ICI Process Control Standards and Nadcap® Casting Program

Complementary Systems with Different Objectives

Brian J. Ferg
Investment Casting Institute Member Emeritus
August 16, 2023
The Mission of the Process Control Standards Subcommittee is to create, establish and summarize in a numerical manner an industry accepted method for evaluating the degree to which process controls are in place and utilized by the Precision Investment Casting foundry.

PCS was designed by foundries and suppliers to

- Enhance the Industry
  - Effectiveness
  - Profitability
  - Overall performance
- Provide foundries with a mechanism for self-evaluation as a means to facilitate continuous improvement
A survey of a foundry’s operational areas (wax, shell and foundry) and of the management team is conducted by a Process Control Certified Surveyor PCCS.

Scoring is done on both a qualitative and quantitative basis, addressing foundry applicable processes, equipment, policies and practices.

Certification recommendation is based on the degree to which the foundry is in compliance with what is considered an optimal implementation:
- Bronze – 40% compliant (self-certification by Internal PCCS)
- Silver – 60% compliant (requires independent PCCS)
- Gold – 80% compliant (requires independent PCCS)

Certification recommendations are made by PCCS and are reviewed and approved by the ICI Process Control Certification Panel.
So, how do the programs differ?
Venn Diagram Comparison of Both Programs
What do these programs have in common?

Nadcap® CASTING STANDARDS

ICI® PROCESS CONTROL STANDARDS

Both programs address Wax, Shell and Casting

Both programs have their place in industry

Both offer value to the users
What are the objectives of these programs?

**Objective**: Strengthen Aerospace Industry

**Objective**: Foster foundry growth and advancement, strengthening the Investment Casting Industry

**Areas Addressed**
- Nadcap® CASTING STANDARDS
- ICI® PROCESS CONTROL STANDARDS

**Value**
- APPLICATION
Who designed these programs?

**Nadcap® CASTING STANDARDS**

**Areas Addressed**

- Aerospace OEMs
- Airbus Commercial
- BAE Systems
- Collins Aerospace
- Honeywell Aerospace
- Leonardo Helicopters
- MBDA
- MTU
- Rolls-Royce
- Safran Group

**Application Value**

- Current & Former Employees of:
  - Bescast Inc.
  - Ceramet – 3M
  - Consolidate Precision Products
  - Doncasters Group Ltd.
  -ESCO
  - General Electric
  - Howmet Corporation
  - Investment Casting Institute
  - Kovatch Casting
  - Paramelt
  - Precision Castparts Corporation
  - S&A Consulting Group Ltd.
Is participation required?

**Nadcap® CASTING STANDARDS**
- Participation is purely voluntary

**ICI® PROCESS CONTROL STANDARDS**
- Participation may be required by Aerospace OEM’s in the future

May be required by Aerospace OEM’s in the future

Participation is purely voluntary
Is there a cost associated with the programs?

Audits have a fee associated with them.

Free internal survey
Nominal charge for independent survey
Who performs the evaluation on your foundry?

Audits are performed by Performance Review International.

Surveys are performed by certified company Internal Surveyor or ICI certified Independent Surveyor.
Is there any training associated with the programs?

Training is offered to foundry personnel for a fee

Free training and surveyor certification
What are the deliverables of each program?

**Nadcap® CASTING STANDARDS**
- Designers
- Requirements
- Cost
- Who?

**ICI® PROCESS CONTROL STANDARDS**
- Requirements
- Designers

**OBJECTIVE**

**PROGRAM**
Program that can be applied at the foundry’s discretion with regular or sporadic frequency to measure and improve the quality of process control systems

**Snapshot of compliance with company documents**
Are there assessments performed on foundry management?

Foundry management is not evaluated

Management is assessed for:
- Visibility
- Support
- Awareness
- Quality review participation
How can foundries be impacted by the results of each program?

**Nadcap® CASTING STANDARDS**

- Passing audit will result in
  - Nadcap® certification
  - May be required by aerospace OEM’s

- Failing audit will
  - Revoke Nadcap certification
  - Identify areas of deficiency
  - May disrupt business with aerospace OEM’s

**ICI® PROCESS CONTROL STANDARDS**

- Plant certification can be used to
  - Reduce cycle time & costs
  - Bolster employee morale
  - Support marketing efforts to entire industry
  - “Bragging Rights”

- Failing survey will
  - Identify shortcomings
  - Identifying path(s) to self improvement
How do the program rating systems differ?

**Nadcap® CASTING STANDARDS**
- Designers
- Requirements
- Cost
- Who?
- Management Review
- Impact of Results
- Objective

**ICI® PROCESS CONTROL STANDARDS**
- Requirements
- Designers
- Areas Addressed
- Application
- Value
- Qualitative / Quantitative (Scoring 0 to 5) evaluating KIVs and KOVs against industry standards in up to six areas

**Binary (Yes / No)**
Thank you.

Questions?