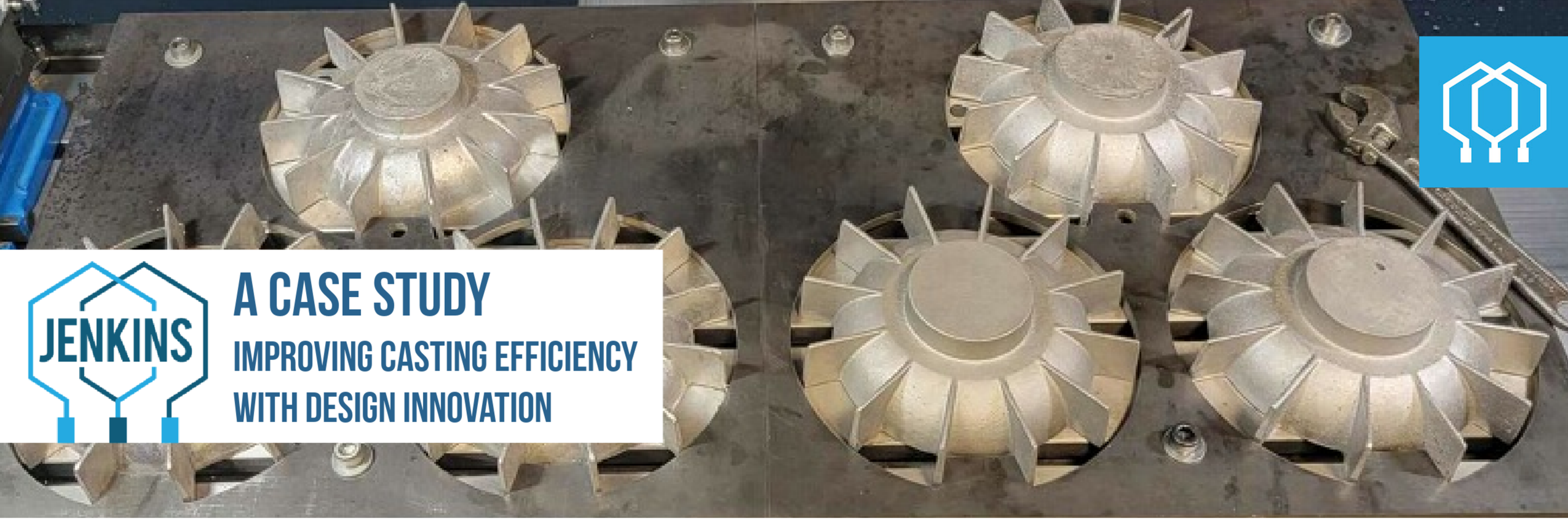


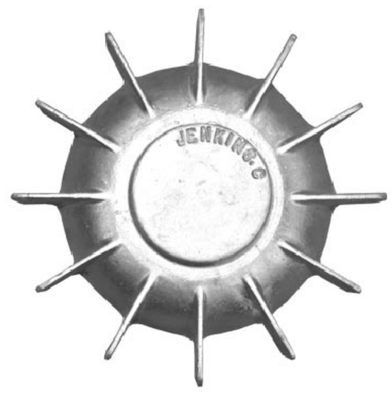
A CASE STUDY

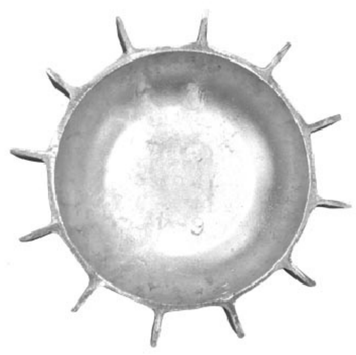
IMPROVING CASTING EFFICIENCY WITH DESIGN INNOVATION

THE CHALLENGE

The Jenkins Foundry pours thousands of parts cast in aluminum, brass, bronze, and copper yearly. Specializing in mid to low-volume castings, our foundry relies on traditional and modern methods while consistently looking for ways to improve casting efficiency. One particular motor cooling fan pattern presented a problem – large order volume but our quality on this particular fan was low. This Series 6 fan with a 9 and 3/4-inch deep recess is cast in aluminum and is used on many European motors and some American designs. After an 8-hour day, a run of 25 fans would produce only 1 or 2 fans that met our standards. This was a glaring issue, and our team took on the challenge of increasing our efficiency with this particular fan. Through the research of improved casting methods, our Ops manager discovered that this fan should not be on a match plate. The match plate is used to pour multiple parts, but this fan was being poured one at a time and was not gated properly. Gating in casting refers to the metal pouring system that moves molten metal into the mold cavity. We consistently had issues with gating and movement during casting of the Series 6 fan. The temperature needed to be exact (1240°F) for the pour, so the first few would be at the right temperature, but then it started to cool, resulting in an unusable fan. Wasted time, materials, labor, and profitability.

The original 6-4 fan.





THE DETAILS

- Our largest foundry customer orders approximately 700 fans yearly.
- Traditionally done on a match plate, there is no way to gate it properly.
- The aluminum must be the exact temperature to get the gates to work. This is difficult to do.
- When the temperature of the aluminum starts to drop, the quality of the casting diminishes.
- With any proposed changes in pattern making, a cost-benefit analysis is necessary.
- Making a 3D pattern provides the benefit of exact specifications; however, it is costly and time-consuming.

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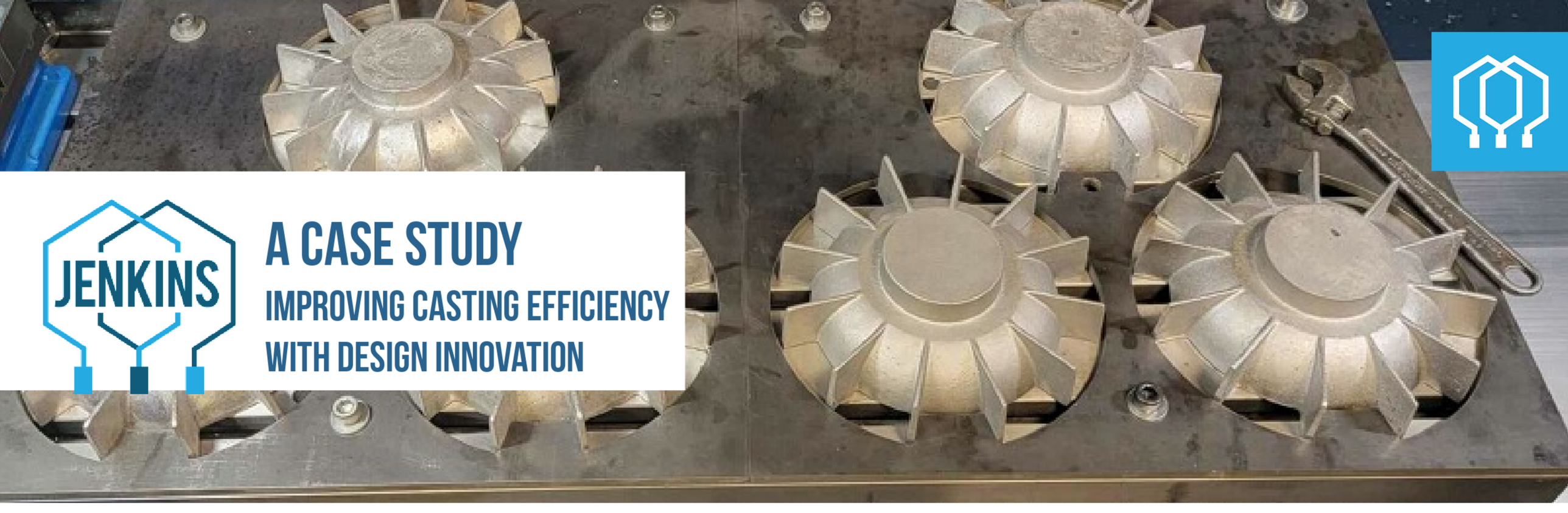


A CASE STUDY

IMPROVING CASTING EFFICIENCY WITH DESIGN INNOVATION

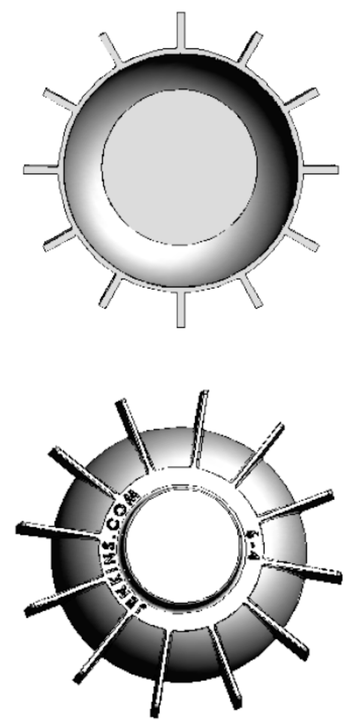
THE SOLUTION

After calculating the time and material savings, it was clear that we needed to invest in a new pattern. In this case, we started with a 3D model in Solid Works. This model was then printed slightly larger to account for pouring a new pattern that would account for shrinkage. This allowed us to get an exact dimensional fan where the previous pattern was smaller. With the new improved pattern, we are able to pour it straight down the center with a bigger temperature variance.

THE RESULTS

The new pattern is consistently reliable. We poured a run of 25 and produced 25 Jenkins Approved quality Series 6 9-3/4″ Deep Recess Fans for our valued customer. The old pattern only resulted in 10% -25% casting efficiency, while our new pattern resulted in 100% casting efficiency. The time savings for our Foundry technicians and machinists are enormous. Now we don't waste labor on unused product and we save time and money on recycling and melting down the unusable product. Our machine shop saves time because they have a much better quality fan. Time, cost, and material savings allow our team to keep our production line moving and our customers satisfied.

3D Images of the new 6-4 fan.



ABOUT JENKINS FOUNDRY

Through casting in our foundry, parts that are obsolete or previously impossible to find can be created. Jenkins can manufacture new precision parts from a sample or drawing. In fact, we already have a large library of patterns for our customers to peruse. From one-offs to large volume equipment part production, our foundry is at the ready. To shop the full catalog of Jenkins replacement fans visit Jenkins.com. Have additional questions? Just Ask Jenkins at answers@jenkins.com or 800-438-3003.

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