



Cast in Steel

After the smashing success of the Viking Axe at the inaugural competition (www.sfsa.org/castinsteel), Steel Founders' Society of America (SFSA) is proud to announce the second Cast in Steel Competition for the 2019-2020 school year. This competition, sponsored by the SFSA Foundation, is focused on the use of modern casting tools such as computer modeling, alloy development and selection, and additive manufacturing; to design and produce a functioning cast Bowie Knife. Each entry shall include the team's Bowie Knife to be tested and a video and technical report documenting the design and manufacturing process. Each Bowie Knife must have a blade at least 9 inches and not to exceed 14 inches, an integrally cast tang and guard, and a cast pommel that does not have to be integrally cast.



*Cast in Steel Viking Axe 2019 Best Engineering Design
Texas State University*



The knife casting should utilize the casting process to the fullest extent possible to get the best quality, unique features and near net shape. Each entry will be eligible for three awards: the best design and process as presented in the technical report, the best video on the project not to exceed 5 minutes, and the best at the performance evaluation.

The technical reports and video entries will be judged by Master Foundrymen and Lifetime SFSA members. The performance evaluation will include chopping and sharpness tests similar to those seen in the History Channel program, *Forged in Fire*. The evaluation will be at the AFS MetalCasting Congress in Cleveland, OH on April 21-23, 2020.

More details, including resource materials and FAQs, will be on www.sfsa.org/castinsteel. SFSA is happy to help answer questions or to locate resources like steel casting experts, steel metallurgy consultants, etc. (email Raymond at monroe@sfsa.org).

Teams

Teams for competing in the Cast in Steel competition must include:

- 2 to 5 university students
- A faculty advisor
- A commercial foundry (SFSA will recruit for interested teams)

Requirements

The project for this competition is a Bowie Knife

- A functioning Bowie Knife* is to be provided for testing.
 - Knife must have: 9 to 14-inch blade, an integrally cast tang and guard, and a cast pommel that does not have to be integrally cast
- A description of the product features including the historical design that qualifies it as a Bowie Knife.
- Pictures of the casting after shake-out, the casting with the gates and risers removed, and the finished blade/tang/guard so the creative use of the casting process can be evaluated.
- A technical report* describing the design and production which can include:
 - Rationale behind the design
 - Alloy and processing to get properties
 - Production processing used
 - Description of the manufacturing
 - Test results for the quality and properties
 - Modeling for process and performance
- A video* of the project of not more than 5 minutes

**SFSA will own all submitted data package and Bowie knife.*

Schedule

- Proposed teams and preliminary plan due Dec 31, 2019.
 - Early registration is advised to get a head start on foundry partner, design and manufacturing plan, and other tips and tricks to be posted on www.sfsa.org/castinsteel
- Submitted reports, video, and Bowie knife due April 3, 2020.

Evaluation

- Competition will be judged by panel of steel experts selected by SFSA

Prizes

- Technical Report \$500/student
- Video \$500/student
- Performance \$500/student
- Special recognition \$200

To enter a team in the Cast In Steel Competition complete the following form:

School Name:

Faculty Advisor:

Faculty Advisor's E-mail:

Team Members:

Team Lead Name, E-mail, Phone:

Please select one of the following for foundry source:

Team has a foundry source

Foundry name:

Team needs a foundry source

Email completed forms to Diana David, SFSA, ddavid@sfsa.org