



CQI-9
***Special Process: Heat Treat System
Guideline***

Agenda

- AIAG Special Process Initiative
- Heat Treat Work Group
- Heat Treat System Assessment Scope
- Heat Treat System Assessment Requirements
- Conclusions



AIAG Special Process Initiative

Definition of Special Processes

- Special Processes result in components whose quality, reliability and durability may be compromised by potential variation in the process and the resulting defect is not feasibly detected prior to use

Mission

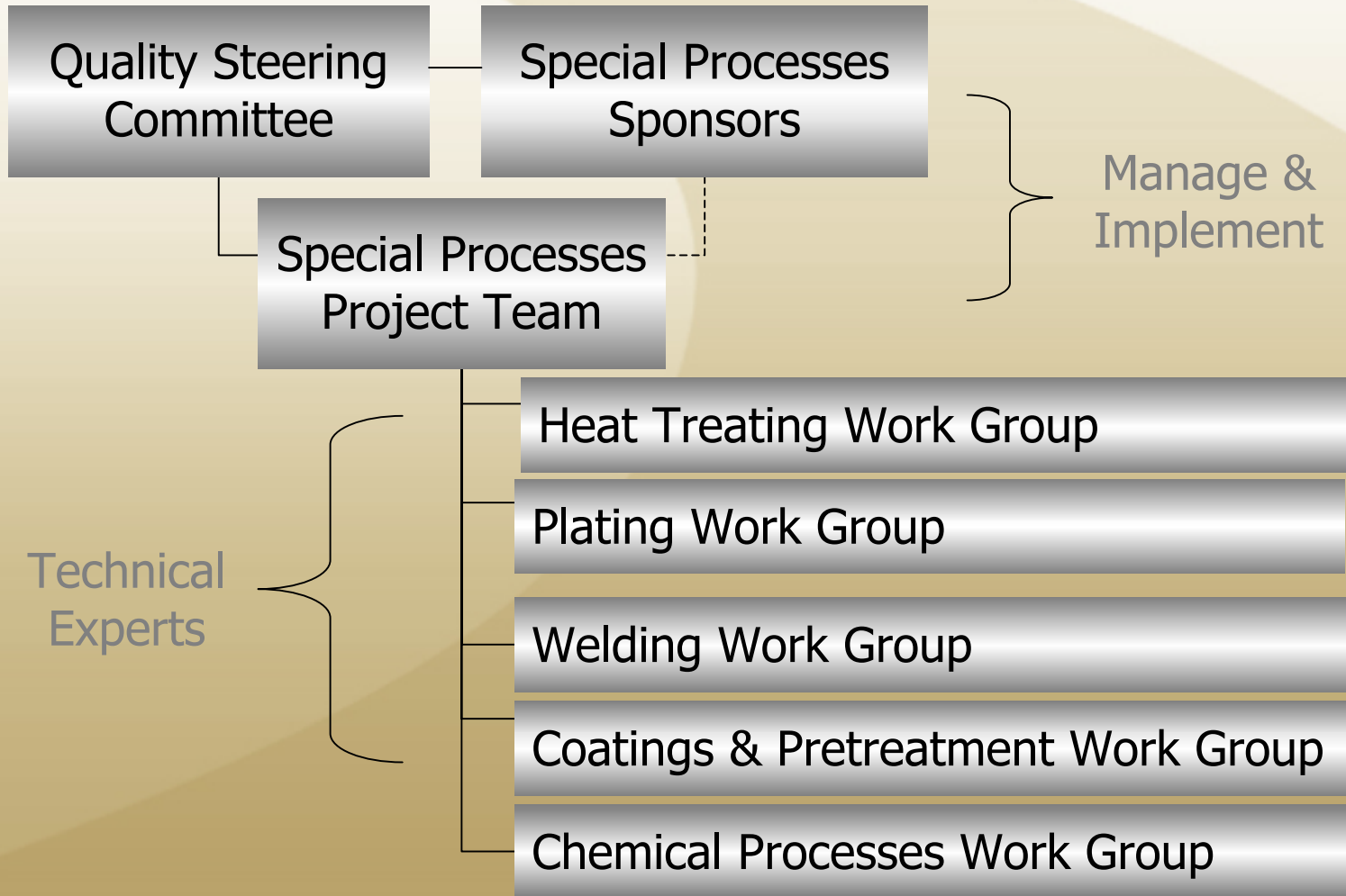
- Ensure quality, reliability and durability of components from “Special Processes”



Goal

- Reduction of campaigns, spills, recalls and warranty claims related to components from “Special Processes”

Project Team Organization





Heat Treat Work Group

Need for HTSA

- There have been multiple quality issues in the past several years as a direct result of heat treat failures
- The domestic OEMs have monitored and audited heat treat facilities differently over the last several years
- This has resulted in suppliers having to conform to several requirements from different customers

HTSA TECHNICAL COMMITTEE

- Core Members
 - Phil Mikula – TRW
 - Ed Jamieson – Bodycote
 - Brett Lenhausen – GM
 - Mel Dilley – DCX
 - Young Kim – Ford
 - Murli Prasad – GM
 - Curt Holmes – Metaldyne
 - Pete Batche - Textron
- Supporting Members
 - Mike Wiezbowski – DCX
 - Mike Oberg – Induction Services
 - Medina Kaknjo – Ford
 - Todd Bensinger – DCX
 - Dave Calkins – DCX
 - Jeff Martin – ZF
 - Leonard Gadzinski – Textron
 - Dean Higdon – Textron
 - Tim Green – BSI
 - Dave Hernacki – Commercial
 - Scott Broderson - DCX



Heat Treat System Assessment Scope

General

- The HTSA can be used to assess an organization's ability to meet the requirements in this document, as well as customer, regulatory, and the organization's own requirements. The HTSA can also be used between an organization and its suppliers.

Goal

- The goal of the HTSA is the development of a heat treat management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the supply chain.

Goal

- This HTSA is intended to provide a common approach to a heat treat management system for automotive production and service part organizations.



Scope

- The HTSA is applicable to sites where customer-specified parts for production and/or service are processed throughout the automotive supply chain.

Assessment Process

- Ongoing assessments shall be conducted annually, unless otherwise specified by the customer.
- Each assessment shall include a review of the organization's systems using the HTSA.
- Successive Job Audits shall sample parts from different automotive component manufacturers that require compliance to the HTSA document.

Assessment Procedure

- Obtain current copy of *CQI-9 Special Process: Heat Treat System Assessment Guideline* from AIAG.
- Identify all heat treat processes to which *CQI-9 Special Process: Heat Treat System Assessment Guideline* applies. Record these processes on the HTSA.

Assessment Procedure

- Complete the HTSA, determining the level of compliance. Sections 1-3 shall be completed first and independent of any job audits performed. A minimum of one job audit shall be performed during each assessment.

Assessment Procedure

- Address each “unsatisfactory” item and determine corrective action, including root cause analysis and implementation of the corresponding corrective action (s). Records of corrective action, including verification, shall be maintained.

Assessor Qualifications

- Assessors shall have the following specific experience to conduct the HEAT TREAT SYSTEM ASSESSMENT portion of the assessment:

Be an experienced quality management system (QMS) internal auditor (e.g., ISO 9000:2000, ISO/TS 16949:2002)

Proof

- The organization shall keep records as evidence of compliance to the requirements identified in the HTSA, as well as all appropriate action plans to address any unsatisfactory ratings. These records shall be readily available for review by any customer requiring compliance to the requirements within this document.



Heat Treat System Assessment Requirements

Process Tables

- The Process Tables specify the tolerances of process parameters and the frequencies for checking process control parameters and parts. The Requirements/Guidelines in the HTSA form will notify the assessor when to refer to the Process Tables.

Process Table I

– Process Table 1 – Ferrous

- Carburizing
- Carbonitriding
- Carbon Restoration or Correction
- Neutral Hardening (Quench and Temper)
- Austempering
- Martempering
- Tempering
- Precipitation Hardening – Aging

Process Table 2

- Process Table 2 – Ferrous
 - Nitriding (Gas)
 - Ferritic Nitrocarburizing (Gas or Salt)



Process Table 3

- Process Table 3 – Aluminum Heat Treating



Process Table 4

- Process Table 4 – Induction Heat Treating (Ferrous)

Process Tables

- These Process Tables contain requirements for:
 - 1. Process and Test Equipment
 - 2. Pyrometry
 - 3. Process Monitor Frequencies
 - 4. In-Process/Final Test Frequencies
 - 5. Quenchant and Solution Test Frequencies

Conclusion

- Both DaimlerChrysler and General Motors have requirements for the use of the HTSA in their Company Specific Requirements.