

Planning Operational Hygiene Into a New Facility

The Operational Hygiene Index gives you a structured way to build hygiene into a new facility before a single pipe is welded in place. At this stage, a Process Landscape and a Roadmap can still shape the plant, instead of being retrofitted into it later.

The Scenario

You are planning a completely new production facility. This means a new building, with its own tanks, piping, and process infrastructure. Everything is built or planned from the ground up.

This is different from adding a new line inside an existing site. In that case, tanks, piping, and infrastructure already exist. Only part of the facility changes. That case is covered separately, under the Brownfield use case.

Facilities like this are rarely simple. A typical build starts with raw material tanks that feed several dissolvers for different product types. From the dissolvers, product moves on into multiple finished goods tanks, and then out through more than one filling line, each sized for different container formats. Shared systems add another layer, such as pigging lines that dose binders and additives across several vessels, one after another.

Many of these elements share critical resources. One example is a single distributor or cleaning aggregate that serves several tanks in sequence. On paper, each piece looks like its own engineering decision. In operation, they behave as one connected hygiene system.

This is exactly the stage where operational hygiene is easiest, and cheapest, to get right. Once concrete is poured and pipework is welded, fixing a hygiene flaw becomes a retrofit project. Before that point, it is still a design decision.

Why This Matters Before Construction

A risk-based view of operational hygiene does not look at single pieces of equipment on their own. Instead, it asks how the whole facility behaves as a system. Where does product sit still? Where does it move? Where do cleaning cycles overlap between shared equipment? Where is responsibility for hygiene still unclear?

Asking these questions during planning, instead of after commissioning, changes what operational hygiene is. It turns from a corrective cost into a design parameter.

This is the gap the OHI closes in a greenfield setting. It gives you a structured way to ask these risk-based questions early. At that point, the answers can still change the layout, the equipment specification, or the hygiene concept, not just the operating procedure around it. For a quality manager or plant planner, this is the point in the project where you have the most influence, and the least cost exposure if something needs to change.

The Cost Perspective

This document will not put a number on what determining an Operational Hygiene Index costs. But one comparison matters more than any single figure: set against the total cost of a new facility, engineering included, operational hygiene optimization is a small fraction of the budget.

That investment tends to pay for itself several times over, in two ways. First, through fewer operational hygiene incidents, such as contaminated batches, the rework they cause, and the disruption to production planning that follows. Second, through flexibility for the future. If preservative use is reduced, whether by regulation or by the market, a facility built with a mature hygiene concept can adapt. One built without it usually cannot, at least not without a retrofit.

Regulation is only one driver here. Market pressure to reduce or remove preservatives is just as real, and it can move faster than legislation does.

Why This Cannot Be Delegated to Equipment Suppliers

Your equipment and plant suppliers can build you a working facility. Building you a hygienic one is a different job, one most of them were never set up to do.

Few equipment or plant suppliers have deep expertise in operational hygiene. This is true for suppliers of a complete turnkey facility. It is also true for suppliers of individual components, such as tanks, pumps, or filling equipment.

Their focus is process performance, mechanical reliability, and general engineering standards. It is usually not the risk-based hygiene profile of your specific product and process.

There is a deeper reason for this, beyond expertise alone. Operational hygiene is a multidimensional topic. Responsibility for it is spread across several functions, not owned by one. In practice, this means it lives at the interfaces between Quality Assurance, Production Planning, and Process Engineering, and interface problems are exactly where hygiene gaps tend to form.

An equipment or plant supplier cannot resolve those interface problems, because they simply do not have the know-how to do so. They do not see operational hygiene as a cross-functional topic at all. They see it through a single lens: process engineering. Quality Assurance and Production Planning are outside their scope, and so is the coordination between all three.

This gap means one thing: the operational hygiene concept has to be developed independently of the equipment supplier relationship. It should never be assumed to come with the delivered equipment.

One central decision in that concept is how hygiene work will actually be carried out, day to day. Hygiene staff are not the same as cleaning personnel. Their role covers cleaning, disinfection, and preservation, across a wide range of equipment, not just wiping down surfaces. Will dedicated hygiene staff form their own function? Or will hygiene tasks stay part of the production team's regular work? This choice also drives the degree of automation the hygiene concept needs. A dedicated hygiene team can work with more manual processes. A lean production team, on the other hand, relies more on automated, CIP-style cleaning cycles.

Whichever model you choose, ownership of the hygiene concept has to stay with the company building the facility. Equipment suppliers can inform individual technical decisions. But the concept as a whole, including the staffing model, the hygiene strategy, the automation level, and the responsibility structure behind it, has to be defined and owned internally. It should not be delegated to whoever happens to deliver the plant.

Where You Can Engage

A Greenfield engagement can start at four different points. Which one fits depends on how far your planning has already progressed. The first two points reflect how planning for a new facility usually unfolds: a Production Concept phase, followed by a Plant Concept phase. The OHI can support both.

1. Production Concept — the earliest entry point. This is where fundamental production decisions are made, for example whether the facility will run slurry production or work without slurries. Decisions like this happen before any layout or equipment list exists, but they set the baseline hygiene effort for the whole facility. Slurry production, for example, means significantly more operational hygiene activity later on. The OHI flags this at the point where it can still shape the wider concept, not once the decision is already built into the process flow.

Another example is the regulatory framework around preservatives in paints. If regulatory requirements on preservative use are expected to stay light, the facility can be built with less focus on operational hygiene. But two situations point the other way: tightening regulation, or a deliberate decision to reduce preservatives as a raw material for cost reasons. In either case, operational hygiene measures have to be planned in from the start, not added later. Fewer preservatives in the product always means more reliance on hygienic design and process control to prevent contamination.

2. Plant Concept — once the production concept is set, it is translated into layout, equipment, and piping. This includes the piping connecting raw material tanks, dissolvers, and filling lines, not just the equipment itself. Individual components, such as tank design, pump types, and filling equipment, are checked against hygienic design principles while the specification is still open.

In this phase, the OHI delivers the operational hygiene concept and supports you directly in component selection. This is where the details matter most. With tanks, for example, planning the right spray ball systems and correct tank venting in advance prevents problems that are difficult and expensive to fix once the tank is already installed.

3. Hygiene Concept Development — layout, process flow, and equipment types are already fixed. But no operational hygiene concept exists yet. The concept is built in parallel with construction and commissioning planning.

4. Finished Concept Review — the design is complete. This is a sanity check, to find hygiene gaps in the finished plan before construction locks them in.

The OHI Greenfield Engagement

A physical, on-site audit is not possible before a facility exists. Because of this, the Greenfield engagement restructures the standard OHI phases. The goal is to reach the same depth of insight without one.

Phase 1 — Standard Kick-off

A structured walkthrough of the facility design. This covers the layout, the equipment list, the process flow, and the current state of hygiene-relevant decisions. It defines what the following phases need to cover.

Phase 2 — Questionnaire, With Audit Questions Built In

The Questionnaire phase is extended with the risk-based questions that would normally be asked on site, during a physical audit. This lets a Greenfield project reach the same analytical depth as a completed facility, working from drawings, equipment data sheets, and planning documents.

Phase 3 — Virtual Audit (optional)

If a 3D model of the facility is available, it is used for a virtual walkthrough instead of a physical audit. This walkthrough focuses on the same hygiene-critical points: flow paths, shared equipment, dead legs, and access for cleaning.

What You Get

Two things come out of this engagement that you can act on directly:

Process Landscape

A documented map of what happens where, and who is responsible for it. A facility like this has raw material tanks, several dissolvers, more than one filling line, and shared systems such as a pigging network. This map keeps hygiene ownership from falling into the blind spots between equipment, departments, and shifts. For a new facility, it is written once, correctly, instead of being reconstructed later from memory.

Roadmap

A prioritized, sequenced list of technical and organizational measures. In a Greenfield context, the Roadmap can be phased alongside construction and commissioning milestones. This way, each measure lands at the point where it is still cheapest to implement, before equipment is installed rather than after it is already running.

Optional: Physical Audit After Construction

A physical, on-site audit only becomes possible once the facility is operational. It can be booked separately at that point. It builds on the Process Landscape and Roadmap from the Greenfield engagement, instead of starting from zero.

Further Support, If You Want It

For a company working with operational hygiene for the first time, the concept itself is only part of what is needed. Two further forms of support are available, depending on what fits your project.

Training for hygiene staff. — hygiene staff are often a new function for companies at this stage. Training builds the practical skills for cleaning, disinfection, and preservation directly, instead of leaving the team to learn on the job after the facility is already running.

Hygiene-focused construction support. — on-site accompaniment during construction, checking that the hygiene concept is actually being built the way it was designed, not just handed over on paper and left to chance once construction starts.

Both are optional. What you actually need depends on where your project stands and what you decide to take on yourself.

Common Questions

What if we do not have a 3D model?

A 3D model is helpful, but not required. Without one, Phase 3 is skipped. The engagement then relies on the Kick-off walkthrough and the extended Questionnaire. A physical audit remains available once the facility is built.

What is the timeline for a Greenfield engagement?

This depends on the facility's complexity and how far planning has progressed. A review of a finished concept can take a few weeks. An engagement starting from the Production Concept phase runs alongside your planning process itself. It is scoped together with you, after the Kick-off.

What if only part of the facility is finished on paper?

That is the normal case, not an exception. Different lines or areas are often at different planning stages at the same time. The Kick-off maps out where each part of the facility stands. The Questionnaire is then scoped accordingly, area by area.

Where to Start

If you are currently working through a Production Concept or a Plant Concept for a new facility, this is the point to bring operational hygiene into the conversation, not after the layout is signed off. The OHI gives you a Process Landscape and a Roadmap you can act on immediately, built on a risk-based view your equipment suppliers are not set up to provide.

Book a call to discuss where your project stands, and how the OHI fits into your planning from here: zeeg.me/grosseronald.

