

Instruction

Performance indicators of direct material suppliers

Abstract	
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1 Purpose

This instruction describes in parallel two phases of the supplier management at Gestamp:

- **Supplier Monitoring:** The instruction defines the indicators used by Gestamp to monitor the supplier's performance during serial life.
- **Supplier Re-Evaluation:** The instruction also describes the method/tool established by Gestamp, to re-evaluate during serial life if suppliers keep the conformity to Gestamp requirements.

The objective of this instruction is:

- To follow-up of suppliers regarding Gestamp requirements and performance criteria.
- To ensure the quality of all purchased parts delivered to Gestamp.
- To provide ongoing feedback to suppliers.
- To allow the early identification of quality issues.
- To promote a continuous improvement policy along every supply chain in order to contribute to Zero-defects objective.

2 Scope

This instruction is applicable for all direct material suppliers (raw material, components and manufacturing processes) which supply serial products and are included on Gestamp supplier panel.

In the same way, this instruction is applicable for all Gestamp Plants where the Quality Module (QA) of Fullstep is implemented.

3 Definitions

direct material

all materials or parts being part of the final product (i.e. vehicles). This includes raw materials and components but also some other materials not so obvious like wire for arc welding or paint for coating. In the case of painting, any chemical component that does not end up being part of the vehicle is not direct material. Tooling is not part of the vehicle either, so it cannot be considered direct material. Packaging is another example: it is not part of the vehicle so it is not direct material.

supplier monitoring

control and follow up of providers' performance through a set of specific indicators and/or 2nd party audits, if applicable

supplier re-evaluation

evaluation conducted to existing Gestamp suppliers in order to assure that it is still a valid supplier

supplier panel

supplier database, containing relevant information from all Gestamp providers

GQI (General Quality Index)

It is a combined indicator used for supplier re-evaluation. It takes into account the measurement of several variables: number of quality and logistic claims, ppms, delivery rate, non-quality costs and satisfaction complaints.

As a result of this combined indicator, suppliers are classified in "A, B or C" depending on the GQI value obtained.

premium freight

extra costs or charges incurred in addition to contracted delivery

normalization of ratings

adjusting values measured on different scales to a common scale.

For example, suppose that Supplier A has reached 20 ppms while its target is 40 ppms and Supplier B has reached 30 ppms but its target is 100 ppms. The ppm result of Supplier A is lower than the result of Supplier B, but if we take into account the different targets, it seems that target compliance of Supplier B is better than in the case of supplier A. In this example the normalized values, using the formula defined in ANNEX A, are 90 for Supplier A and 94 for Supplier B, that clearly shows that the compliance with the target of Supplier B is better than supplier A.

approved supplier

Supplier who comply with the minimum quality requirements defined by Gestamp and, if a second party audit has been developed, the result has been positive

4 Normative references

The relationship between this directive and IATF 16949 is the following:

Standard	Clause	
ISO 9001	8.4.1	General
IATF 16949	8.4.2.4	Supplier Monitoring

5 Responsibilities

Gestamp QA Users: Gestamp QA users of each plant will be responsible for tracking supplier performance on the system and keeping the Supplier Panel related to their plant updated.

Supplier: The supplier will be responsible for reviewing the achieved performance, implement the respective actions when needed and keeping Gestamp's requirements updated through Supplier Portal. It is mandatory that suppliers review this information each month. In case that performance "A" is not reached, the supplier must define and implement appropriate actions without being requested by Gestamp.

6 Description

6.1 Supplier Monitoring

Gestamp evaluates the monitoring of direct material suppliers through the following individual indicators:

- **Conformity to product**, which is measured through:
 - ppm (Parts per Million)
 - CPT (Claims per Thousand): Quality Claims Level 1, 2 and 3
- **Delivery Rate** which is measured through the Logistic Claims Level 1, 2 and 3
- **Customer disruptions** at the receiving plant which is measured through Logistic Claims Level 3
- Number of occurrences of **premium freight**.

These indicators are automatically calculated by the system every month. The results are available through Fullstep QA system or QlikView and through Supplier Portal (<https://www.gestamp.com/Suppliers>).

Gestamp QA user of each plant shall do an individual monitoring of each of these indicators. In case that any value is not according the expectation, a root cause analysis must be performed and, if necessary, define an action plan in order to correct the behavior of the indicator.

6.1.1 Performance indicators calculation

6.1.1.1 ppm performance

For ppm performance calculation, we will use the ppm value, which is the number of defective parts of all deliveries from the last 6 months extrapolated to one million parts.

$$ppm = \frac{\text{Number of defective parts}}{\text{Total delivery of parts}} \times 1.000.000$$

For ppm calculation, the **quantity of defective parts indicated on level 1 to 3 of Quality Claims** is considered.

The defective parts indicated on Alerts are not taken into account.

6.1.1.2 CPT performance

For Claims Performance, only **quality claims are taken into account**. Quality alerts are not considered.

Each Quality claim has an amount of demerit points depending on the quality claim's level according to the following table:

Type of Quality Claim	Demerit Points	Quality Claim Definition
Quality Claim Level 1	1 point	- Non-repetitive claims <u>and</u> - Do not affect customer <u>and</u> - Claim not affecting any special characteristic.
Quality Claim Level 2	2 points	- Repetitive claim <u>or</u> - affects customer <u>or</u> - Claim affecting any significant characteristics. - Production shutdown at Gestamp. - Occasional warranty claims.
Quality Claim Level 3	6 points	- Safety & Regulation risk <u>or</u> - Leading to a Recall <u>or</u> - Production shutdown at customers. - Warranty claims affecting significant number of parts.

For Claims performance calculation, we will use the ratio CPT (Claims per Thousand) which is the sum of demerit points assigned to the quality non-conformities opened during the last 6 months and divided by the accumulated 6 rolling monthly deliveries.

$$CPT \text{ (Claims per Thousand)} = \frac{\sum(\text{Weighted Quality claims})}{\text{Number of deliveries in the last 6 months}} \times 1.000$$

Note that in this indicator the number of deliveries is used, not the number of delivered parts that is normally used in the CPM

6.1.1.3 Delivery rate performance

For Delivery Schedule Rate calculation, **only Logistic Claims are taken into account** without considering Logistic Alerts.

Each Logistic Claim has an amount of demerit points depending on the logistic claim's level according to the following table:

Type of Logistic Claim	Demerit Points	Logistic Claim Definition
Logistic Claim Level 1	1 point	- Re-planning of the production schedule. - Advanced delivery. - Amount delivered does not match with requested (Low impact).
Logistic Claim Level 2	2 points	- Delivery delay to customer or production shutdown at Gestamp. - Amount delivered does not match with requested (Medium/High impact).
Logistic Claim Level 3	6 points	- Production shutdown at customer line.

Delivery Rate is the sum of demerit points assigned to each logistic non-conformity opened during the last 6 months and divided by the accumulated 6 rolling month's deliveries.

$$Delivery\ Rate = \frac{\sum(Weighted\ Incorrect\ Deliveries)}{Number\ of\ deliveries\ in\ the\ last\ 6\ months} \times 100$$

The number of 6 rolling months' deliveries will be the result of **summing up all lines contained in each delivery note at goods receipt stage**.

6.1.1.4 Customer disruptions

This variable is directly calculated only taking into account the **number of Logistic Claims Level 3** during the 6 rolling month's deliveries.

$$Disruptions\ Rate = \frac{\sum(Weighted\ Incorrect\ Deliveries\ with\ customer\ disruption)}{Number\ of\ deliveries\ in\ the\ last\ 6\ months} \times 100$$

6.1.1.5 Number of occurrences of premium freights

Number of **premium freight of the supplier** during the 6 rolling month's deliveries.

That is, the **sum of alerts and logistic claims** with an affirmative answer to the question of premium freights.

$$Premium\ freights\ Rate = \frac{\sum(Weighted\ Incorrect\ Deliveries\ with\ premium\ freights)}{Number\ of\ deliveries\ in\ the\ last\ 6\ months} \times 100$$

6.2 Supplier Re-evaluation

Gestamp has established a supplier re-evaluation process to check if suppliers are still being acceptable to keep them in supplier panel. **In this re-evaluation it is taken into account:**

- **General Quality Index:** combined indicator that takes into account the service provided by the supplier (in terms of quality, logistic, customer satisfaction and cost of non quality)
- **Compliance with Gestamp Requirements**

The combined indicator GQI is automatically calculated by the system every month. Likewise, compliance with the requirements is updated daily. The results are available through Fullstep QA system, QlikView and through Supplier Portal (<https://www.gestamp.com/Suppliers>).

6.2.1 GQI Calculation

The GQI depends on **four variables** divided into **seven sub-variables**. Each of these variables bears a different weighting within the total GQI as shown in the following table:

Variable	Sub-Variable	Weighting
PRODUCT QUALITY	- ppm (Parts per Million)	15%
	- CPT (Claims per Thousand)	35%
NON-QUALITY COSTS	- Non-quality costs	10%
LOGISTICS	- Delivery Rate: Logistic Claims Level 1, 2 and 3	20%
	- Customer disruptions at the receiving plant: Logistic Claims Level 3	10%
	- Number of occurrences of premium freight	5%
CUSTOMER SATISFACTION	- Satisfaction complaints	5%

The supplier performance is calculated based on the following formula, which states the GQI as the sum up of the performance of the **seven sub-variables** (each one multiplied by his predefined weighing) divided into 100:

$$GQI = \frac{15 \times D_{ppm} + 35 \times D_{Claims} + 20 \times D_{DelivRate} + 10 \times D_{Disrupt} + 5 \times D_{PremFreight} + 10 \times D_{NonQualityCosts} + 5 \times D_{Satisf}}{100}$$

For the D_{ppm} , D_{Claims} , $D_{DeliveryRate}$, $D_{Disruptions}$ and $D_{Prem.Freight}$ the normalized values of the performance indicators explained in clause 6.1.1 are used. For the $D_{NonQualityCosts}$ the indicator described in 6.2.2.1 is used.

The normalized values allow comparison of suppliers with different targets. Thus

- a value of 100 corresponds to optimal compliance, that is, no claim, no delay ...
- those suppliers that, having had some demerit, continue to be within the objective, will receive a normalized value between 100 and 80.
- if the indicator is below the planned target but above the control limit, the value obtained will stay between 80 and 0.
- finally, if the control limit is not even reached, the value will be 0.

For example, suppose that the supplier A has reached 20 ppms while its target is 40 ppms and a second supplier B has reached 30 ppms but its target is 100 ppms. The ppm result of Supplier A is lower than the result of Supplier B, but if we take into account the different targets, it seems that target compliance of Supplier B is better than in the case of supplier A. In this example the normalized values are 90 for Supplier A and 94 for Supplier B, that clearly shows that the compliance with the target of Supplier B is better than supplier A

The formulas used to transform one indicator to its normalized value are explained in detail in Annex A

Finally, the D_{Satisf} component is obtained from the table available in clause 6.2.1.2.

Supplier classification according to GQI value

GQI value can be from 0 to 100. Once the GQI value is automatically calculated by the system, the supplier will be classified as A, B or C depending on specific range of value obtained.

Rating	GQI value	Definition
A	$GQI \geq 85$	Supplier with optimum performance in terms of periodical deliveries.
B	$60 \leq GQI < 85$	Supplier which must improve their performance in terms of quality or logistic.
C	$0 \leq GQI < 60$	Supplier with risky performance on its service in terms of quality or logistics. Supplier will be included within an Improvement Plant requested by Gestamp.

6.2.1.1 Non quality cost performance

Refers to **non-quality costs included both in claims and Alerts of Quality and Logistic.**

$$NonQuality\ Costs = \frac{Amount\ charged\ due\ to\ non\ quality}{Supplier\ turnover}$$

6.2.1.2 Satisfaction complaint performance $D_{Satisfaction}$

This variable measures the **quality of the service provided by the supplier.**

The value is obtained from the total number of satisfaction complaints raised during the last 6 months as shown in the following table.

Nº of satisfaction complaints	Performance
0	100
1	75
2	50
3	25
Equal or more than 4	0

6.2.2 Compliance with Gestamp Requirements

The supplier must meet the following requirements to be considered an approved supplier:

- **Quality Management System:** Supplier must have at least one quality certificate (IATF 16949 or ISO 9001) up-to-date and must provide a copy of it through Supplier Portal. As an exception, if approved by the customer, a system audit conducted by Gestamp with positive result (A or B) is valid.
- **Positive Process Audit:** In case that an on-site process audit has been conducted to the supplier by Gestamp, the result must be positive (A or B).

In case that any of the above requirements is **not** fulfilled, the supplier will be considered as not approved.

7 Related documents

Document ID	Description	Type
6359839341	Supplier management	Directive

8 Document history and revisions

Revision Number	Date	Description
1	24/10/16	New document
2	09/01/17	Modification in GQI's Formula: a) Change on ABC ranking values. Suppliers will be "A" when GQI ≥ 85 (before when GQI ≥ 80) b) Logistic Performance now has greater impact on GQI formula (from 15 to 25 points) and it is slightly reduced the impact of Quality Claims (from 42 to 35 points) and Satisfaction Complaints (from 8 to 5 points). c) Logistic claims are now categorized into different Levels: 1, 2, 3. d) For Quality Claims and Logistics performance's calculation, the severity of the claims (according to Level 1, 2, 3) are taken into account and, 6 rolling months are considered in the volume of deliveries.
3	21/11/17	Supplier Monitoring is based on the measurement and follow-up of 5 mandatory indicators: 1. ppm rate 2. CPT rate 3. Delivery Rate 4. Customer Disruptions 5. Premium Freights Supplier Re-evaluation is based on GQI indicator. Modification in GQI's Formula: a) Supplier can be ranked as "D" whenever any of the following requirements are not fulfilled by the supplier through Supplier Portal: a. Quality Management System (QMS) or, i. ISO 9001 or ii. ISO TS 16949 or iii. System Audit (A or B result) b. Product Safety Officer (PSO) or, c. Corporate Social Responsibility (CSR) or, d. Result of "C" on the last on-site audit performed to the supplier b) Supplier Assessments has now deleted from GQI formula. c) Therefore, logistic Performance weighting is now increased to from 25 points to 35 points.

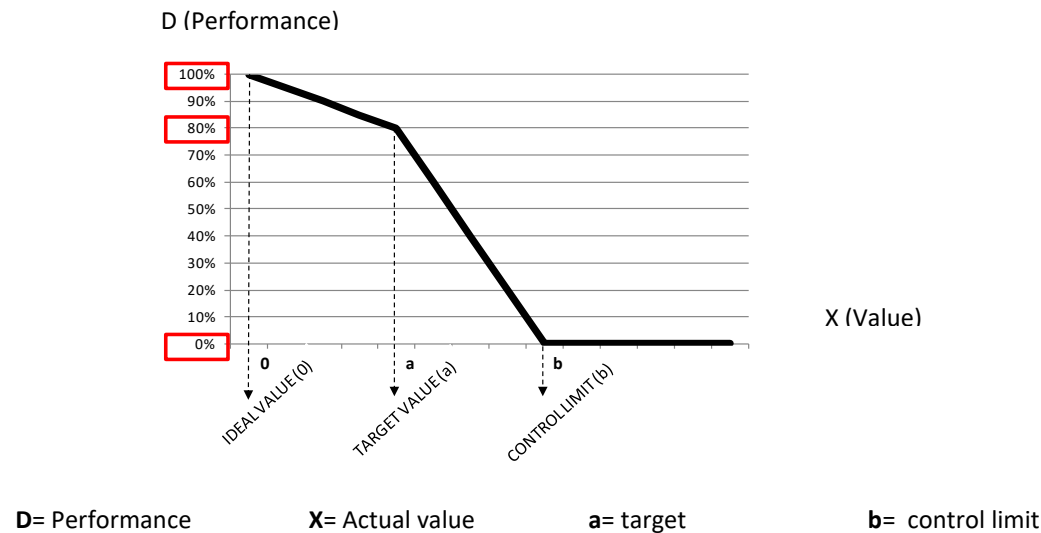
Revision Number	Date	Description
		d) Logistic Performance considers now additionally the number of occurrences of premium freights together with the Disruptions at the receiving plant
4	18/10/18	Clause 6.2.2 Supplier classification. Clarification of the down-grading rules. ISO/TS is no longer a valid certificate. A system audit conducted by Gestamp is only valid If approved by the customer.
4.1	06/03/2019	Link to supplier's portal updated
5	01/02/2022	Included concept of normalizing of scale to a better understanding of the GQI formula. Split the re-evaluation of the supplier into the global indicator GQI and the fulfilment of the requirements of Gestamp. Elimination of "D-Supplier" and introduction of "Approved and Not approved" supplier Updated the requirements to be an approved supplier.

9 ANNEX A: FORMULAS AND EXAMPLE

The measurement of the quality product, non-quality costs and logistic is calculated on the basis of a target and a control limit and according to the following formulas:

$D = 100 - 20 \times \frac{X}{a}$	if $0 \leq X \leq a$	When actual value (X) is less than or equal to the target (a) , the performance percentage (D) will stay between 100% and 80%, therefore it will be a good result.
$D = 80 \times \frac{(X - b)}{(a - b)}$	if $a < X \leq b$	If the actual value (X) is greater than the target (a) , without exceeding the control limit (b) , the performance percentage (D) will stay between 80% and 0%. The higher the value, the worse the result.
$D = 0$	if $b < X$	Finally, if the actual value (X) is greater than the control limit (b) , the performance percentage (D) will be 0%,

Where:



Example:

Considering a "Supplier Y" which has delivered **7.719.000 parts** during the last 6 months in **861 deliveries**. Out of delivered parts, **23 parts** have been identified as non-conforming and **4 Quality Claims** (3 Claims Level 1 and 1 Claim Level 2) have been raised until that month. There have been **two incorrect deliveries** raised one as **Logistic Claim Level 3** and another one as **Logistic Alert**. Furthermore, a **premium freight** has been tracked during that period in the logistic alert. Taking into account target and control limit for each variable, the performance is calculated following next rules:

Product Quality = $15 \times D_{\text{ppm}} + 35 \times D_{\text{Claims}} = 15 \times 0,97 + 35 \times 0,67 = \mathbf{38,07}$ (out of 50 points)

D_{ppm} : ppm Performance (%)

- X = ppm value
- $\text{ppm} = \frac{\text{Number of defective parts}}{\text{Total delivery of parts}} \times 1.000.000 = \frac{23}{7.719.000} \times 10^6 = 2,98$
- a = target = 20
- Since X value (2,98) is less than "a" value, then the formula to be applied is:

$$D_{\text{ppm}} = 100 - 20 \times \frac{X}{a} = 100 - 20 \times \frac{2,98}{20} = \mathbf{97,02 \%}$$

D_{CLAIMS} : Claims Performance (%)

- X = Claims per Thousand (CPT) value
- $\text{CPT} = \frac{\Sigma(\text{Weighted Quality claims})}{\text{Number of deliveries in the last 6 months}} \times 10^3 =$

$$\frac{(3 \text{ClaimsLevel1} \times 1 \text{Point} + 1 \text{ClaimLevel2} \times 2 \text{Points})}{861} \times 10^3 = 5,80$$
- a = target = 5
- b = control limit = 10
- Since X value (5,80) is bigger than "a" (5) and less than "b" (10), then the formula to be applied is:

$$D_{\text{Claims}} = 80 \times \frac{(X - b)}{(a - b)} = 80 \times \frac{(5,80 - 10)}{(5 - 10)} = \mathbf{67,2 \%}$$

Non-Quality Costs = $10 \times D_{\text{NonQualityCosts}} = 10 \times 0,996 = 9,96$ (out of 10 points)

$D_{\text{NonQualityCosts}}$: Non-Quality Costs Performance (%)

- X = Non-Quality Costs (NQC) value
- $\text{NQC} = \frac{\text{Associated costs due to non quality}}{\text{Supplier turnover}} = \frac{0,26}{45.698,57} = 0,004$
- a = target = 0,30

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- $b = \text{control limit} = 0,50$
- Since X value (0,004) is less than " a " value then the formula to be applied is:

$$D_{\text{NQC}} = 100 - 20 \times \frac{X}{a} = 100 - 20 \times \frac{0,004}{0,3} = \mathbf{99,96 \ \%}$$

Logistics = $20 \times D_{\text{DeliveryRate}} + 10 \times D_{\text{Disruptions}} + 5 \times D_{\text{PremiumFreights}} = 20 \times 0,972 + 10 \times 0,24 + 5 \times 0,996 = 23,328 + 2,4 + 4,98 = \mathbf{30,7}$ (out of 35 points)

D_{DeliveryRate}: Delivery Rate Performance (%)

- $X = \text{Delivery Rate value}$
- $\text{Delivery Rate} = \frac{\Sigma(\text{Weighted Logistic Claims (Level 1,2,3)})}{\text{Number of deliveries in the last 6 months}} \times 100 = \frac{1 \times 6 \text{ points}}{861} \times 100 = 0,7$
- $a = \text{target} = 5$
- $b = \text{control limit} = 10$
- Since X value (0,7) is less than " a " value, then the formula to be applied is:

$$D_{\text{DeliveryRate}} = 100 - 20 \times \frac{X}{a} = 100 - 20 \times \frac{0,7}{5} = \mathbf{97,2 \ \%}$$

D_{Disruptions}: Customer disruptions at receiving plant Performance (%)

- $X = \text{Disruptions Rate value}$
- $\text{Disruptions Rate} = \frac{\Sigma(\text{Weighted Logistic Claim Level 3})}{\text{Number of deliveries in the last 6 months}} \times 100 = \frac{1 \times 6 \text{ points}}{861} \times 100 = 0,7$
- $a = \text{target} = 0$
- $b = \text{control limit} = 1$
- Since X value (0,7) is bigger than " a " value, then the formula to be applied is:

$$D_{\text{Disruptions}} = 80 \times \frac{(X-b)}{(a-b)} = 80 \times \frac{(0,7-1)}{(0-1)} = \mathbf{24 \ \%}$$

D_{PremiumFreights}: Number of occurrences of premium freight Performance (%)

- $X = \text{Premium freights Rate value}$
- $\text{Premium freights Rate} = \frac{\Sigma(\text{Weighted Logistic Claims (Level 1,2,3)} + \text{Logistic Alerts})}{\text{Number of deliveries in the last 6 months}} \times 100 = \frac{1}{861} \times 100 = 0,1$
- $a = \text{target} = 5$
- $b = \text{control limit} = 10$
- Since X value (0,1) is less than " a " value, then the formula to be applied is:

$$D_{\text{PremiumFreight}} = 100 - 20 \times \frac{X}{a} = 100 - 20 \times \frac{0,1}{5} = \mathbf{99,6 \ \%}$$

10 ANNEX B: OVERVIEW OF INDICATORS

INDICATOR	FORMULAS
ppm	$ppm = \frac{\text{Number of defective parts}}{\text{Total delivery of parts}} \times 1.000.000$
CPT	$CPT = \frac{\Sigma(\text{Weighted Quality claims})}{\text{Number of deliveries in the last 6 months}} \times 1.000$
Non-Quality Costs	$\text{Costs of Non Quality} = \frac{\text{Amount charged due to non quality}}{\text{Supplier turnover}}$
Delivery Rate	$\text{Delivery Rate} = \frac{\Sigma(\text{Weighted Incorrect Deliveries})}{\text{Number of deliveries in the last 6 months}} \times 100$
Customer disruptions at receiving plant	$\text{Disruptions} = \frac{\Sigma(\text{Weighted Incorrect Deliveries with customer disruption})}{\text{Number of deliveries in the last 6 months}} \times 100$
Number of occurrences of Premium freight	$\text{Premium Freights} = \frac{\Sigma(\text{Weighted Incorrect Deliveries with premium freights})}{\text{Number of deliveries in the last 6 months}} \times 100$