Qualité Endeavour

Quarterly Newsletter from Équipe Qualité Consultants, Issue No. 21, April 2017

About EQC India

Équipe Qualité Consultants *(EQC India) comprises of a team of quality professionals engaged in providing quality management and welding services for the infrastructure sector and manufacturing units.*

EQC's areas of Operation of are:

- *Supplier assessment, audits and development*
- *Review and approval of Quality Plans and Field Quality Plans*
- *Field Quality Audits*
- *Consultancy for PED certification/ CE Marking*
- *Welding Qualifications as per ASME and EN/ISO*
- *Quality Management System & IMS implementation*
- *Quality Improvement Studies*
- *Documentation & Implementation of ISO: 3834 Series for Quality requirements for fusion welding of metallic materials and EN: 15085-2 for railway vehicles.*
- *Technical Support and Training on Codes and standards on Steels including Chinese, Russian, Indian, EN and ASME codes.*
- *Technical Support, Consultancy & Training on Welding Technology, NDT, Industrial Painting, Dynamic Balancing & Engineering Materials.*

EQC India was started in 2009 to provide value added quality management services to Industry.

Inspiring Quality Since 2009

In the present issue of Qualité Endeavour, we cover tips on welding stainless steels.

Stainless steels are chosen for construction because of their enhanced corrosion resistance, high temperature oxidation resistance or their strength. Various types of stainless steels have different microstructures, different welding characteristics and susceptibility to defects.
The article gives basic guidance on welding processes and techniques which can be employed in fabricating stainless steel components without impairing the corrosion, oxidation and mechanical properties of the material or introducing defects into the weld.

We also cover in this issue a new clause in ISO 9001-2015. More than eighteen (18) months have passed since the release of new ISO: 9001 2015 and most organisations are yet to decipher and implement properly the requirements of clause 4.1. Context of the organization is a new requirement in ISO 9001-2015, stating an organization must consider both the internal and external issues that can impact its strategic objectives and the planning of the QMS. The requirements regarding the context of the organization do sound a little bit vague, so what does this clause actually require? Read on!!

Happy Reading!

Please do send in your comments & suggestions for improvement of the newsletter.

Editor, 1st April 2017

NEW CLIENTS/ CONTRACTS/ PARTNERS DURING THE LAST QUARTER

GMR Creating tomorrow today **GMR Bajoli Holi Hydropower Private Limited**	POWER MECH INDUSTRI PRIVATE LIMITED	RG Industries An ISO Certified Company

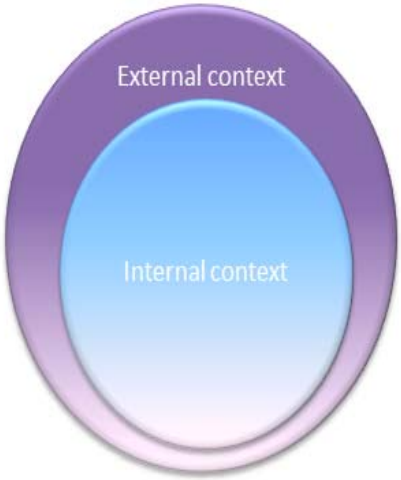
Weldability of Stainless Steels

Most stainless steels are considered to have good weldability and may be welded by several arc welding processes. For any of these processes, joint surfaces and any filler metal must be clean. The coefficient of thermal expansion for the austenitic types is 50% greater than that of carbon steel and this must be considered to minimize distortion. Less welding heat is required to make a weld because the heat is not conducted away from a joint as rapidly as in carbon steel.

STAINLESS STEELS TYPES, PROPERTIES & WELDING

SS TYPE	PROPERTIES	WELDING CHARACTERISTICS
FERRITIC STAINLESS STEELS	The ferritic stainless steels contain 10.5 to 30% Cr, up to 0.20% C and sometimes ferrite promoters Al, Nb (Cb), Ti and Mo. They are ferritic at all temperatures, do not transform to austenite and therefore, are not hardenable by heat treatment. This group includes the more common types 405, 409, 430, 442 and 446.	They are characterized by weld and HAZ grain growth which can result in low toughness of welds. To weld the ferritic stainless steels, filler metals should be used which match or exceed the Cr level of the base alloy. Austenitic Types 309 may be used for dissimilar joints. To minimize grain growth, weld heat input should be Minimized, Preheat should be limited to 300-450°F and used only for the higher carbon ferritic stainless steels.
MARTENSITIC STAINLESS STEELS	The martensitic stainless steels contain 11 to 18% Cr, up to 1.20% C and small amounts of Mn and Ni and, sometimes, Mo. These steels will transform to austenite on heating and, therefore, can be hardened by formation of martensite on Cooling. This group includes Types 403, 410, 414, 416, 420, 422, 431 and 440.	They have a tendency toward weld cracking on cooling when hard brittle martensite is formed. Chromium and carbon content of the filler metal should generally match these elements in the base metal. Type 410 filler can be used to weld types 402, 410, 414 and 420 steels. When it is necessary to match the carbon in Type 420 steel, Type 420 filler, should be used. Preheating and interpass temperature in the 400 to 600°F) range is recommended for most martensitic stainless steels. Steels with over 0.20% C often require a post weld heat treatment to soften and toughen the weld.
AUSTENITIC STAINLESS STEEL	The austenitic stainless steels contain 16-26% Cr, 8-24% Ni, Mn, up to 0.40% C and small amounts of a few other elements such as Mo, Ti & Nb (Cb).The balance between the Cr and Ni + Mn is normally adjusted to provide a microstructure of 90-100% austenite. These alloys are characterized by good strength and high toughness over a wide temperature range and oxidation resistance to over 1000°F (538°C). This group includes Types 302, 304, 310, 316, 321 and 347.	Filler metals for these alloys should generally match the base metal but for most alloys, provide a microstructure with some ferrite to avoid hot cracking as will be discussed further. To achieve this, Type 308 is used for Type 302 and 304 and Type 347 for Type 321. The others should be welded with matching filler. Type 347 can also be welded with Type 308H filler. These filler materials are available as coated electrodes, solid bare wire and cored wire. Type 321 is available on a limited basis as solid and cored wire. Two problems are associated with welds in the austenitic stainless steels are: 1) Sensitization of the weld and HAZ and 2) Hot cracking of weld metal.

ISO: 9001 2015 – Context of the Organisation

Clause 4.1 says, The organization shall determine *external and internal issues* that affect its ability to achieve the intended results of its quality management system. The organization shall monitor and review the information about all these external & internal issues. Most organisations going for transition to the 2015 version have been facing a tough time understanding and implementing this clause. For easy reference, list of a probable External and internal issues relevant to the QMS are listed below:	

External Issues	Internal Issues
Ecological/Environmental Issues	**Product and service offerings**
Current legislation	**Governance, organizational structure, roles, and accountability**
Anticipated future legislation	**Regulatory requirements**
International legislation (global influences)	**Policies and goals, and the strategies that are in place to achieve them,**
Regulatory bodies and processes	**Assets (e.g., facilities, property, equipment and technology)**
Government policies, terms and change	**Capabilities, understood in terms of resources and knowledge (e.g., capital, time, people, processes, systems, and technologies)**
Funding, grants, and initiatives	**Information systems, information flows, and decision-making processes (both formal and informal)**
Market lobbying groups	**Relationships of the staff/volunteers/members and the perceptions and values of their internal stakeholders including suppliers and partners**
Wars and conflicts	**Organization's culture**
Consumer attitudes and opinions	**Standards, guidelines, and models adopted by the organization**
Media views	**Employee motivation and engagement**

QUALITY AWARDS

ACI's Airport Service Quality (ASQ) is the world-renowned and globally established and reputed global benchmarking programme measuring passengers' satisfaction whilst they are travelling through an airport.

Making an airport more competitive is good business, and increasing passenger satisfaction will provide the necessary edge over competition. The Airports Council International (ACI) announced in March 2017, the winners of the 2016 Airport Service Quality (ASQ) Awards. Introduced in 2006, ASQ is a global benchmarking program that measures passengers' satisfaction while they are traveling through an airport. The program provides research tools and management information to airport facilities operators to help them better understand passengers' views and what they want from an airport's products and services. Following awards have been bagged by Indian Airports under Asia- Pacific Region for 2016.

Criteria	*Airport*	*Position*
Best Airport by Region (over 2 million passengers per year)	***Delhi Airport (DEL)*** ***Mumbai Airport (BOM)***	***2nd Place (Tie)***
Best Airport by Size ***(2-5 million passengers per year)***	***Jaipur Airport (JAI)*** ***Srinagar Airport (SXR)***	***1st Place (Tie)*** ***2nd Place (Tie)***
Best Airport by Size (5-15 million passengers per year)	***Hyderabad Airport (HYD)***	***1st Place (Tie)***

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Équipe Qualité Consultants also provides consultancy and customized training for QA, QC/ Inspection/ Welding/ Engineering / Power Professionals/ Fabricators in the following areas:

1. Welding Technology & Consumables	***2. Welding Qualifications as per ASME IX***
3. Welding Qualifications as per EN/ISO	***4. Engineering Materials - Steels***
5. Welding Certification as per ISO: 3834	***6. Railway Certification as per EN: 15085-2***
7. ISO:9001, ISO: 14001 & OHSAS 18001	***8. Factory Production Control (FPC) for CE***
9. QA/QC for Chinese Power Equipment	***10. Industrial Painting Systems***

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Inspiring Quality Since 2009