

To continually examine our processes to provide greater value to our customers without waste.

Logical Problem Solving Tool = A3

A Lean tool that Grunau started using last year when solving problems is called an "A3" which is basically a format to organize your thought processes. The A3 is a simple one-page document that can be shared with others for clear communication about the problem and solution.

You could think of the A3 as a storyboard that shows the logical steps to take to solve a problem. It can be completed by one person or by a team. The A3 prevents us from putting a quick-fix bandage on a problem and instead directs us to a long-term solution.

There are 7 steps shown on the A3 that guide you in the process of solving a problem:

1. **Background** = Establish importance of item and why you are talking about it.
2. **Current Conditions** = Identify the real problem & where things stand today. Important to KNOW conditions by observing actual work; can't base on assumptions of what you think may be occurring.
3. **Goals** = Write the specific outcome expected.
4. **Analysis** = Identify the root cause of the problem. Only by figuring out the root cause, can a long-term solution then be determined.
5. **Countermeasures** = List the countermeasures (or experiments) to take to reach the goals.
6. **Plan** = Identify the countermeasures to be used; what activities & who will accomplish to implement changes.
7. **Follow-up** = Ensure the improvements made a difference. Share knowledge with others.

The easy-to-read A3 has been used to solve problems our company was facing including the following items:

- Hardware Box
- Video Conferencing
- Daily Huddle
- No Hub Procedures
- Safety Budget
- Material Handling

While the official "A3" is on an 11x17 piece of paper (which is called an A3 size of paper and thus the name of the Lean tool), here are some examples in a smaller format for sake of illustration only.

NO-HUB Installation & Testing Procedures 2010 (2009)

Background

- No Hub testing was taking longer than the manufacturer said testing should take.
- Testers were finding leaks in all No-Hub systems checked with air.
- Installers were using different installation practices at various sites.
- Testers were using different processes at various sites.
- Manufacturer states testing with air is not recommended.
- Testers are required to secure the system with wire before air testing.

Current Condition

No Hub Test Failure Rate First Attempt

Proposed Countermeasures

Suspected Cause	Action Item	Responsible	Result by January 2010
1. Packed Bench	Use proper tighten procedure	Installer	
2. Bad Seal Bench	Check gasket for variance or fit	Installer	
3. Incomplete Alignment	Check Hanger heights	Installer	
4. Damaged Material	Replace re-install, grind high spot	Installer	
5. Incomplete Alignment	Make consistent with foreman	Installer	
6. Cracked Pipe	Tap with hammer before for some	Installer	
7. Turbopump on end	File growth	Installer	
8. Test Kit Leak	Check test kit after installation	Tester	
9. Test Gauge Leak	Check test equipment	Tester	

Goals

- Improve First Test Pass Rate To 80% by March 2010
- Reduce Band Failure To 10% Of Tests by March 2010

Root Cause Analysis

Plan

Test the use of a check assembly for No-Hub installation & testing. Jr. & Bob Mann tested successfully. Field test failed (smaller size they had to hand tighten all fittings) will redo field test with better supervision. April 2010 Jr. set out a check assembly from Milwaukee tool. Waiting until next NO-Hub project.

Follow Up Actions

Waiting for next No-Hub project to re-test May 2010. Bob Mann

Current Conditions

Cause of First Test Failure

Analysis

No Hub Test Failure Rate First Attempt

Cause of Test Failure

Follow Up Actions

Waiting for next No-Hub project to re-test May 2010. Bob Mann

Background

Production Gas System set up in 2009. Production distribution installation in the past month on jobsites. Some issues have been identified in the Milwaukee Gas System.

Current Conditions

Flow rate of hydrogen being tested throughout the installation. 100% Pass Rate. 0 Failures.

Goals

Improve production change setup time to 15 minutes or less. Minimize the amount of time spent testing between jobsites. One person will be responsible for hardware key strategy and completion. PASS 100%.

Countermeasures

1. Increase number of jobsites. 2. Increase number of jobsites. 3. Increase number of jobsites. 4. Increase number of jobsites. 5. Increase number of jobsites. 6. Increase number of jobsites. 7. Increase number of jobsites. 8. Increase number of jobsites. 9. Increase number of jobsites. 10. Increase number of jobsites.

Plan

Working on plan stage

If you have a problem that you'd like to try solving using the A3 way to organize your thoughts, contact us for more information and assistance to help get you started.