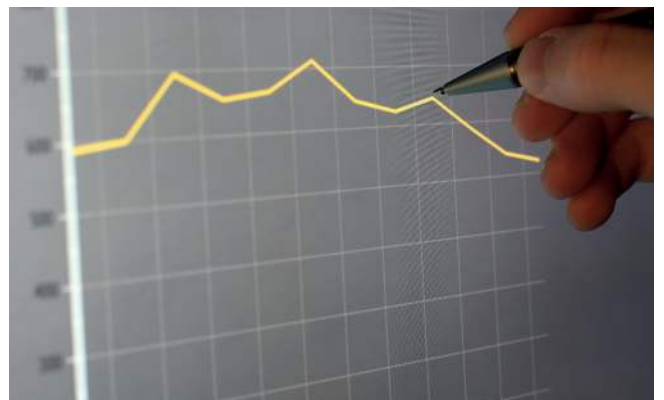


# CAUSE ANALYSIS AND PROBLEM SOLVING IN QUALITY EMERGENCIES

- > Immediate reaction and task force
- > Comprehensive error-cause analysis
- > Risk avoidance thanks to durable quality strategies



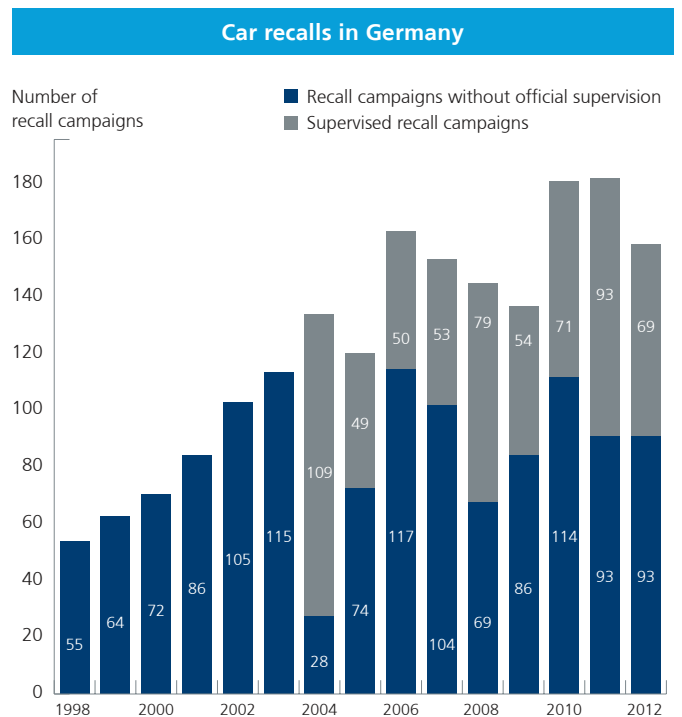
## STAUFEN.

Your Partner on the way to Top-Performance

## WORST CASE FOR QUALITY STANDARDS

Increasing warranty expenses and recourse claims as well as recall campaigns are an almost daily occurrence in the automotive industry - and are associated with enormous costs and lasting damage to the image of manufacturers and their system suppliers.

In recent years, significantly more cars were recalled than ever before.



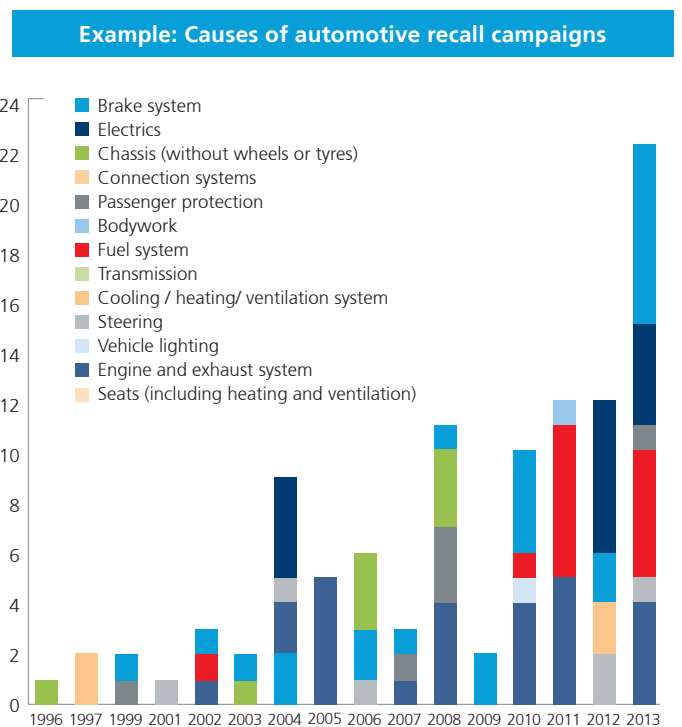
Source: Federal Motor Transport Authority (KBA)

The causes of these increasing risks are clearly obvious:

- > Ever more complex vehicles and technologies with a direct impact on their proneness to errors
- > At the same time: ever shorter development cycles
- > Ever more extensive development and value creation shares of suppliers
- > The policy of carry-over parts and the cost-pressure of OEMs results in systems being produced in many different locations and fitted to a wide range of vehicles, thus significantly increasing the risk and scope of recall actions

For that reason, it is no surprise that increasing costs and a greater number of recalls put many manufacturers under considerable pressure.

Even if German manufacturers still do quite well in comparison, there is an immanent risk in the interaction of mechanics, electronics and other components. Stringent quality management and quick reaction are required to keep it under control.



Source: ADAC recall database (1995-2013)

# CONTROLLING DEVIATIONS THROUGH EFFECTIVE PROBLEM SOLVING

- > **Speedy analysis of faults and quality failures**
- > **Resilient clarification of the physical cause-effect principle**
- > **Definition of sustainable remedial action**
- > **Installation of task force teams and completion of actions**

Quality Excellence is a service package offering you valuable assistance in the rapid analysis of causes as well as in preventative action. Our experts can rely on many years of experience and success with acute quality problems and risk prevention. We offer you readiness for action and immediate access to expertise in all analytical tools as well as in escalation management.

This allows you an accurate estimate of scope, impact and implementation of countermeasures with a long-term effect. You experience our structured approach and increase your internal problem solving competency.

Make use of the very earliest error reports from the field for the systematic identification of causes and the definition of remedial measures. The next recall campaign that does not happen will confirm your action.

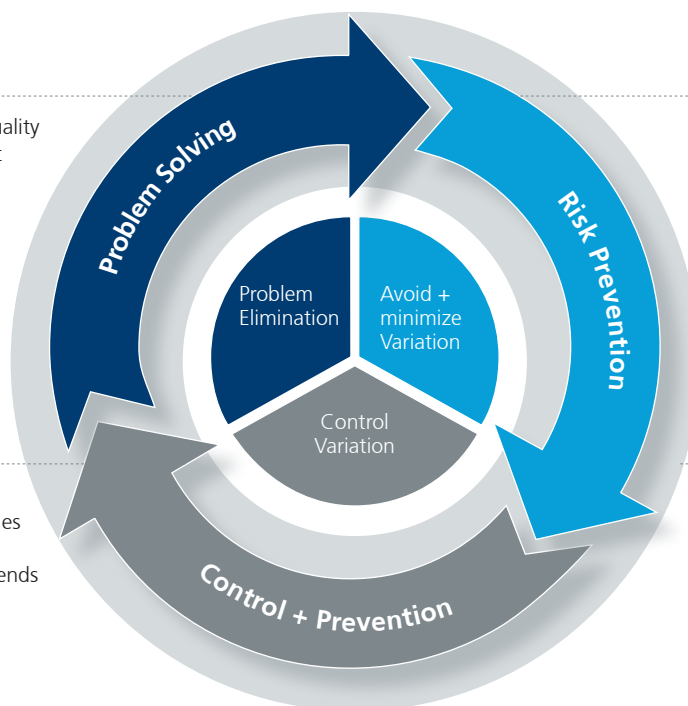
## PROJECT METHODOLOGY – THE **STAUFEN** QUALITY EXCELLENCE APPROACH

### PROBLEM SOLVING

- > Rapid and effective reaction to acute quality problems that interfere with an efficient value creation chain
- > Identification of the main cause rather than dealing with the symptoms

### CONTROL + PREVENTION

- > Managing risks - full awareness of product and process variations at all times
- > Proactive problem avoidance thanks to control and identification of negative trends



### RISK PREVENTION

- > Assessment of potential internal and external product and process risks
- > Reduction of product and process development times

### QUALITY STRATEGY

- > Suitable quality system for the sustainable support of the business strategy
- > Establishment and further development of a problem solving culture
- > Quality control instead of mere quality assessment

- > Based on structured problem solving and problem avoidance, Staufen has developed a comprehensive approach to quality management: Staufen Quality Excellence (SQE).
- > Featuring defined methods and tools, the SQE model enables any organisation to solve or prevent problems according to the respective phase in the process/ product life cycle.

# BEST CASE FOR QUALITY EMERGENCIES

We know all about quality problems. Because we know how to apply established methodologies and systematic approaches, we are able to analyse complex error patterns rapidly and with scientific accuracy. Please contact us for examples and references.

CUSTOMER	NATURE OF PROBLEM	CAUSE	PROJECT DURATION
<b>Gearbox manufacturer</b>	Error at start-up - vehicle in emergency mode	Silting effect in hydraulic system valve	4 weeks
<b>Automotive OEM</b>	Unwanted acceleration in diesel engine and major engine failure	Wire chipping of the diesel injector fuel filter - only for injectors with max. interference fit	4 weeks
<b>Automotive OEM, Tier 1 and Tier 2</b>	Rupture of drive shaft from gearbox - vehicle standstill	Faulty matching of ball, sleeve and hub due to massive component tolerance deviation	5 weeks
<b>Tier 1 Suppliers</b>	Leakage in the high-pressure fuel pump (petrol) - supply stoppage to OEM	Grooves on the interior surface of the cast housing as the result of faulty mechanical processing	2 weeks
<b>Aircraft manufacturers</b>	Cracks in the bearing structure of the wings - safety checks for airworthiness	Lack of stiffness in certain slots	6 weeks
<b>Energy generation</b>	Turbine blade rupture - major turbine damage	Porosity following the casting process at one of the two blade suppliers	6 weeks

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