

"AIR COMPRESSOR MANUFACTURER" Pilot Study: Service Technicians

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Conducted by The Executive Group 

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Purpose

The purpose of the Pilot Study was to quantify characteristics most conducive to improving the "Air Compressor Manufacturer's" selection process for Service Technicians.

Overview

Nineteen Service Technicians were evaluated from "Air Compressor Manufacturer" to see if there was data to support the ability to differentiate "high performers" from "low performers" in a selection process. All Service Technicians completed the 16PF Personality Questionnaire, the SRA Test of Mechanical Concepts and the Ramsay Corporation Electrical Aptitude Test... Mechanical Concepts measures an individual's ability to visualize and understand basic mechanical and spatial interrelationships. It also measures an individual's knowledge of common mechanical tools and devices. The Electrical Aptitude test measures the ability to learn and perform jobs involving electricity. Both mechanical and electrical skills sets are integral parts of the Service Technician's job requirements.

The Process

In addition to the assessments, performance ratings were obtained from current Supervisors. Service Technicians' overall performance was rated on a scale from 1 to 7, 1 being the lowest (not right for the job) and 7 being the highest (excellent). Employees rated 1, 2 or 3 were deemed as "low performers," those rated 4 were labeled as "average," and those rated 5 or 6 were combined to form a group of "high performers."

Low-Rated Group 1-3	Average Group 4	High-Rated Group 5-6
6 people	6 people	7 people

Summary of Findings

Assuming that an applicant has the skills and the personality to get hired, focus on the factors listed below merits attention for distinguishing eventual poor performers from eventual top performers.

Raw cutoff scores of 23 or higher on Electrical Aptitude, raw cutoff scores of 53 or higher for Mechanical Ability (Total Score), and less than 2 Areas of Potential Concern were examined. When combined, they would eliminate 5 or the 6 poorer performers, 2 of the 6 average performers, and none of the top performers.

Any one variable or combination of the three can be used as a guideline.

Results	Raw Score Cutoff
Electrical Aptitude	> or = 23
Mechanical Concepts	> or = 53
16PF Personnel Report Area of Potential Concern	0 or 1 of lesser importance

With a larger sample, a more complex algorithm could be developed. At this point it makes sense to require reasonably high scores on the Aptitude and Ability testing and either zero or a single less important Area of Potential Concern.

In addition, examination of the following factors from the 16PF listed below are cautionary factors to look for and evaluate further.

Factor	Score	Meaning
Factor B	> 3	Measure of reasoning and problem solving ability
Factor E	> 3 < 9	Assertive, competitive, confident
Factor F	< 8	Not too enthusiastic, happy, lively, energetic
Factor G	> 3	Conventional, follows the rules
Factor I	< 5	Not too sensitive or susceptible to feelings
Factor L	< 8	Not too suspicious, skeptical, or blaming
Factor O	< 7	Not too much worrying, or fear of making mistakes
Factor Q3	> 4	More orderly, perfectionist
Factor Q4	< 6	Not too impatient, tense, or driven
Workplace Coping Skills	> or = 4	Ability to function in a stable and predictable manner. Maintain steady and resilient presence across many different kinds of job circumstances.
Self Control	> or = 4	Conduct should generally conform to expectations and rules. Solid work ethic and signs of conscientious self-control.

The Outcome

Statistical analysis of the data from the Pilot Study showed strong indicators to help quantify the appropriate characteristics most conducive to improving the "Air Compressor Manufacturer's" selection process for Service Technicians. The results are suggestions to consider when evaluating test data.

Of the 19 Service Technicians examined, 2 individuals quit their jobs. In reviewing their performance data, both were rated in the low-rated group. One scored below the recommended cutoffs on both the Electrical Aptitude and Mechanical Ability tests and one scored below the recommended cutoffs in the Mechanical Ability test.

The Personnel Report is modeled on the professional experience and research publication of Dr. Michael Karson, a recognized authority on objective personality testing. As a well-constructed, scientifically validated personality inventory, interpreted according to the way traits are expressed in the workplace, *The Personnel Report* constitutes a vital addition to other sources of data used in making personnel selection decisions. As we usually find, all the 16PF correlations were in the expected direction, which suggests that the 16PF is a valid personality test for use with this population.

Recommended guidelines

Test data should not form the sole basis of personnel decisions. Optimal use of personality and technical skills test data can be enhanced with decision-making guidelines. For selection purposes, focus on the following recommendations may prove helpful to distinguish performance potential.

1. Mechanical Ability (Raw score of 53 or higher)
2. Electrical Aptitude (Raw score 23 or higher)
3. Area of Potential Concern either zero or a single less important area.
4. Focus on the other significant 16PF factors mentioned in this report.