System Review

Instruction guide for initial pre-audit and annual system review

The System Review is a potent and cost-effective tool that guides you step-by-step through all necessary points that must be checked during the initial pre-audit, and then annually. It is most effective when used on a mobile device (tablet or smartphone) via the CALMS application.

Note: Always ask the customer for permission before taking pictures.

Follow Review steps: Notes | System details | Efficiency | Reliability | Potential Savings

1. Begin the compressed air system review with an introductory meeting, then proceed to the compressor room. Record any issues with the compressed air system, and photograph the entire installation before continuing with the distribution and demand-side inspection (this may also be part of a waste-leak audit).
2. **Notes:** Discuss with the customer any identified issues with the compressed air system. Utilize predefined and user (expert only) – predefined questions.
3. **System details:** Fill out the System Details page and note the equipment in the compressor room: - record compressor data, take pictures of name-plates and panels - document dryer data, take pictures of nameplates and HMI - gather receiver data and photograph receivers with a pressure gauge. Also, photograph the compressor room and PI&D schematics or sketch them in Setup -> schematics.
4. **Efficiency**: Complete the System Efficiency page.
5. **Reliability**: Fill in the System Reliability page.
6. **Potential savings**: Correct if necessary auto-suggested savings and estimate %savings. Generate a System Review report.
7. Optional: Conduct a waste audit: - carry out a leak survey using a selected ultrasound detector - identify artificial demands - spot inappropriate uses - add significant compressed air users with data.

Note: All data and fields must be fulfilled otherwise system review is incomplete.

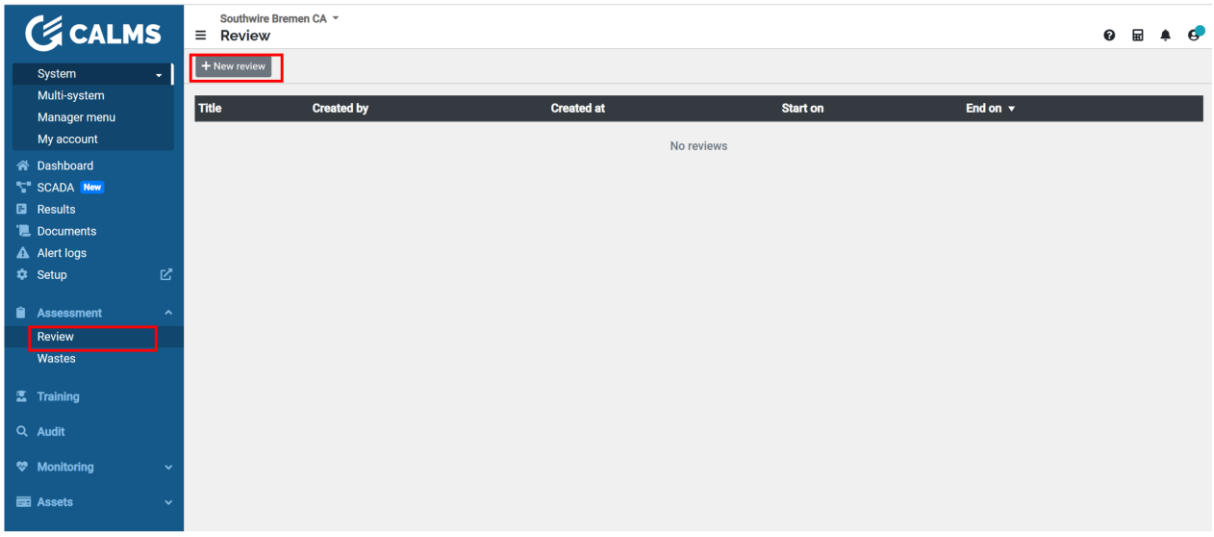
1 Content

2 Open new or existing system

Create new system (only for CALMS partners) under Manager menu select Create new system.

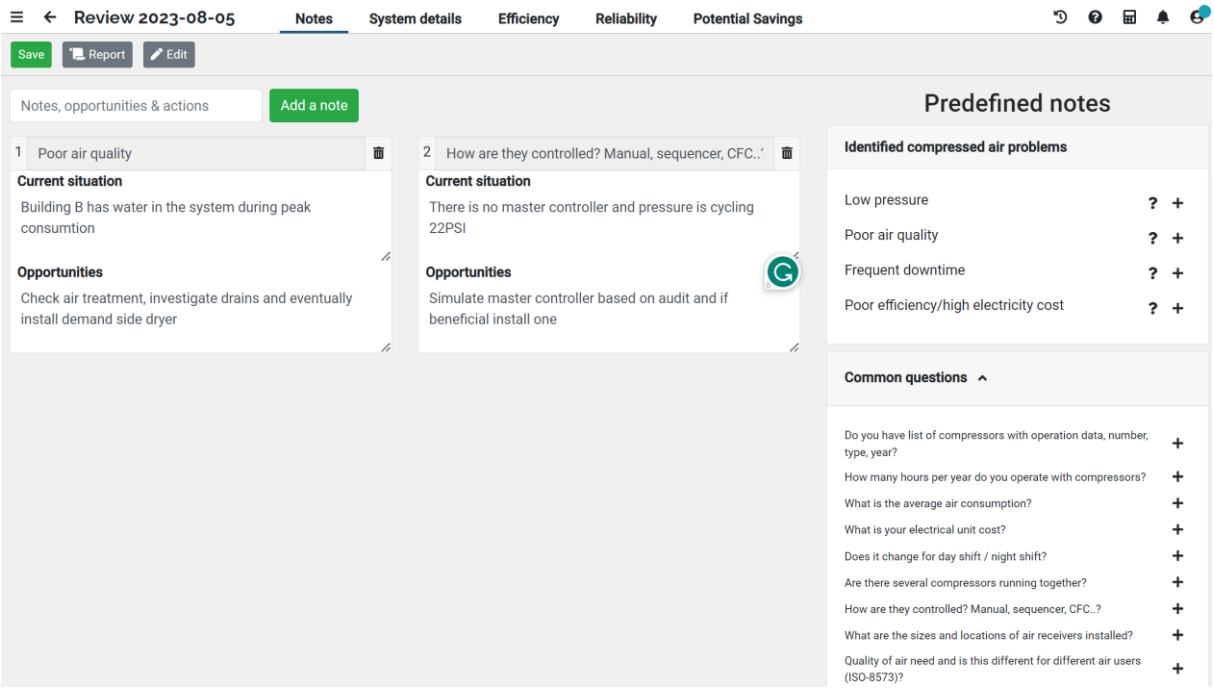
In case system is already created select the **system** under System menu.

- **Open Review under Assessment**
- **+ New review (**we recommend to set end on date with duration of 1 year)



3 Notes

Start with Notes menu, select with + predefined questions, problems or write own. Purpose of notes is to get list of opportunities, record information about the system. Take and link pictures, sort notes and return to notes whenever needed during system review.



4 System details

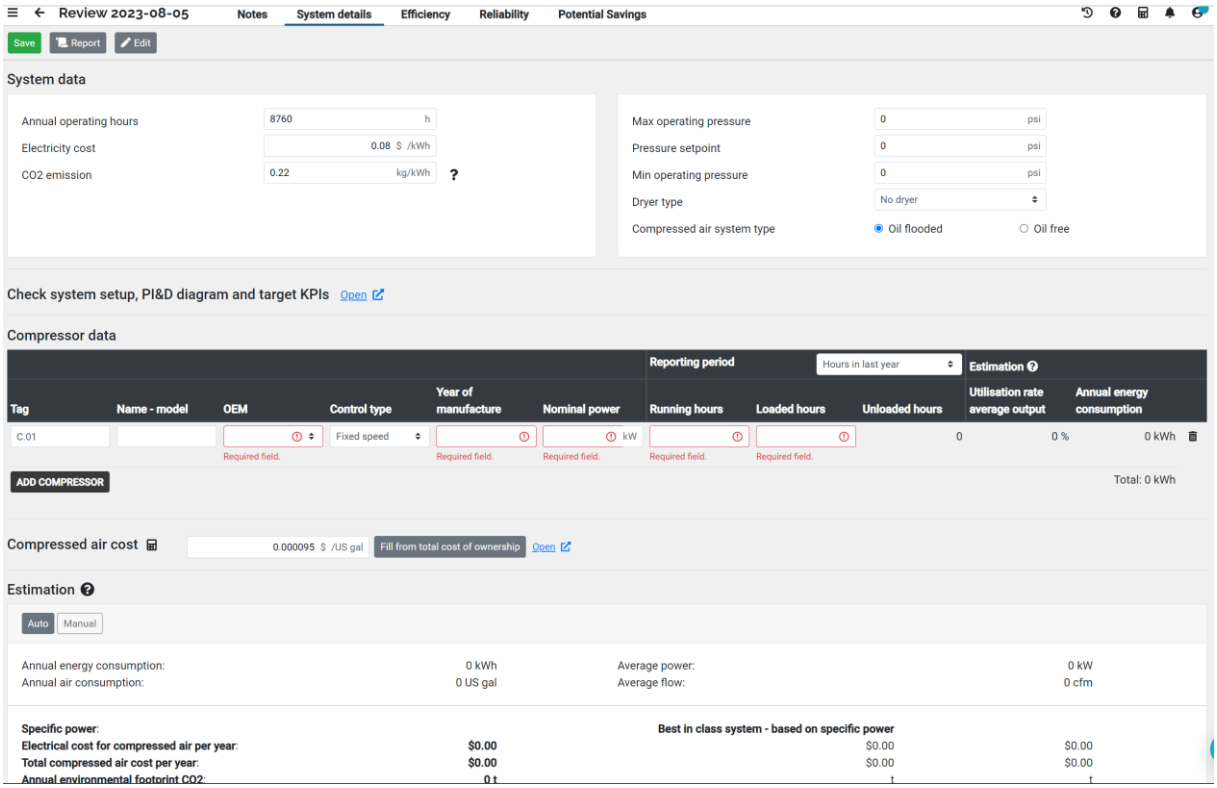
1.Collect system data,

2. With link check major **system setup** and create **PI&D schematics**, draw PI&D under **Setup/Equipment** menu with as many data and pictures of equipment as possible (based on linked pictures you can enter data later). Return back to System review.

3. Enter the **compressor data** (if PI&D is completed all the data will copy to this page), use loaded/unloaded hours to estimate operation to estimate annual consumption.

4.Record **Compressed air cost** from customer books, with help of CALMS calculator or CALMS TCO tool.

5.Under **Estimation** use Auto or enter manual data for annual consumption to estimate system efficiency and compare to the best in class based on system data.



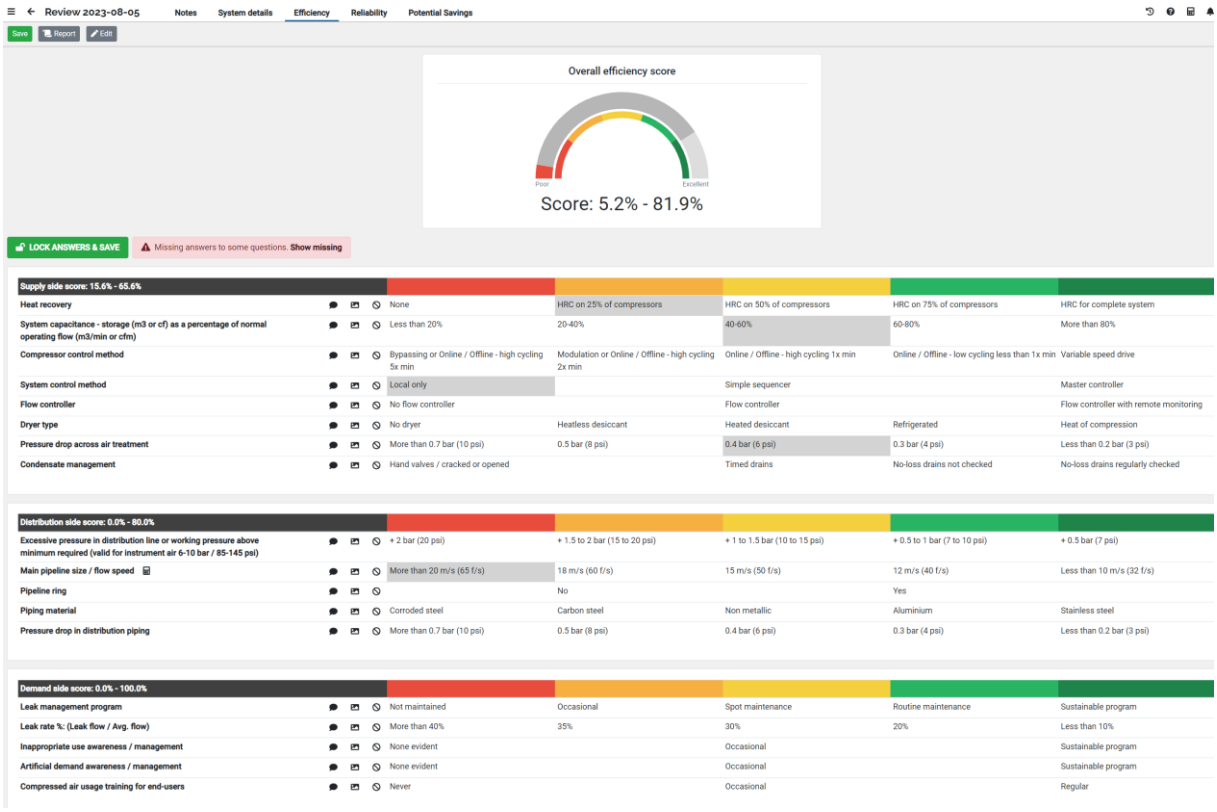
5 Efficiency

1.Collect data for overall efficiency score with highlighting the answers

Note: All questions must be answered

2. Press **Edit answers** button to start replying with selecting (click on the most appropriate answer), when all is selected press **Lock answer&save** button to save.

3. For each question you can use 3 icons: **Edit comment** for detail explanation, remarks, **Add images** to take some photos related to and **Marks as not applicable** in case this point is not relevant or applicable for this system



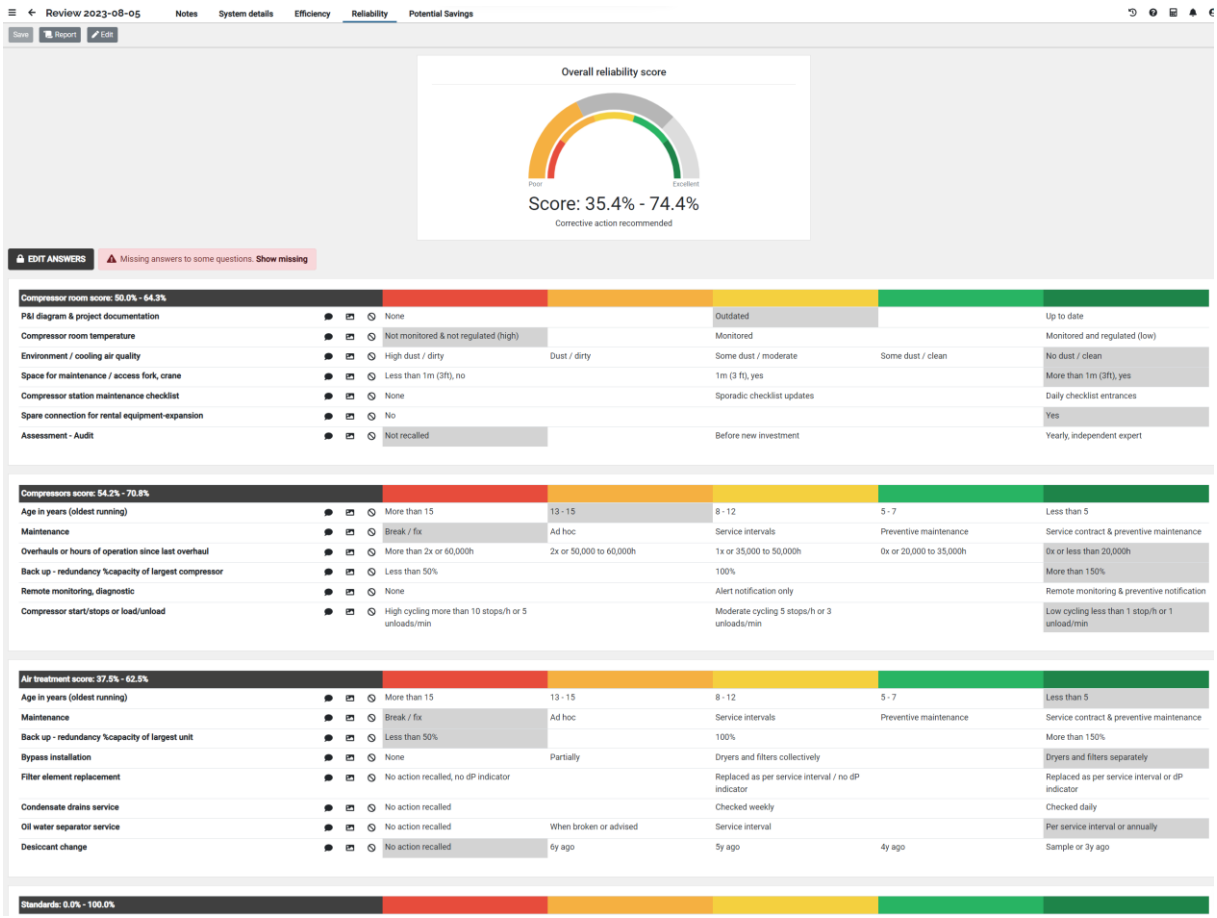
6 Reliability

1.Collect data for overall reliability score with highlighting the answers

Note: All questions must be answered

2. Press **Edit answers** button to start replying with selecting (click on the most appropriate answer), when all is selected press **Lock answer&save** button to save.

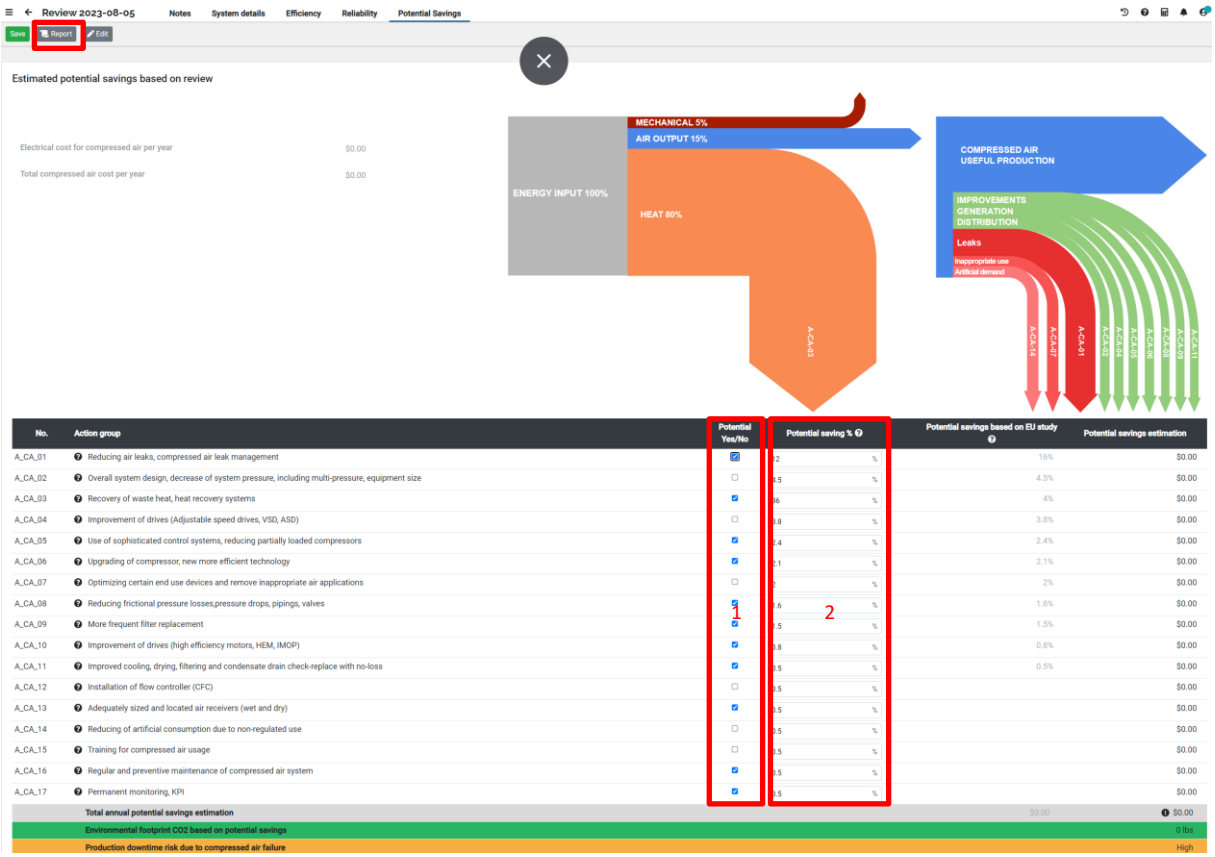
3. For each question you can use 3 icons: **Edit comment** for detail explanation, remarks, **Add images** to take some photos related to and **Marks as not applicable** in case this point is not relevant or applicable for this system



7 Potential savings

1.Check all actions, estimated compressed air cost and correct selection of **Potential actions Yes/No** and correct estimated **potential savings %.**

2. Create **Report** with using of existing template and you can always modify report with additional sections, comments , pictures...to deliver best representation on system review



No.	Action group	Potential Yes/No	Potential saving %	Potential savings based on EU study	Potential savings estimation
A_CA_01	Reducing air leaks, compressed air leak management	☑	12 %	16%	$0.00
A_CA_02	Overall system design, decrease of system pressure, including multi-pressure, equipment size	☐	4.5 %	4.5%	$0.00
A_CA_03	Recovery of waste heat, heat recovery systems	☑	%	4%	$0.00
A_CA_04	Improvement of drives (Adjustable speed drives, VSD, ASD)	☐	3.8 %	3.8%	$0.00
A_CA_05	Use of sophisticated control systems, reducing partially loaded compressors	☑	2.4 %	2.4%	$0.00
A_CA_06	Upgrading of compressor, new more efficient technology	☑	2.1 %	2.1%	$0.00
A_CA_07	Optimizing certain end use devices and remove inappropriate air applications	☐	%	2%	$0.00
A_CA_08	Reducing frictional pressure losses,pressure drops, pipings, valves	☑	1.6 %	1.6%	$0.00
A_CA_09	More frequent filter replacement	☑	1.5 %	1.5%	$0.00
A_CA_10	Improvement of drives (high efficiency motors, HEM, IMOP)	☑	0.8 %	0.8%	$0.00
A_CA_11	Improved cooling, drying, filtering and condensate drain check-replace with no-loss	☑	0.5 %	0.5%	$0.00
A_CA_12	Installation of flow controller (CFC)	☐	0.5 %		$0.00
A_CA_13	Adequately sized and located air receivers (wet and dry)	☑	0.5 %		$0.00
A_CA_14	Reducing of artificial consumption due to non-regulated use	☐	0.5 %		$0.00
A_CA_15	Training for compressed air usage	☐	0.5 %		$0.00
A_CA_16	Regular and preventive maintenance of compressed air system	☑	0.5 %		$0.00
A_CA_17	Permanent monitoring, KPI	☑	0.5 %		$0.00
	Total annual potential savings estimation			$0.00	$0.00
	Environmental footprint CO2 based on potential savings				0 lbs
	Production downtime risk due to compressed air failure				High