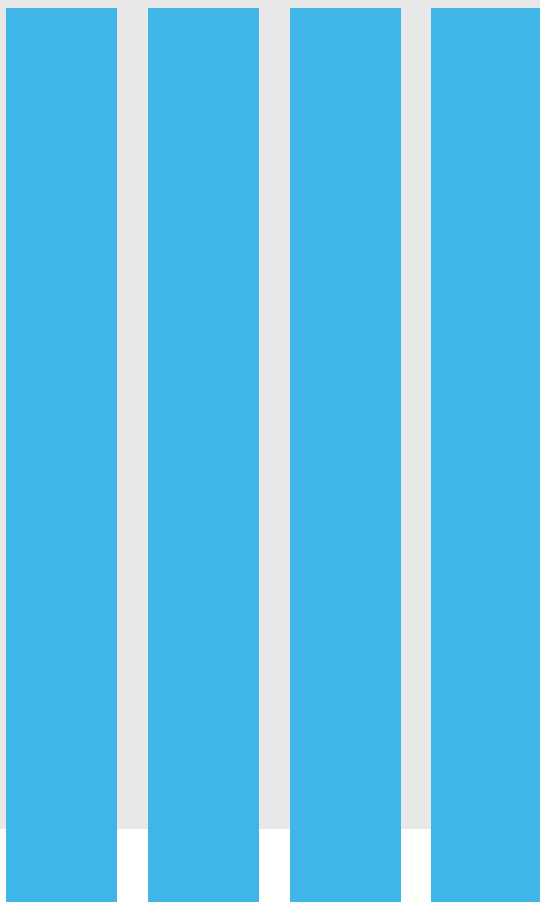


PLANT ENGINEER

# RECRUITMENT & SELECTION

A PLAN FOR 2023 BY JOHN STALEY



Our mission is to provide overall customer satisfaction through a quality product, while ensuring exceptional technical and sales support.



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# EXECUTIVE SUMMARY

The following whitepaper provides a front-to-back approach to a proposed recruitment and selection plan for the plant engineer position for 2023. Through the use of a job analysis, the KSAOs associated with the plant engineer were identified and a job description was generated. The results of the job analysis provided a baseline of information from which a recruitment and selection method could be developed. As such, this procedure focuses on a geographical approach to recruitment methodology

with eight separate avenues for recruitment contact including career fairs, social media, internships, etc. Additionally, the proposed methods include five separate selection methods through which the candidates are measured. These include the application process, an initial interview, a mechanical aptitude test, a general intelligence test, and a situational judgement interview. It is through this methodology that the most skilled and knowledgeable candidate can be selected.



**“We can never fall short when it comes to recruiting, hiring, maintaining and growing our workforce. It is the employees who make our organization’s success a reality” - Vern Dosch**

## THE KEY TAKEAWAY

The following whitepaper provides a front-to-back approach to a proposed recruitment and selection plan for 2023. Through the use of modern recruitment and selection techniques, this proposal will provide the most qualified candidate for the plant engineer position.

# PLANT ENGINEER BACKGROUND

Originally, the position of plant engineer at Shenango had no documentation to describe job duties and their associated skills. To provide a baseline for the development of the recruitment and selection process, a job analysis was performed for the position of plant engineer. The job analysis consisted of employee interviews and the combination job analysis method (CJAM) and involved two SMEs (the CEO and the plant engineer). The results of this process (shown below) were a list of tasks, KSAOs, and a job

description which were all used together to create a posting to advertise the position to potential applicants. Additionally, the CJAM provided an opportunity for both of the SMEs to rank the importance of each KSAO in performing the necessary tasks which allowed for the refinement of the total list of KSAOs. The ranking exercise also helped to define the KSAOs which should be most sought after for applicants during the selection process. Lastly, it should be noted that there is only one plant engineer position available to be filled.

## JOB ANALYSIS RESULTS



### JOB DESCRIPTION

The position of plant engineer is responsible for the general management of all facility operations, personnel, and financials. As such, a qualified applicant should be capable of the oversight of production, supply chain operations, hazardous waste disposal, safety regulations, and the general maintenance of the facility.



### PREFERRED KNOWLEDGE

Preferred to have knowledge of general manufacturing processes and standard industrial manufacturing safety protocols.



### RESPONSIBILITIES

Responsibilities generally include tasks relating to supply chain management, safety regulations, production oversight, facility maintenance, and waste disposal.



### EDUCATION REQUIREMENTS

Must have a Bachelor's Degree in Engineering or Industrial Manufacturing as well as coursework in business and finance.



### SKILL REQUIREMENTS

- Interpersonal Skills
- Time Management
- Leadership and Delegation
- Advanced Critical Thinking
- Organizational Finance



# RECRUITMENT PROCESS

The recruitment process will focus on a variety of approaches which attempt to market the plant engineer position to a target audience. While Shenango would accept qualified applicants from any location, it is important to consider that Terre Haute, IN contains a large potential applicant pool with its four local colleges and universities. These include Ivy Tech Community College, Indiana State University, Rose Hulman Institute of Technology, and Saint Mary of the Woods College. Therefore, a recruitment approach which prioritizes a local applicant search may be the quickest and most cost effective way to reach candidates.

The design of the job posting would be done using Adobe Illustrator, the same software used to make this white paper. Illustrator offers many templates which prioritize aesthetics while also allowing information to be communicated effectively. The cost involved with Illustrator is a small subscription fee of \$20.99 per month. Due to the versatility of Illustrator, it will also be possible to provide consistent formatting across multiple avenues of advertising such as websites, social media platforms, and brochures.

In terms of specific design features, the advertising would promote attractive features of the job while also communicating the responsibilities associated with the job analysis. An example of such language and formatting might be:

“Do you have a passion for **Industrial Manufacturing** and a desire to **Lead?**”

Through the use of this sort of persuasive language, it will be possible to appeal to a large pool of applicants.

Once initial interest has been garnered from a number of applicants, the focus will shift to maintaining their interest until the first round of interviews begins. Strategies to maintain candidate interest will include frequent updates about the status of the recruitment process as well as invitations for onsite visits.

The recruitment process will be conducted by the sole HR Generalist at Shenango due to the fact that there is only one position available for plant engineer. Relatedly, the recruitment process is not expected to take much time considering the potential for campus visits to each of the local institutions. Additionally, using a greater variety of recruitment methods can lead to increased visibility for the job posting (Breaugh, 2009) . Between the variety of recruitment strategies that are detailed on the next page and the size of the potential applicant pool, there should be no issues generating interest for this position.



# RECRUITMENT STRATEGY

## CAREER FAIRS

By taking advantage of the local colleges in Terre Haute, career fairs will offer the opportunity to engage with students who are seeking employment after graduation.

## SOCIAL MEDIA

Posting job openings via social media is a great approach to reach candidates. SHRM reports that over 80% of organizations currently recruit using social media (SHRM, 2017).

## WEBSITES

External websites are another tool that could be used to find applicants. Examples include Indeed, Glassdoor, LinkedIn, Ziprecruiter, and even Google.

## OUTSOURCING

While more expensive than other options, outsourcing to an external hiring company would lift work off of the current staff if they were unable to find applicants.

## EVENTS

Thanks to the presence of the four universities in Terre Haute, there are plenty of regular events hosted at campuses which offer opportunities to recruit such as sporting and networking events.

## CONFERENCES

Conferences are another potential recruitment strategy which enables the recruiter to seek out a specific type of candidate. For example, Rose Hulman hosts an annual engineering symposium.

## INTERNSHIPS

Another potentially convincing recruitment strategy would be to offer a promising student an internship with the intent to employ them after they graduate.

## SCHOLARSHIPS

If a competitive applicant was interested in the position, but required financial assistance for tuition, a scholarship opportunity could be created. SHRM reports that tuition benefits help to recruit and retain top employees (SHRM, 2019).

# SELECTION METHODS

The selection methods chosen for the plant engineer position focus on a few key factors. Firstly, it is important to note that many applicants may not have manufacturing or engineering experience due to the recruitment focus on college students. Therefore, the resume portion of the selection process will primarily look to satisfy education requirements and identify areas where the required skills were demonstrated. As such, any applicants who do not possess the education requirements will be eliminated from the selection process. Lastly, those who do not demonstrate at least two of the five required skills on their resume will be eliminated as well. Through this process, the applicant pool will be narrowed down to those individuals with the most basic qualifications.

## THE JOB APPLICATION

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The job application will include a series of basic questions to gain general information about the applicant. Such questions will provide information regarding the candidate's name, contact information, education, job history, and disclaimers relating to legal residency and military status. Additionally, the job application will ask for a resume submission and three references to verify the information on the resume. Lastly, there will also be a required submission for academic transcripts to verify

“

**“The secret of my success is that we have gone to exceptional lengths to hire the best people in the world.”**

**-Steve Jobs**



candidate grades and education history. Transcripts may prove to be especially useful considering the likelihood that an applicant may still be in school or recently graduated with no relevant work experience. The job application will be located on external websites such as indeed or ziprecruiter due to the state of the current shenango website which needs updated. The target time frame for the job application will be approximately 8 weeks with the potential for extension depending on the number of applicants.

# SELECTION METHODS

After evaluation of the resumes and job applications has been completed, remaining applicants will be invited to begin the interview process. The interview process will consist of two one-on-one interviews and two assessments to test the candidates aptitude for the relevant KSAOs. The first interview will be conducted at the beginning of the interview process and will be in a semi-structured format. To maintain a quality candidate experience the first interview will



## Interviews

Structured interviews will be conducted to assess the candidates' interpersonal and communication skills as well as their situational judgement.



## Mechanical Aptitude Test

The Seliant mechanical aptitude test will be conducted to assess the candidates' comprehension skills and knowledge related to industrial manufacturing.



## General Intelligence Test

A general intelligence test known as the Criteria Cognitive Aptitude Test (CCAT) will be conducted to assess the candidates' major components of cognitive ability.

begin with unstructured questions which aim to build rapport with the candidate and establish a comfortable environment. Following the unstructured questions, the interview will then turn to a structured format which focuses on past candidate experiences in both education and work. For example, one question from this part of the interview would be:

**“Tell me about a time when you overcame an obstacle at work.”**

This would be an example of a question which provided the opportunity to demonstrate communication skills, leadership and delegation, or even critical thinking capability. The goal of these sorts of questions in an interview format is to capture candidate skills which may not come through in either of the assessments. Once the initial interview is completed, the candidates will be asked to leave. If candidates performed well during the interview, they will be invited back for the second round of selection at a future date.

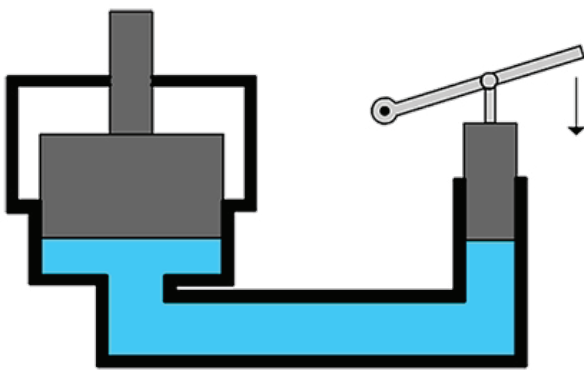
The second round of selection will contain both of the assessments for mechanical aptitude and general intelligence. The first of these tests is the mechanical aptitude test which aims to assess the ability of the candidate to understand and solve mechanical problems through the application of concepts related to physics (Aptitude, 2022). The mechanical aptitude test consists of 40 items in a multiple choice format with a time limit of 30 minutes.



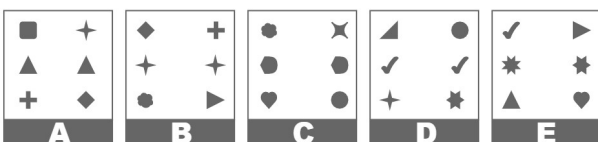
# SELECTION METHODS

The mechanical aptitude test is presented in an online format and consists of questions similar to the following:

**If the small plunger is forced down by 5 units, how far will the larger plunger move?**



The second assessment in the second round of selection is known as the Criteria Cognitive Aptitude Test or CCAT. The CCAT is designed to measure general intelligence through criteria such as critical thinking, problem solving, and learning ability. Furthermore, the CCAT is designed specifically for bachelor's degree level applicants and has been shown to have high construct validity relative to cognitive aptitude and high predictive validity for job performance (Criteria, 2022). The CCAT consists of 50 questions with an approximate completion time of 15 minutes. The CCAT is also presented in an online format and consists of questions similar to the following:



Once both of the assessment tests have been completed, they will be collected and the scores recorded. Candidates will then be asked to leave until the last round of interviews. Scoring for each of the assessments will be done via raw score and percentile rank. The candidates who scored in the combined top three will be invited back for the last round of selection.

The last round of selection will serve as a follow-up interview as well as an assessment debrief to inform the candidates of their performance in the second selection round. During the assessment debrief portion of the interview, the candidates will be asked to explain some of the answers they chose to demonstrate their reasoning and problem solving process. Following the debrief, the candidates will be asked three open-ended situational judgement questions relating to the plant engineer position. An example of such a situational judgement question would be:

**“Your production capacity has reached it’s limit despite the looming deadline for an order of five castings. Increasing production has the possibility of meeting the deadline, but also introduces risks to the integrity of the product. You will lose the customer if you do not meet the deadline. What do you do?”**

Questions such as the one above are intended to demonstrate the professional judgement of the candidate. In this scenario, the question is testing the candidates preference for speed vs quality. Lastly, the third round interview will set some time aside for candidates to have the chance to ask questions of the interviewer. Once the interviews are completed, the candidates will be sent home.

# SUCCESS PREDICTORS

1

## **APPLICATION PROCESS**

The application process serves the first role in the selection process as it eliminates those candidates who do not meet the specified educational or skill requirements. In doing so, the application process promotes the likelihood of success for the next stage of the selection process.

2

## **INITIAL INTERVIEW**

The initial interview serves to provide candidate information which may not be demonstrated by any of the following methods. Through a series of basic interview questions, candidates have the chance to exhibit skills such as communication, leadership, or even organizational finance.

3

## **MECHANICAL APTITUDE TEST**

The mechanical aptitude test serves as a measure of candidate ability to understand and solve problems related to physics and industrial manufacturing. As such, this test indicates the ability for potential skills related to the responsibilities listed in the job analysis.

4

## **GENERAL INTELLIGENCE TEST**

The general intelligence test serves as a measure of cognitive skills in the criteria of critical thinking, problem solving, and learning. Such a test provides a confirmation that candidates are cognitively capable of succeeding in their job duties.

5

## **SITUATIONAL JUDGEMENT INTERVIEW**

The situational judgement interview serves a similar purpose to the general intelligence test while also applying a real-life work scenario to their judgement. As such, this interview method provides insight into the candidates ability to reason on the job in real-time.



## POTENTIAL LIMITATIONS

There are a number of potential limitations to consider about this recruitment and selection process. Such limitations exist as a result of circumstances relating to the job analysis, recruitment process, and selection methods.

The first limitation associated with the job analysis relates to the method of data collection used to construct the KSAOs and task statements. Due to the small size of the company, the only method of data collection was interviews from each of the SMEs. As such, the limited variation in data collection could have resulted in some bias towards the responses and ratings of task statements and KSAOs. A second potential limitation of the job analysis relates to the lack of information regarding the plant engineer position. Considering that there was no existing information describing the position, tasks, or KSAOs for the plant engineer, the entirety of the job analysis was based off of two interviews from the SMEs and information from ONET regarding standard responsibilities for manufacturing engineers. While these limitations are not major, they would have been better mitigated by the presence of additional SMEs or existing documentation.

There are also some potential limitations regarding the recruitment process. The first of these limitations relates to the number of dedicated staff available for recruitment purposes. While it is not necessary to have many recruiters for the purpose of hiring one employee, it does make it more difficult

to pursue the different methods described in the recruitment strategy. For example, it would be very difficult for one recruiter to manage their general job responsibilities and also attend events, career fairs, and conferences for all four universities in Terre Haute. Additionally, one recruiter would have a large workload to balance if there were many applicants. Another limitation relates to the scholarship and internship recruiting methods. Both of these approaches would take considerably more resources than the others listed due to the financial input required for a scholarship or internship. Lastly, the method of outsourcing of recruitment for only one position would be very cost inefficient compared to the other methods of recruitment.

The limitations relating to selection are mostly due to the nature of the position in question. There are many intricate practices and procedures in the realm of centrifugal casting and industrial manufacturing. Additionally, the scarcity of centrifugal casting facilities means that experience can not be expected of the plant engineer candidate. Therefore, it may be that selecting for KSAOs relative to industrial manufacturing does not adequately encompass the skills and knowledge required to operate the machinery. However, it is reasonable to assume that selecting for such KSAOs eliminated candidates who were not capable of learning the intricacies of centrifugal casting and industrial manufacturing.



## CONCLUSION

# THE TOP TAKEAWAYS

This recruitment and selection plan was designed with the intent to hire a qualified candidate who exhibited the KSAOs defined in the plant engineer job analysis.

The recruitment of an individual for this position should follow the guidelines provided in this white paper which include multiple methods and avenues such as career fairs, social media, internships, ect. By taking advantage of the geographical location of Shenango LLC, the recruiter should have access to four different colleges and universities worth of potential recruits.

Likewise, a front-to-back approach of selection was presented in this white paper which identifies five different methods of selection, each with their own predictors of success. Use of these selection methods would undoubtedly provide a qualified candidate to fill the position of plant engineer.

Specifically, the use of each of the assessments would serve as the best functional predictor of ability to perform in the role of plant engineer due to the conceptual difficulty involved with both mechanical aptitude and general intelligence.

The results of the recruitment and selection methods should leave three qualified candidates from which the recruiter has the choice of hiring. Therefore, there is a degree of freedom in which the candidate of best fit can be determined for the organization.

This whitepaper provides a front-to-back approach to a proposed recruitment and selection plan for 2023. Through the use of modern recruitment and selection techniques, this proposal will provide the most qualified candidate for the plant engineer position.

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