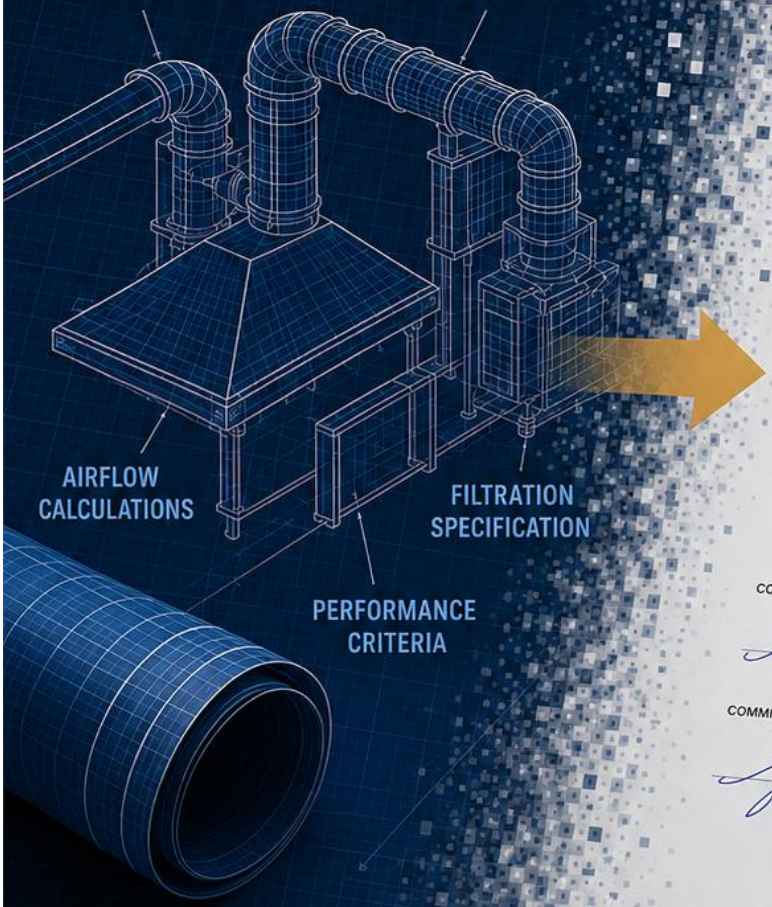
DEFENSIBLE LEV COMMISSIONING

A Governance Framework for Duty Holders

CAPABILITY • EVIDENCE • ACCOUNTABILITY



COMMISSIONING ASSURANCE REPORT

System has been commissioned in accordance with design intent and verified as capable of achieving the specified performance criteria.

- DESIGN INTENT DEFINED ✓
- TECHNICAL VERIFICATION COMPLETED ✓
- PERFORMANCE BENCHMARK ESTABLISHED ✓
- EVIDENCE DOCUMENTED ✓
- ONGOING ASSURANCE CONFIRMED ✓

COMMISSIONED BY — DATE 11/06/2026

COMMISSIONED BY (LEV SPECIALIST) — DATE 11/06/2026

DEFENSIBLE CONTROL · VERIFIED & EVIDENCED

Commissioning is not a technical formality.
It is the point at which exposure control becomes defensible — or not.

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Contents

Foreword

Local Exhaust Ventilation (LEV) remains one of the most relied-upon engineering controls for the prevention of occupational exposure to hazardous substances.

Under the Control of Substances Hazardous to Health (COSHH) Regulations, employers are required to ensure that exposure is either prevented or adequately controlled. Where LEV is relied upon to achieve that control, its performance must be demonstrably effective.

Commissioning is the point at which control moves from design assumption to verified capability. It is the stage at which the installed system should be demonstrated as capable of meeting its intended performance criteria. It is also where a benchmark is established against which ongoing statutory examination can be measured.

In practice, commissioning is sometimes treated as a procedural formality associated with project completion. However, from a regulatory perspective, commissioning represents the evidential foundation upon which subsequent assurance depends.

Without clearly defined design intent, measurable performance benchmarks and structured documentation, it may be difficult for Duty Holders to demonstrate that exposure control was ever adequately established.

This paper does not seek to reinterpret statutory requirements. Rather, it aims to clarify the governance and evidential implications of commissioning within the existing regulatory framework. It emphasises the distinction between:

- Establishing capability (commissioning), and
- Confirming ongoing condition (Thorough Examination and Test).

By presenting a structured framework for defensible commissioning, this document seeks to support organisations in strengthening their ability to demonstrate effective control of exposure, consistent with the intent of CoSHH and established guidance such as HSG258.

The objective is not to increase procedural burden, but to reinforce clarity of responsibility, competence and documentation so that engineering controls relied upon for worker protection, under scrutiny, can be evidenced with confidence.

Section 1: Executive Summary

Defensible LEV Commissioning: A Governance Framework for Duty Holders

Why Now?

Increasing regulatory focus on exposure control, occupational disease claims, and corporate governance means organisations are being asked not merely whether LEV systems exist, but whether they can demonstrate that those systems were capable of achieving effective control from the outset.

LEV commissioning is therefore increasingly recognised as a regulatory priority.

Under CoSHH, the Duty Holder is required to ensure that exposure to hazardous substances is either prevented or adequately controlled. Commissioning is the point at which that control must be demonstrated — not assumed.

In many organisations, commissioning is treated as a procedural stage at the end of installation. Documentation is produced, airflow readings are recorded, and the system is handed over. However, commissioning is not a formality. It is the moment where design intent becomes measurable performance and where capability is evidenced for the first time.

If commissioning is weak:

- Exposure control cannot be confidently assured
- Annual Thorough Examination and Test (TExT) results lack meaningful reference
- Compliance becomes difficult to defend under scrutiny

Annual testing confirms only a condition at a point in time. Commissioning establishes capability.

Without a properly defined and documented performance benchmark at handover, ongoing testing cannot demonstrate that the system was ever capable of controlling exposure as intended.

There remains widespread misunderstanding in the industry between qualification and competence.

Attendance on a recognised training course or possession of a BOHS certificate is an important milestone, but it does not in itself guarantee the ability to interpret contaminant behaviour, verify system resistance, establish appropriate capture performance, or document defensible evidence of control. Under COSHH, the Duty Holder retains responsibility for ensuring that those appointed to commission LEV systems are competent to do so.

In addition, commercial integration between system design, installation and commissioning can introduce perceived or actual conflicts of interest. Where commissioning is conducted without independent scrutiny or clear reference to documented design intent, the evidential value of that commissioning can be undermined.

This paper introduces the **OXYL8 Defensible Commissioning Framework™**, a structured model designed to clarify what commissioning must achieve in order to provide governance-level assurance. The framework separates five essential stages:

1. Definition of design intent
2. Technical verification of installed configuration
3. Measurable performance benchmarking
4. Structured documentation of evidence
5. Ongoing assurance against established benchmarks

By reframing commissioning as a governance function rather than a procedural task, organisations can strengthen their ability to demonstrate effective control of exposure, withstand regulatory scrutiny, and protect worker health.

Commissioning is not simply a paperwork or 'box ticking' exercise.

It is the point at which proven LEV performance becomes defensible — or not.

Section 2: The Common Misunderstanding

2.1 Commissioning Treated as Administrative Closure

In many projects, commissioning is perceived as the final administrative step before handover. Once installation is complete and airflow measurements have been taken, documentation is compiled and issued to the client. The process is often viewed as confirmation that the system is operational.

This interpretation is incomplete.

Commissioning should not simply confirm that a fan runs and that airflow is present. It must demonstrate that the system is capable of actually achieving the specific control performance required for the identified hazard. Where commissioning is reduced to a checklist exercise, the evidential value of the process is significantly weakened.

2.2 Over-Reliance on Annual Testing

A common misconception is that a satisfactory Thorough Examination and Test (TExT) demonstrates effective control.

TExT is a statutory requirement under COSHH Regulation 9. Its purpose is to confirm that an existing system continues to function as intended. However, TExT compares current performance against a benchmark.

If no meaningful performance benchmark was established at commissioning, the subsequent TExTs may only confirm that the system is performing consistently with its previous condition — not that it is fully capable of controlling exposure adequately.

This distinction between capability and condition is fundamental.

2.3 Absence of Documented Design Intent

Effective commissioning begins with clearly defined design intent. For example, this should include:

- The hazardous substance(s) involved
- Required control Benchmark
- Process arrangements and Contaminant generation characteristics
- Required control mechanism
- Target velocities, pressures, flowrates

In practice, design intent is often poorly documented or not formally recorded in a way that links ‘hazard’ to ‘control requirement’.

Without explicit design intent, commissioning cannot objectively verify that the installed system meets the required performance standard.

2.4 Qualification Misinterpreted as Competence

Another common misunderstanding lies in the assumption that possession of a recognised qualification automatically equates to commissioning competence.

Qualifications such as BOHS P602, P604 etc can demonstrate knowledge of principles and assessment processes. They do not, on their own, confirm:

- Depth of experience in complex LEV systems
- Ability to interpret contaminant behaviour
- Judgement in resolving design-performance gaps
- Capability to define defensible benchmarks

Competence is demonstrated through applied knowledge, experience, technical judgement and the ability to produce coherent, defensible evidence.

The Duty Holder must ensure that those appointed to commission systems are competent in this broader sense.

2.5 Commissioning Without Governance Context

Commissioning decisions are often made at project level without explicit consideration of governance implications. Yet commissioning documentation may become critical evidence in the event of:

- Regulatory inspection and/or interventions
- Civil litigation
- Occupational illness claims
- Corporate due diligence

Where commissioning records lack clarity regarding assumptions, measurement uncertainty, limitations, or deviations from design intent, their reliability under scrutiny can be compromised.

Commissioning must therefore be structured not only to satisfy technical requirements but to support governance-level assurance.

2.6 The Resulting Risk

When commissioning is misunderstood:

- Systems may operate for years without verified capability.
- TExT results may provide false reassurance.
- Exposure may be inadequately controlled without detection.
- Duty Holders may face difficulty demonstrating compliance.

The issue is not procedural compliance alone. It is evidential integrity.

Reframing commissioning as the establishment of defensible performance — rather than completion of installation — is essential to addressing this gap.

Section 3: Commissioning vs Testing

Capability, Condition and Evidential Integrity

A clear technical distinction between commissioning and Thorough Examination and Test (TExT) is essential if LEV systems are to be considered defensible under COSHH.

Confusion between these stages remains one of the most persistent weaknesses in LEV governance.

3.1 Purpose and Timing

Commissioning is undertaken at system handover, following installation or re-commissioning following significant modification. Its purpose is to verify that the installed LEV system is capable of achieving the control performance defined at design stage.

It answers the question:

> *Is this system capable of controlling the identified hazard as intended?*

TExT, conducted at statutory intervals (typically 14 months under COSHH Reg 9), evaluates the ongoing condition and functionality of the system.

It answers the question:

> *Is this system still performing in line with its established benchmark?*

Commissioning establishes capability.

TExT confirms continued condition relative to that capability.

3.2 Establishing Design Reference

Effective commissioning must begin with defined design intent, including:

- Nature and behaviour of the contaminant
- Required control mechanism (enclosure, capture hood, receiving hood etc.)
- Target velocities, pressures, containment criteria etc

- Required duct transport velocities
- Fan performance expectations
- Static pressure design requirements

These parameters form the technical reference against which performance is measured.

TExT does not establish these values. It relies on their prior existence.

Where no formal design reference exists, TExT measurements lack meaningful context.

3.3 Measurement Scope

Commissioning measurements should include:

- Hood face or capture velocity assessment (where applicable)
- Volumetric airflow rates at hoods and main branches
- Duct transport velocities
- Static pressure profiles across system
- Fan duty confirmation (flow vs pressure curve alignment)
- Assessment of system balance

Measurement methodology should be documented, including:

- Instrument calibration status
- Measurement location and method
- Assumptions and limitations
- Environmental factors

Commissioning must also consider measurement uncertainty and its potential impact on performance interpretation.

TExT measurements typically include:

- Airflow rate confirmation
- Static pressure readings
- Visual inspection of hood condition
- Filter condition and pressure drop
- System integrity checks

The TExT compares current readings against:

- Commissioning benchmark values

- Previously recorded test data

Without an established commissioning benchmark, TExT can only confirm relative stability — not adequacy.

3.4 Capability vs Condition

The critical technical distinction lies between capability and condition.

A system may:

- Be mechanically intact
- Demonstrate stable airflow readings
- Pass routine statutory examination

Yet still be incapable of achieving effective contaminant control if:

- The original airflow was insufficient
- Hood design was inappropriate
- Control approach was not aligned with contaminant behaviour
- System resistance exceeds design assumptions

If commissioning did not confirm adequate control performance at the outset, the system may have operated sub-optimally from day one.

TExT cannot correct inadequate design capability.

It can only detect deterioration relative to prior measurements.

Practical Scenario (A) Welding

Consider a welding extraction system commissioned with a measured airflow rate of 850 m^3/hr.

Annual Thorough Examination and Test (TExT) results over the following five years record airflow measurements ranging between 820 and 870 m^3/hr. The system appears stable and consistently achieves values close to the original benchmark.

From a condition perspective, the system may appear satisfactory.

However, if the original commissioning process did not establish that 850 m^3/hr was sufficient to achieve effective fume capture under actual operating conditions, the organisation has demonstrated only consistency of performance — not adequacy of control.

In this scenario:

- Commissioning established a benchmark value.
- TExT confirmed that benchmark was maintained.
- Neither activity demonstrated whether the benchmark itself was appropriate.
- The result is a system that may pass statutory examination for many years whilst exposure control remains uncertain.
- This illustrates why commissioning must establish capability, not merely record measurements.

Practical Scenario (B) Woodworking

Consider a woodworking workshop where an LEV system is installed to control hardwood and softwood dust generated by saws, planers and sanders.

At commissioning, airflow measurements are recorded and benchmark values established for each extraction point. The system is handed over and enters routine use.

Over the next few years, statutory Thorough Examination and Test (TExT) results demonstrate that airflow remains close to the original commissioning values. The system therefore appears to be operating as intended.

However, subsequent investigation identifies significant dust deposition around one of the sanding processes, with visible dust escaping the capture zone during normal operation.

Further review reveals that although the system has consistently achieved its benchmark airflow, the original commissioning process did not adequately assess hood control effectiveness.

In this scenario:

- The LEV system was operating consistently.
- TExT confirmed that performance remained stable.

- Benchmark values were maintained.
- Effective contaminant control had not been adequately demonstrated.

The organisation therefore possessed evidence of system condition, but limited evidence of actual exposure control capability.

This illustrates that commissioning must verify not only that air is moving through a system, but that the engineering control achieves its intended purpose under real operating conditions.

3.5 Benchmarking and Performance Baseline

A defensible commissioning process produces:

- Documented benchmark airflow rates
- Defined static pressure references
- Identified acceptable tolerance ranges
- Clear statement of system limitations
- Proof that the systems adequately controls contaminant exposure

These benchmark values allow:

- Meaningful comparison during TExT
- Identification of performance drift
- Trigger points for intervention

Without benchmarking, annual testing becomes a comparative exercise without a defined starting point.

3.6 Re-Commissioning Triggers

Commissioning is not a one-off event if system conditions change.

Re-commissioning should be considered where, for example:

- Significant process change alters contaminant emission profile
- Ductwork is modified
- Fan replacement alters duty
- Additional branches are introduced

- Major filter upgrades alter resistance

Treating commissioning as permanent, regardless of modification, introduces governance risk.

3.7 Governance Implications

From a regulatory perspective, commissioning provides evidence that the system was capable of effective control. TExT provides evidence that it has been maintained in working order and continues to offer the level of control intended.

They serve distinct but complementary functions.

Failure to distinguish between them risks:

- Overconfidence in statutory testing
- Weak evidential foundation
- Difficulty demonstrating control adequacy under scrutiny

Commissioning must therefore be understood as the establishment of defensible capability, not simply completion of installation.

Section 4: OXYL8 Defensible Commissioning Framework™

The **OXYL8 Defensible Commissioning Framework™** is structured to clarify what commissioning must achieve in order to provide governance-level assurance.

It separates the commissioning process into five interdependent stages. Each stage must be demonstrably completed for commissioning to be considered defensible.

Stage 1: Design Intent Definition

Commissioning begins before measurement. This stage requires explicit documentation of:

- Hazard characterisation
- Contaminant generation mechanism
- Required control strategy
- Target performance criteria (Control Benchmark)
- Design airflow and pressure assumptions

Design intent must be recorded in sufficient technical detail to allow objective verification.

Without defined intent, measurement has no reference.

Stage 2: Technical Verification of Installation

This stage confirms that the installed system reflects design intent.

Verification includes:

- Hood geometry and positioning
- Duct sizing and routing (reflected in design handover drawings)
- Fan selection and orientation
- Filter configuration
- Air replacement considerations

The objective is to ensure that physical configuration supports intended performance.

Deviations must be recorded and evaluated for performance impact.

Stage 3: Performance Benchmarking

This stage establishes measurable evidence of capability.

It includes:

- Airflow measurement at defined locations
- Static pressure profiling
- Control performance validation (observed)
- System balancing confirmation
- Fan duty verification against performance curves

Measurement uncertainty should be acknowledged.

The outcome of this stage is a clearly defined performance benchmark. This benchmark becomes the reference for future statutory examination.

Stage 4: Structured Documentation and Evidence

Technical measurements must be translated into defensible documentation.

This includes:

- Clear statement of commissioning methodology
- Benchmark values and acceptable tolerances
- Assumptions and limitations
- Instrumentation details (inc. calibration certs)
- Sign-off responsibilities

Documentation should allow a third party to understand:

- What was verified
- How it was verified
- Why the system is considered capable

This stage transforms technical activity into governance evidence.

Stage 5: Ongoing Assurance and Change Management

Defensible commissioning recognises that systems can degrade and processes evolve.

This stage defines:

- How TExT references the commissioning benchmark
- Trigger points for investigation
- Criteria for re-commissioning
- Documentation retention and review

It ensures that commissioning is not treated as historic paperwork but as the foundation of continuing assurance.

Framework Summary

The **OXYL8 Defensible Commissioning Framework™** reinforces that:

- Design intent must be explicit.
- Capability must be demonstrated.

- Performance must be benchmarked.
- Evidence must be documented.
- Assurance must be ongoing.

When these five stages are satisfied, commissioning provides governance-level confidence.

When they are not, commissioning becomes procedural rather than defensible.

Commissioning is not a technical courtesy extended at handover.

It is the structured demonstration that exposure control is capable of achieving its intended purpose, and that this capability can be evidenced under scrutiny.

Section 5: Governance Implications

Commissioning as a Board-Level Assurance Function

Commissioning of LEV systems is often treated as a technical engineering exercise. In governance terms, it is considerably more than that.

Under the Control of Substances Hazardous to Health (CoSHH) Regulations, the Duty Holder must ensure that exposure to hazardous substances is prevented or adequately controlled. This obligation is not delegated by appointing a contractor, consultant or commissioning engineer. Legal accountability remains with the employer or responsible person.

For this reason, commissioning must be understood not only as technical verification, but as the establishment of defensible evidence that exposure control is capable of achieving its intended purpose.

5.1 Commissioning as Evidence of Control

From a governance perspective, commissioning documentation may become critical evidence in the event of:

- Regulatory inspection or intervention
- Improvement or Prohibition Notice
- Occupational illness investigation

- Civil litigation
- Corporate due diligence review
- Acquisition or merger activity

In each of these scenarios, the question is not simply whether an LEV system exists or has been tested. The question is whether the organisation can demonstrate that it exercised reasonable care to ensure effective control.

Commissioning records form the foundation of that demonstration.

Where commissioning evidence clearly defines:

- Design intent
- Measured performance benchmarks
- Methodology used
- Assumptions and limitations
- Competence of those involved

The organisation is better placed to demonstrate structured and informed control.

Where commissioning is poorly documented or lacks technical clarity, governance risk increases significantly.

5.2 Duty Holder Accountability and Role Separation

A recurring governance risk arises from misunderstanding the distinction between operational delivery and legal accountability.

Contractors may design, install and commission systems.

Consultants may advise and measure.

Maintenance teams may undertake servicing and statutory testing.

However, the **Duty Holder** retains responsibility for ensuring that:

- Those appointed are competent
- Commissioning has established effective control
- Documentation is sufficient and accurate
- Ongoing assurance mechanisms are in place

Governance failure often occurs where technical reliance substitutes for managerial oversight.

The Duty Holder must be able to ask and answer:

- What was the design basis for this system?
- How was capability verified?
- What benchmark was established?
- How do we know it remains adequate?

If these questions cannot be answered clearly, governance exposure exists.

5.3 Independence and Conflict Considerations

Where LEV commissioning is conducted within a commercially integrated design/installation model, there is potential for perceived or actual conflict of interest.

This does not imply impropriety. However, from a governance standpoint, independence strengthens evidential robustness.

An independent or transparently structured commissioning process can provide:

- Objective evaluation of design adequacy
- Clear documentation of deviations
- Reduced perception of bias
- Increased defensibility under scrutiny

Duty Holders should consider whether commissioning arrangements allow for objective verification of performance, particularly in higher-risk environments.

Governance strength increases when technical verification is demonstrably independent of commercial delivery pressures.

5.4 Documentation as Governance Asset

Commissioning documentation should not be viewed as an operational file retained for reference. It is a governance asset.

Effective documentation should:

- Be retained centrally
- Be accessible to responsible managers

- Be referenced during statutory examination
- Be reviewed when process change occur
- Be included in internal audit processes

Inadequate document control introduces avoidable risk.

Clear linkage between commissioning benchmarks and ongoing TExT results strengthens the organisation's ability to demonstrate systematic management of exposure control.

5.5 Change Management and Corporate Memory

Over time, personnel change, processes evolve, and documentation may be lost or archived without context.

Governance requires that commissioning benchmarks are:

- Preserved
- Understood
- Referenced during system modification
- Updated following significant change

Where systems are modified without structured re-commissioning, the evidential chain may be broken.

Organisations must ensure that change management processes explicitly consider:

- Impact on control effectiveness, velocities, airflows, system resistance etc
- Contaminant profile changes
- Revised performance requirements

Failure to integrate commissioning into change management weakens governance continuity.

5.6 Board-Level Exposure

At senior leadership level, LEV commissioning may appear distant from strategic decision-making. In reality, ineffective exposure control carries material risk including potential for:

- Enforcement action
- Civil claims
- Reputational damage

- Operational disruption
- Increased insurance scrutiny

Commissioning provides assurance that engineering controls — often relied upon as primary risk mitigation measures — are demonstrably capable of fulfilling their function.

Where commissioning is robust, leadership can take confidence in the integrity of exposure control systems.

Where commissioning is weak, risk may be latent and undiscovered until failure occurs.

5.7 From Procedural Compliance to Evidential Integrity

Governance maturity is reflected in how commissioning is perceived internally.

Low maturity:

> *Commissioning is treated as project completion paperwork.*

Higher maturity:

> *Commissioning is recognised as the formal establishment of defensible control capability.*

The shift from procedural compliance to evidential integrity is central to strengthening LEV governance.

Commissioning is not merely an engineering milestone. It is a governance checkpoint.

5.8 Summary

For Duty Holders and senior leaders, the implications are clear:

- Commissioning establishes the evidential baseline for exposure control.
- TExT confirms ongoing condition relative to that baseline.
- Qualification (of LEV Specialists) does not remove Duty Holder accountability.
- Documentation quality directly affects defensibility.
- Independence strengthens assurance.

Effective governance requires that commissioning be approached with the same seriousness applied to financial audit, quality assurance, or safety-critical system verification.

When commissioning is structured, documented and benchmarked appropriately, it provides confidence. When it is not, organisational risk may remain hidden until challenged.

Summary: Defensible LEV Commissioning

Why This Matters

Where Local Exhaust Ventilation (LEV) is relied upon to control exposure to hazardous substances, the organisation must be able to demonstrate that the system is capable of performing that function.

Commissioning is the stage at which this capability should be established and evidenced. If commissioning is weak, compliance may be difficult to defend.

Key Governance Risks

1. **Over-reliance on Annual Testing**

Statutory testing (TExT) confirms current condition.

It does not prove that the system was ever capable of adequate control.

2. **Absence of Defined Performance Benchmark**

Without documented benchmark values established at commissioning, ongoing testing lacks meaningful reference.

3. **Misinterpretation of Competence**

Possession of qualifications does not remove Duty Holder accountability for ensuring commissioning competence.

4. **Inadequate Documentation**

Poorly structured commissioning records weaken evidential integrity during regulatory scrutiny or civil claims.

5. **Unmanaged System Changes**

Process modifications without re-commissioning may invalidate original performance assumptions.

What Defensible Commissioning Requires

The OXYL8 Defensible Commissioning Framework™ identifies five essential stages:

1. **Design Intent Definition**

   Clear articulation of hazard, control strategy and required performance.

2. **Technical Verification**

   Confirmation that installed system reflects design assumptions.

3. **Performance Benchmarking**

   Measured airflow and pressure data establishing demonstrable capability.

4. **Structured Documentation**

   Clear, traceable records of methodology, benchmarks and limitations.

5. **Ongoing Assurance**

   Integration of commissioning benchmarks into statutory examination and change management.

Board-Level Questions

Senior leaders should be able to answer:

- Do we have documented commissioning benchmarks for our LEV systems?
- How do annual test results reference those benchmarks?
- Who verified commissioning competence, and on what basis?
- What triggers re-commissioning following system or process change?
- Where is commissioning documentation retained and reviewed?

If these questions cannot be answered clearly, governance exposure may exist.

Strategic Position

Commissioning is not a technical formality. It is the point at which exposure control becomes defensible — or not.

Robust commissioning strengthens:

- Regulatory assurance
- Organisational accountability
- Worker protection
- Corporate resilience

It should therefore be treated as a governance function, not merely an engineering milestone.

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