

Zero-series procurement: strategic purchasing between prototype and series

Zero-series procurement covers the procurement of materials, parts and components for the zero series, i.e. the final trial stage before a product enters series production. It poses a particular challenge for buyers and suppliers, as unit quantities are small while the requirements are already almost production-compliant. In this glossary article, you will learn how zero-series procurement works, which criteria matter when selecting suppliers and which risks can be controlled at an early stage.

Key facts

- The zero series is the precursor to series production and serves to validate processes, tools and parts under realistic conditions.
- Typically, a zero series comprises several dozen to a few hundred units, depending on product complexity and industry.
- In this phase, buyers must weigh up development versus series suppliers and prepare the supplier release.
- Prices in the zero series are often significantly higher than the later series costs, as tooling costs, set-up costs and low volumes become due and carry financial weight.
- Quality documentation and traceability should already be established in the zero series in a production-ready manner.
- Zero-series procurement significantly influences the later series purchasing, for example through contractually agreed prices, capacities and logistics processes.

Definition: zero-series procurement

Zero-series procurement denotes the systematic procurement of all materials, components and services required for the zero series. The zero series is the final milestone before the production start-up and tests the product, manufacturing processes and supply chain under almost real conditions. For procurement, it is the interface between development, quality assurance and the series supplier.

Distinction from prototype and pilot run

The prototype primarily serves to test the functionality of individual parts or systems, often using quickly manufactured parts. The pilot run, often used synonymously with the zero series, by contrast already tests industrial production capability, i.e. processes, fixtures and staff qualification. Zero-series procurement forms the connecting link: it procures parts that must mostly already come from the later series tooling or at least from production-like processes.

Objectives from a procurement perspective

The aim is to make well-founded decisions for the production start-up: identify suitable suppliers, negotiate prices and conditions, test logistics concepts and prepare the supplier release. At the same

time, findings from the zero series are to be incorporated into change requests, such as a change order, before the tooling is finally designed. In this way, the zero series reduces the risk of costly corrections during ongoing series operation.

Process and methods of zero-series procurement

The process typically follows the product's requirement specification and the development milestones. Procurement translates engineering requirements into reliable request documentation and qualifies suppliers who can also support the later series.

Requests and supplier selection

The starting point is technical drawings, bills of materials and quality requirements. Structured request processes are common, partly supported by electronic tendering, to make quotations comparable. Selection is based not only on prices, but also on process capability, tooling expertise and willingness to engage in close development collaboration, as pursued in the open innovation approach. Frequently, two sources are deliberately qualified to prepare the later dual-sourcing strategy.

Model contracts and pricing

In practice, separate framework agreements are concluded for the zero series, as volumes and prices differ from the series. Tooling costs are often allocated to the zero-series volume or invoiced separately. It is important to regulate contractually how zero-series prices become series prices, for example via graduated degression or binding target prices from a defined volume. Call-off procedures for the series should also already be outlined.

Qualification and release

In parallel with the delivery of the zero-series parts, qualification runs: first article inspection, on-site process audit and agreement of inspection plans. Only once incoming goods quality and process capability have been demonstrated is the formal supplier release for the series granted. Procurement coordinates these steps with quality assurance and development and documents the results in an audit-proof manner.

Key KPIs and assessment areas

Although the zero series is small, relevant metrics can be collected that make the production start-up predictable. Procurement should capture these metrics systematically from the outset.

On-time delivery and quality

Key metrics are the on-time delivery of zero-series supplies and the quality of the delivered parts, measured for example in parts per million (ppm) or the rate of rejected deliveries. Because volumes are small, individual deviations must be weighted more heavily than in the series. It is also advisable to document rework and tool corrections as an early indicator of series risks.

Costs and project cost deviation

Target costs from the calculation are compared with the actual costs of the zero series, broken down into unit costs, tooling costs and set-up costs. The deviation shows how realistic the series calculation is. The lead time from order to delivery is also recorded in order to derive delivery concepts and safety stock levels for the series.

Supply chain metrics

Trial runs in logistics provide initial figures on incoming goods quality in handling, packaging adequacy and throughput times from goods receipt to availability, measurable for example via dock-to-stock times. These figures later feed into the evaluation of series logistics.

Risks and controls in zero-series procurement

The zero-series phase carries typical risks: small volumes, high unit costs, inflexible deadlines and suppliers who assess the series and the zero series strategically differently. Targeted controls mitigate these risks.

Contract risks and payment terms

Securing tool orders and advance payments is important. Common in practice are tool ownership arrangements in favour of the buyer, as well as security such as a bank guarantee or surety bond for substantial advance payments. As the legal position must be assessed on a case-by-case basis, contracts should be reviewed by legal counsel.

Single-source suppliers and capacity risks

Suppliers who regard the zero series merely as a stopgap neglect the project in favour of larger orders. Controls include project-accompanying audits according to a defined audit plan, fixed contact persons and milestone clauses in the contract. For critical parts, an early assessment of a second source or partial outsourcing is recommended.

Documentation and change management

Every deviation between drawing, sample and inspection result must be documented and resolved via a change order or change request. Unresolved changes between the zero series and the series are a common cause of delays during start-up. Procurement ensures that change statuses are consistent in purchase orders and bills of materials.

Current developments and digital support

Zero-series procurement benefits from digitalisation: procurement platforms, data-based supplier searches and digital quality packages shorten throughput times between development and production start-up.

E-procurement and digital platforms

E-procurement in purchasing enables structured processes even for small volumes, from the digital request through the comparison of quotations to the purchase order. Specialised marketplaces for manufacturing and supplier services significantly shorten the search for suitable zero-series suppliers, as capacities, processes and certifications can be queried directly.

Resilience and procurement strategy

Many companies use the zero series to assess procurement risks in a structured manner and to test alternatives from Asia, the Middle East or Eastern Europe. Aspects such as customs and trade law, for example storage in a customs warehouse, and currency hedging via hedging in international procurement are gaining in importance. Sustainability requirements, for example FSC/PEFC certificates for wooden components, are also increasingly being reviewed as early as the zero series.

Reducing complexity before the start-up

The zero series is the last opportunity for complexity reduction: variants can be dropped, parts standardised and in-house production depth finally defined. Those who implement standardisation here achieve lasting reductions in series costs and procurement effort.

Typical metrics

Zero series on-time delivery: > 95%

Target benchmark strived for in practice; deviations carry greater weight at small volumes.

Incoming goods quality: < 500 ppm

Usual target value for qualified parts; stricter limits depending on the industry.

Cost deviation from the calculation: < 10%

Early indicator of how realistic the series calculation is.

Dock-to-stock time: < 24 hours

Benchmark for smooth goods receipt and inspection processes.

Practical example

A medium-sized machinery manufacturer is developing a new size variant of a special machine and plans the production ramp-up in nine months. For the zero series of 50 machines, around 400 custom parts need to be procured.

- Structured tender via a digital procurement portal with uniform request documentation for twelve qualified suppliers
- Agreement of zero-series prices with a binding degression table up to the series volume, plus tool ownership with the buyer
- Project-accompanying audits according to a fixed audit plan and first article inspection per part number before supplier release
- Documentation of all deviations as change orders with fixed deadlines in order to keep the production start-up on schedule

Conclusion

Zero-series procurement is more than a transitional phase: it determines the price level, supplier structure and process quality of the entire series. Buyers who issue structured requests here, qualify suppliers and agree binding conditions secure tangible advantages in series purchasing. The key success factors are clear change processes, early quality documentation and a clean separation between zero-series and series contracts. Digital procurement platforms are taking on a growing role here, as they make suitable suppliers easier to find. Those who consistently transfer the findings of the zero series into series procurement reduce start-up costs and avoid expensive corrections during ongoing operations.

Frequently asked questions

What does zero-series procurement mean?

Zero-series procurement refers to the procurement of materials and components for the zero series, the final trial phase before series production. This is where production-like processes and tools are already

tested. Here, procurement qualifies the suppliers and contracts for the subsequent series.

How many units does a typical zero series comprise?

This depends heavily on the product and industry. In practice, a zero series often comprises anywhere from several dozen to several hundred units. For complex products such as machinery, it is often fewer; for consumer goods, sometimes considerably more.

Why are zero-series prices higher than series prices?

Small volumes spread tooling, set-up and start-up costs across few parts, which significantly increases unit costs. In addition, there are no manufacturing learning effects. Typically, zero-series prices are contractually shown separately from the later series prices.

What is the difference between a zero series and a pilot series?

The terms are sometimes used synonymously. Frequently, the zero series refers to the first production run under real conditions, while the pilot series is an enlarged pre-series batch with final tooling and processes. Definitions may vary depending on the company and industry.

Which contracts are important during the zero-series phase?

Key aspects are agreements on tool ownership, advance payments including possible security such as a bank guarantee or surety bond, confidentiality, and the transition to series prices and conditions. Capacity commitments and change processes should also be regulated. The legal assessment should be reviewed on a case-by-case basis.

How do you find suitable zero-series suppliers?

Suitable suppliers can be found through structured tenders, supplier databases and specialised B2B marketplaces for manufacturing services. Important factors are evidence of process capability, references in comparable projects and a willingness to engage in close collaboration with the development team.