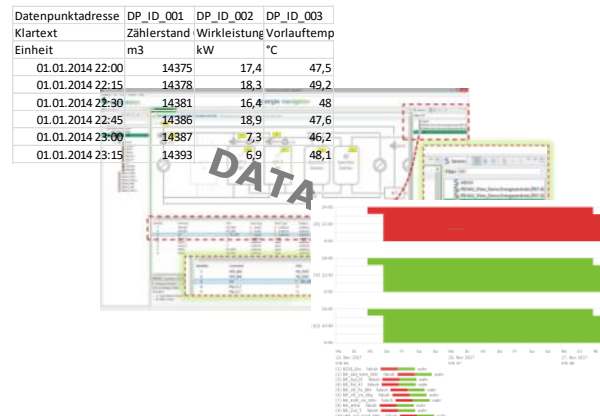
3 **Monitoring**

Reporting of optimization potential and continuous monitoring of building performance

Energy savings of 10-30%, improved climate comfort, less depreciation and massive support for technical building managers

Step 1 (Design): Setpoints & Testing procedures

- Design review
- Selection of relevant test parameters for the building and the systems
- Specification for integration and, where appropriate, addition of measurement and metering systems
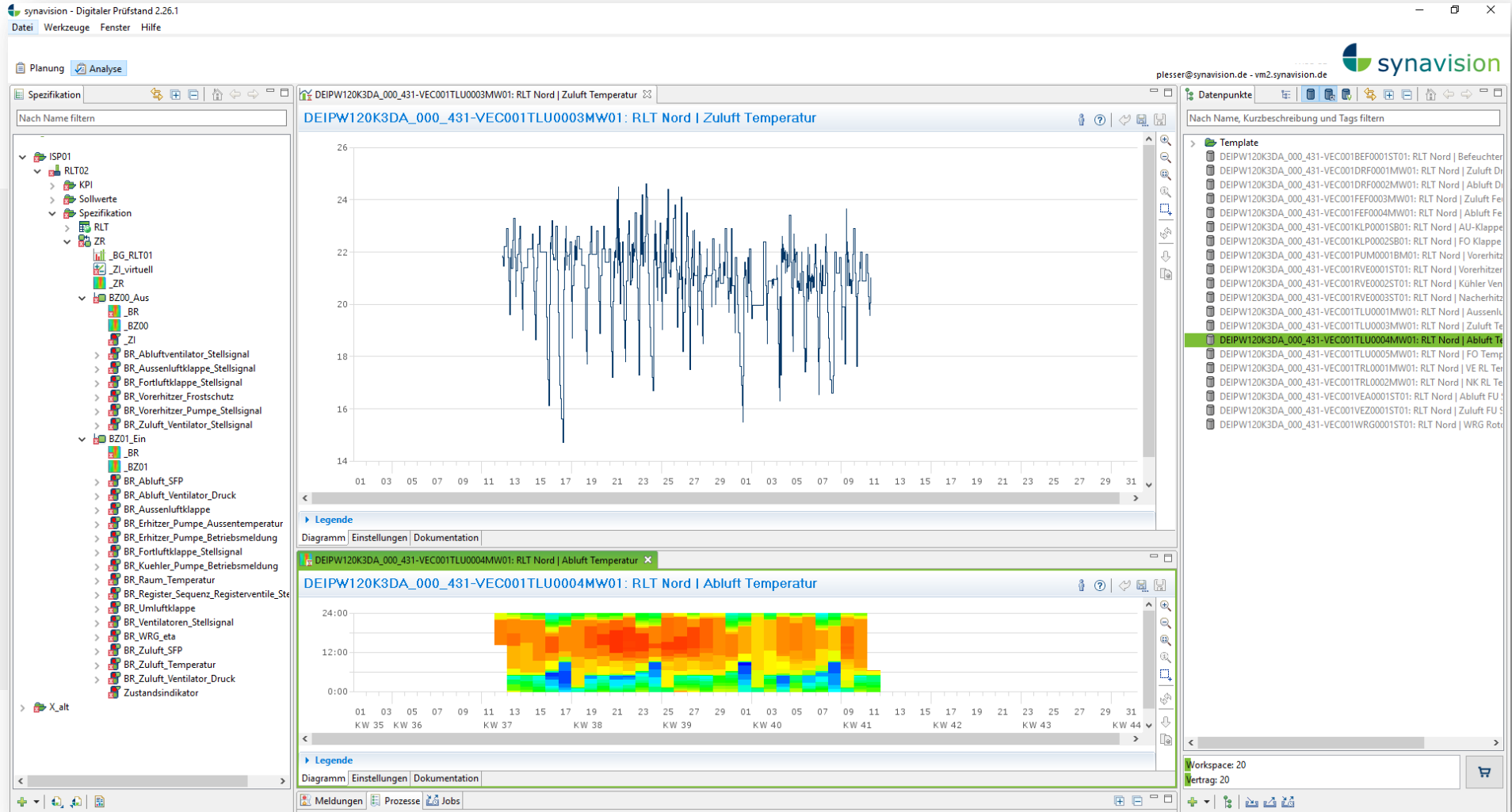- Specifications for data preparation and transfer.

Documents provided by synavision:

- List of Data points for each system to be tested
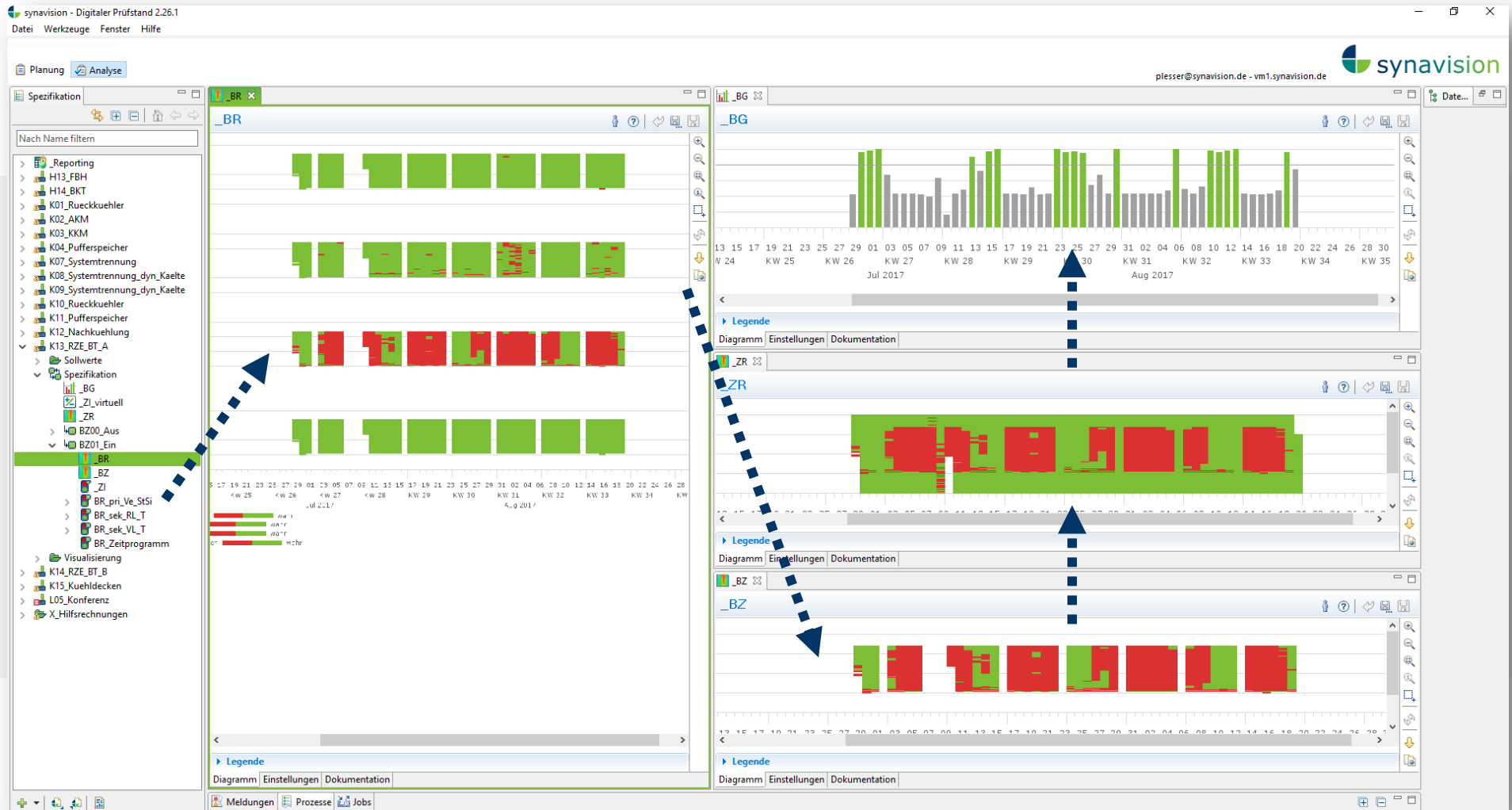- Testing Specification for each system to be tested

Design   Operational excellence

Condition 1
- Status = 0   0
- Temperature = 24   24
- Flap position = 100   100

Condition 2
- Status = 1   1
- COP > 3,8   2,7
- Volume flow = 17,6   12,4
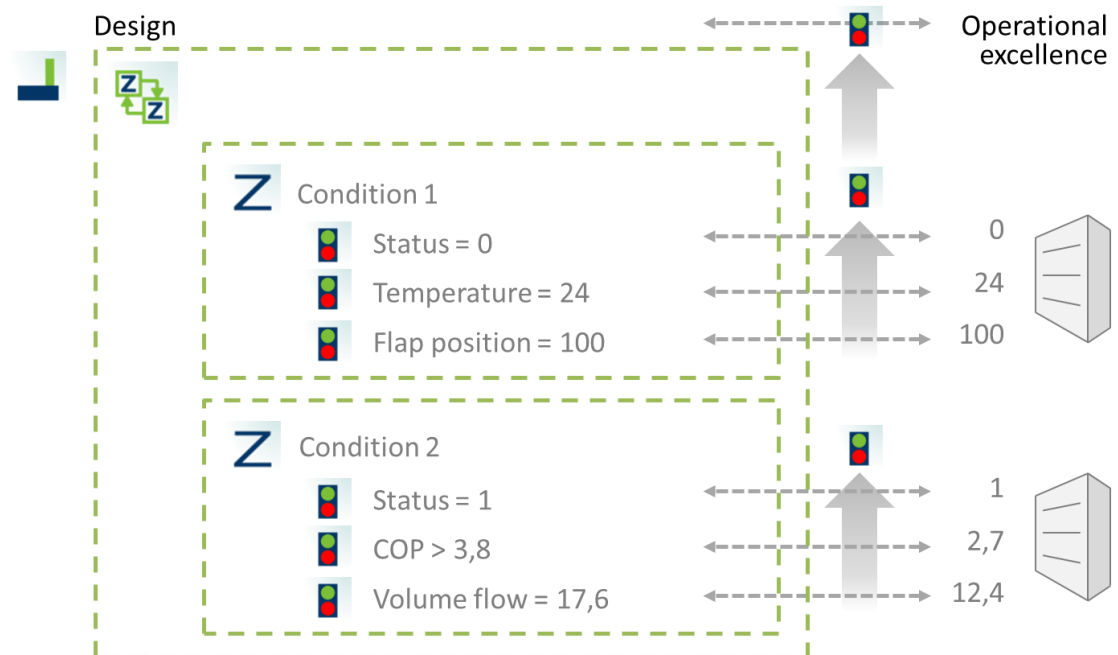
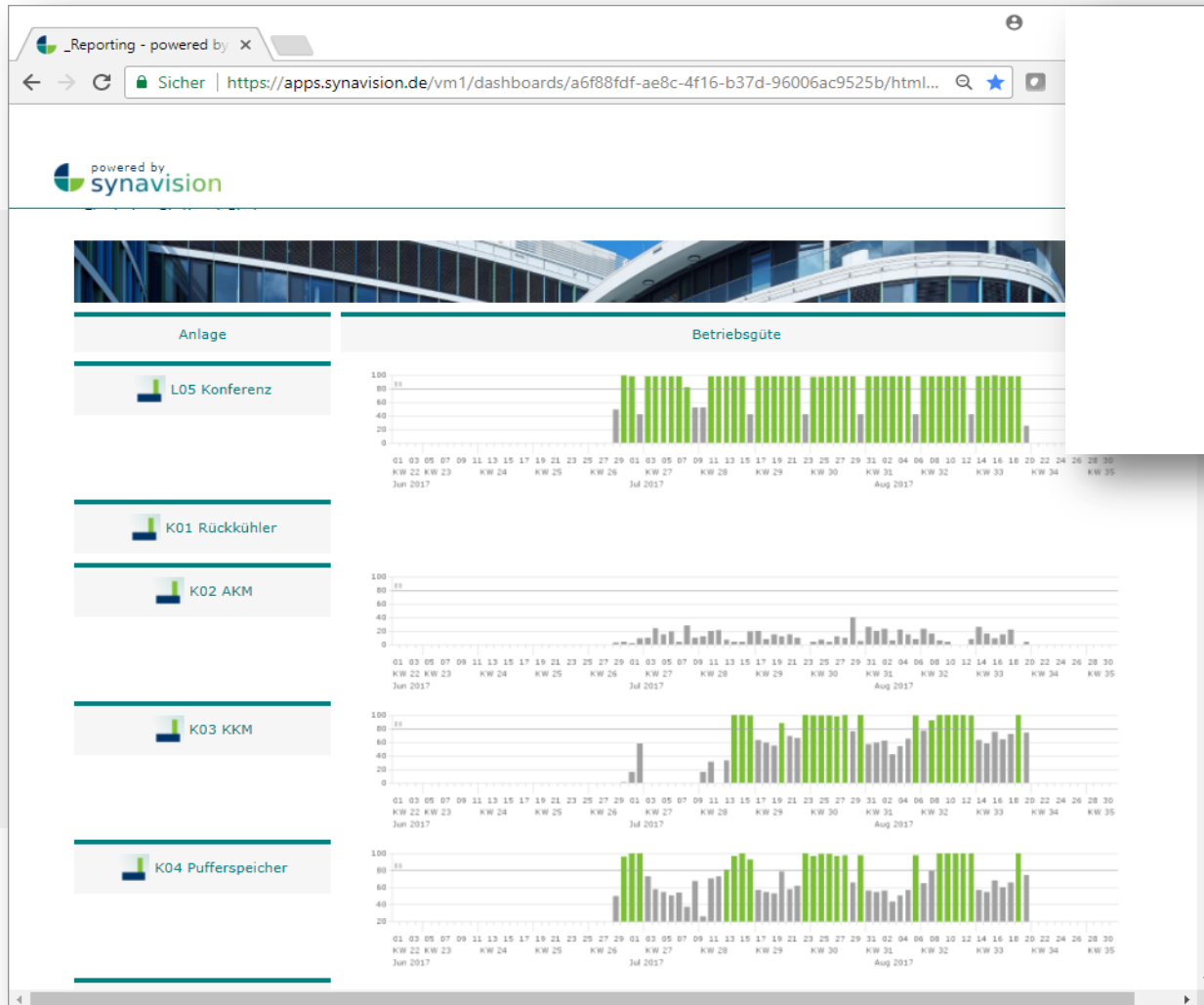# Step 2: Import and validation of data

Step 3: Performance analysis and identification of optimization potential

At a glance, synavision shows the operational quality of building equipment and optimization potential
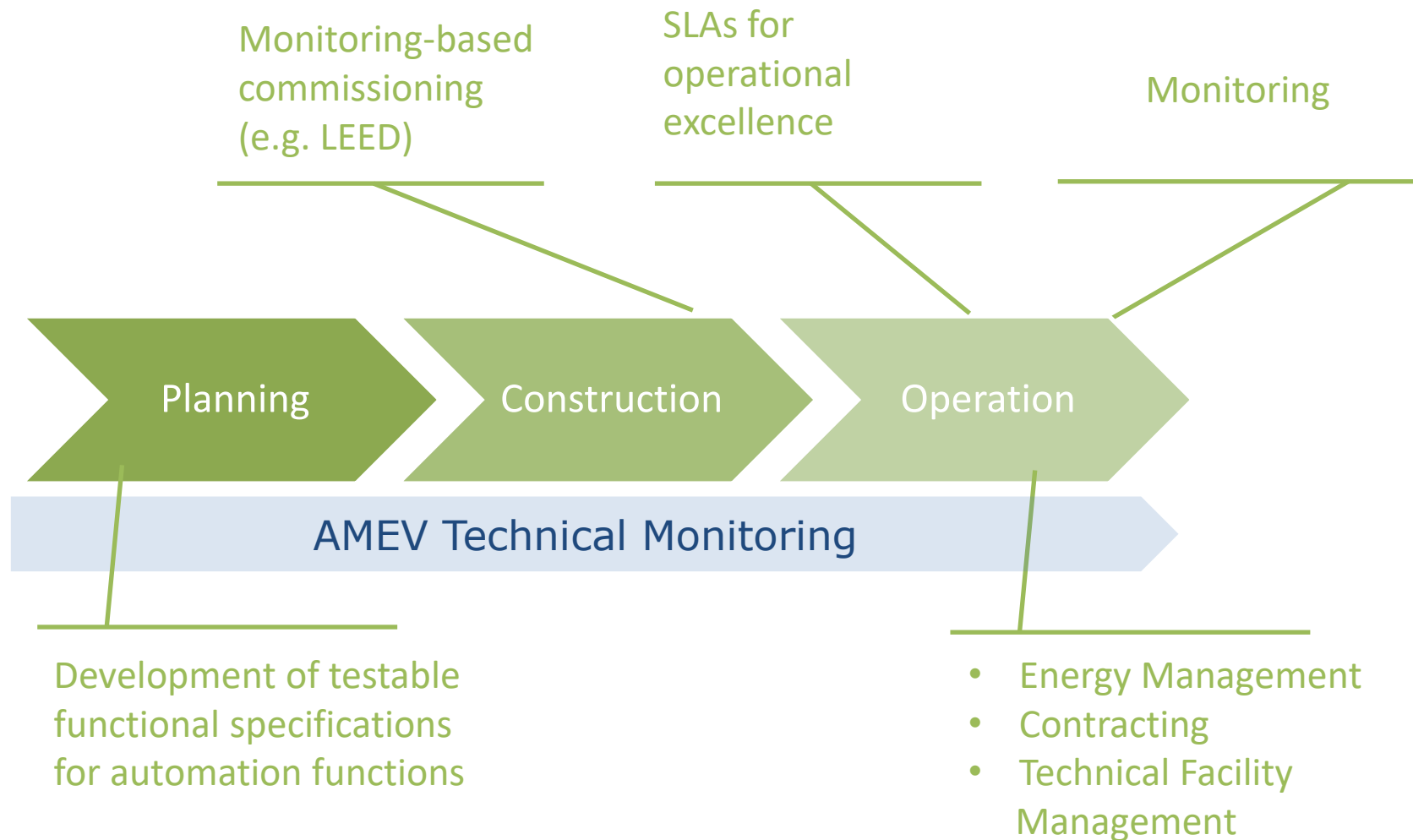
Reporting dashboard

Digitalization enables:

- Maximum aggregation on building level and drill-down
- Maximum transparency
- Fully automated, high productivity

Use cases

Monitoring-based commissioning (e.g. LEED)

SLAs for operational excellence

Monitoring

Planning   **Construction**   **Operation**

AMEV Technical Monitoring

Development of testable functional specifications for automation functions

- Energy Management
- Contracting
- Technical Facility Management

Our offers

Monitoring reports

- Performance report including Identification of optimization potential, actions and quantification of savings

- Initial report can be continued any time at approx. 20% the cost of first report

- Quarterly report recommended in first two years of operation

Software-as-a-Service
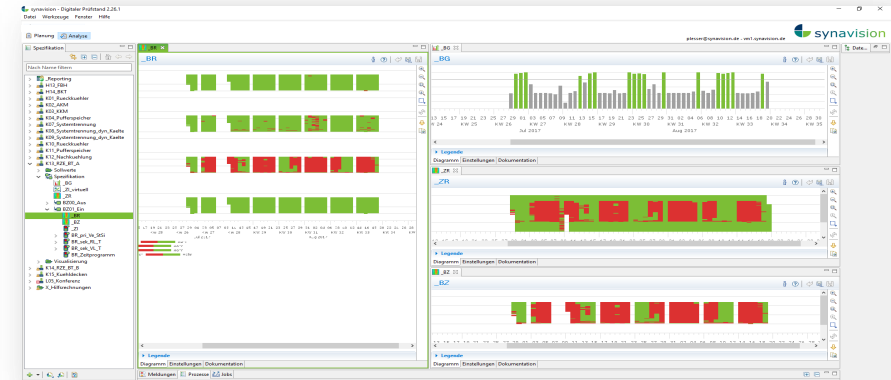
- Daily control of building performance and automatic detection of deviations from defined operational targets

- Software including building-specific customizing is handed over

- Solution for data exchange in place

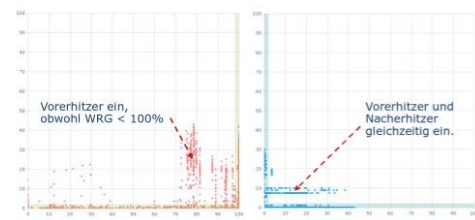# Sample results of monitoring report prepared by synavision
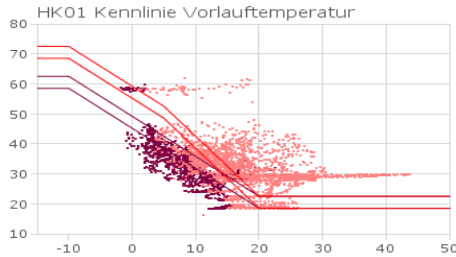
„System temperatures do not comply with target values. Please check set points and balancing."

!!
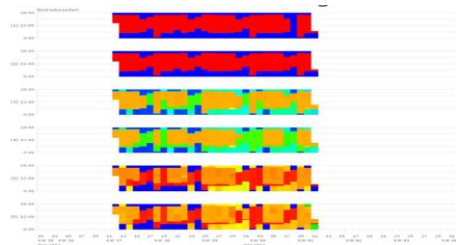
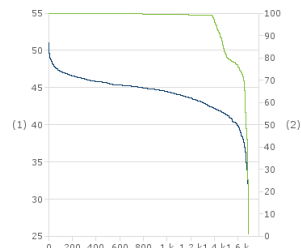„Outdoor air dampers, Fan-Signals and pressure measurements are not consistent. Fans may run with closed dampers. Check immediately!

!!!

„Heating and cooling coils are not precisely locked. Please check programming of the sequence."

!

„Small control range of valve which indicates faulty dimensioning of valve. Control settings and design should be reviewed."

!!

Selection of references

With average payback times of less than one year, synavision offers a highly attractive investment opportunity

Identified savings potential[1,2] and customer payback times
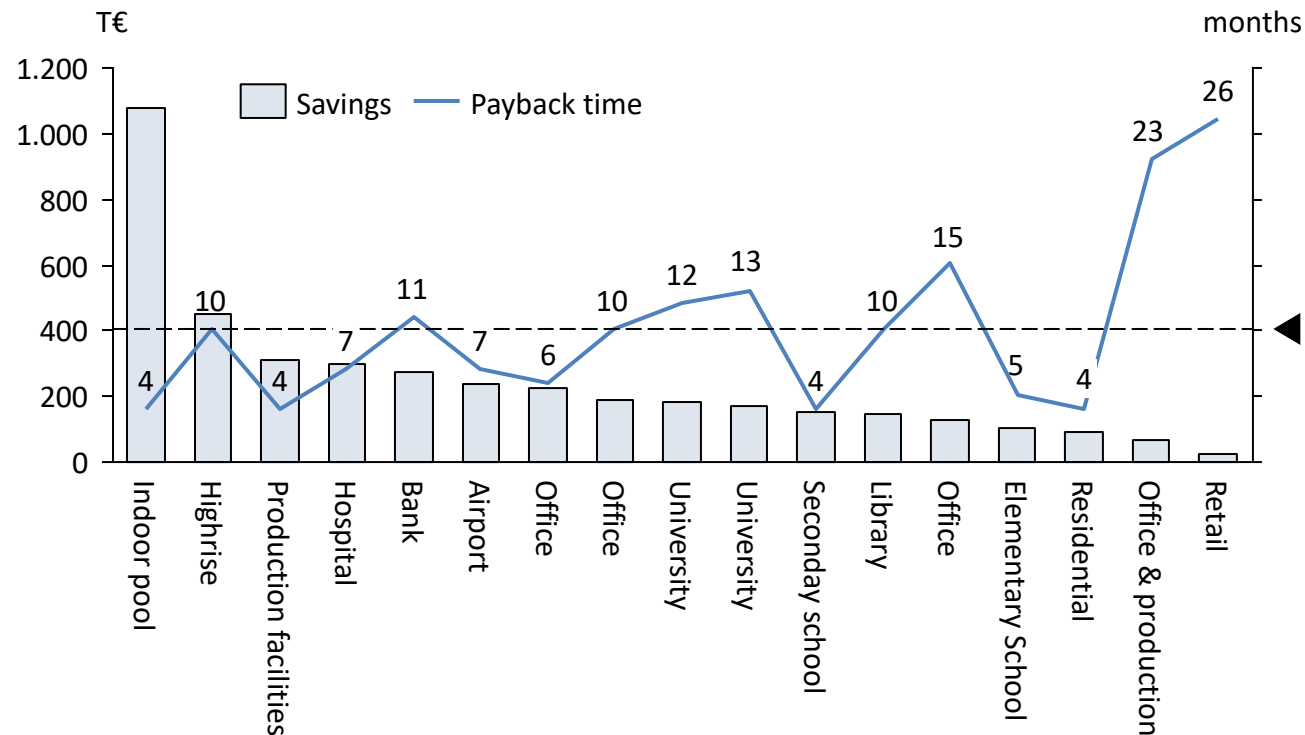
- Energy savings of up to 30%

- Sustainable improvement of building performance

- Better climate comfort

- Reduction of depreciation

- Increase of project speed and success through more quality

- Transparent, massive support for building operators

1) Cumulative lifecycle savings over 15 years
2) Savings consist of less energy consumption and depreciation

Why synavision

Fast payback times in less than one year on average

- Save on energy consumption and depreciation, improve indoor climate
- Tested building performance increases the value of your real estate

Save time

- Faster, better commissioning
- Massive support for technical building management through measurable building performance and automated indication of optimization potential

Increase productivity and user satisfaction

- Consistently high quality of indoor climate reduces sick leave and increases productivity

Easy implementation and fast results

- Technical Monitoring fits perfectly into existing processes in the building industry
- Low requirements: planning documents and data is all we need.
- No further investments necessary: Results can be easily implemented and sustainably improve building performance

synavision - operating complex buildings made easy.

Stefan Hindrichs

Geschäftsführer

T: +49 (0) 521 329 681 – 12

M: +49 (0) 160 907 172 08

hindrichs@synavision.de

www.synavision.de

For further information, please contact us anytime.