

Apprentice Growth Plan – Boilermaker

The following is an “outline” for the expectations of an apprentice who enters the company at the minimum level. The expectations listed are guidelines for training with milestones listed for each specific skill to be mastered.

Upon completion of each skill the specific trainer will be responsible for signing off that the apprentice has received the training for the specific skill. In addition, the department Service Manager will be required to test the apprentice and confirm the skill level has been met.

This “outline” is to be used as a basis for progressive skills training and though each skill has been designated to a particular year, it is in no way intended to limit the growth of an individual. If an apprentice can master more than the skills listed for the time period, the additional skills learned will have a weighted input into the overall rating of the apprentice level. The same can be said for an apprentice who does not meet the requirements for the time period listed.

All skills listed must be completed prior to moving to the next level. There will be no increases or changes made until every skill for the specific level has been completed and approved by the Service Manager.

Upon successful hiring

The Boilermaker Apprentice will be required to provide his/her own “tool pouch” or bucket containing the minimum hand tools required to do the work of a technician. See the attached list for tool pouch or bucket requirements.

Safety equipment – To be issued by the company.

MILESTONES

SIX MONTHS – The apprentice must be signed up for a basic welding course through an outside school or college. This class will cover the basic fundamentals of welding and procedures. Tuition reimbursement will be made upon issuance of certificate of successful completion of the course.

Level 1 (up to completion of first year of service)

Skill required	Description	Trainer initials	Service Manager Initials
Basic Welding course completed	Completion of basic welding course with a grade of 78% or better.		
Torch usage	Types of tips and sizes, cutting heads, materials to be cut, pressure settings, hose repair and o rings, cleaning and storing		
Rolling and beading	Ability to roll at all angles and bead tube properly.		
Scarfig tubes	Cutting tubes inside of tube sheet.		

Pipe fittings	Familiar with all types of pipe fittings and terminology and application (HBMI, SBMI, Forge)		
Annual Inspections	Ability to complete annual inspection (thoroughly).		

Level 2 (Completion of 1 year up to 2 years of service)

Intermediate weld course	Completion of intermediate weld course with a 78% or better grade.		
AWS structural certification	Certification in AWS structural.		
Scarfig welds	Ability to scarf seal welds from tube sheets and scarf tubes through tube holes with no damage to sheet.		
Types of boilers	Identification of different types of boilers (FT,WT, inclined WT, Industrial WT)		
Casing	Ability to fit and weld casing		
Pipe fitting	Ability to fit, cut and thread pipe and fittings.		
Valves	Knowledge of different types of valves and operations as well as ratings (Blow down, Safety, Non return, check).		
Turbine	Ability to turbine tubes, use turbine, maintain and complete process.		
Hydro pump	Ability to properly hook up and test equipment. Proper isolation and understanding of pump capabilities.		
Bent tube boilers	Ability to remove casing, identify, remove and replace bent tubes.		

Level 3 (Completion of 2 years up to 3 years of service)

Weld certification	Certification in a 2" EX – 6 G weld test with 6010 root and 7018 filler		
Refractory	Ability to proper change out a throat and liner tile job in a boiler.		
Rear doors	Ability to rebuild a CB rear door to CB-Kramer specifications.		
Refractory materials	Knowledge in ratings, use, applications and conditions of refractories.		
Insulating materials	Knowledge in ratings, use, applications and conditions of insulating materials.		
Mortors and adhesives	Knowledge in ratings, use, applications and conditions of mortors and adhesives.		
Re-tube	Ability to complete a retube of a firetube or an commerical watertube boiler.		
Seal welding	Ability to seal weld tubes per procedure.		
Wire feed welder	Ability to set up, operate and weld with a MIG.		

Plasma cutter	Knowledge and ability to utilize a plasma cutter and for what materials.		
Air Arc	Knowledge and ability to utilize an air-arc cutter and for what materials.		

Level 4 (Completion of 3 years up to 4 years of service)

Pipe fitting	Ability to layout and install welded and threaded pipe and fittings		
Heli-arc class	Enrollment in a Heli-arc class through a college or trade school.		
Copper pipe	Ability to sweat or silver solder pipe to size 4"		
Bricklaying	Basic bricklaying skills.		
Watertube class	Completion of the Nebraska / CB watertube training class with a score of 78% or better.		
Watertube boilers	Knowledge in operation of watertube boilers, scrubbers, seals, refractories, tube seals.		
Blue print	Ability to read and fully understand isometric drawings for pipe and layouts.		
Sizing requirements	Proper pipe sizing knowledge for piping to control valves, pumps, PRV's, etc.		
Code procedures	Full understanding of all code procedures for repair of boilers and piping.		
Safe ends	Ability to properly remove and replace a safe end from a fire-tube boiler.		
Tubesheets	Ability to properly remove and replace a tubesheet from a firetube boiler.		
Feedwater patch	Ability to properly remove and replace a feedwater patch from a firetube boiler.		

Level 5 (Completion of 4 years up to 5 years of service)

Heat Exchangers	Ability to retube heat exchangers, change heads, understand traps and valves.		
Heli-Arc	Certification in Heli-arc welding		
Weld Procedures	Qualification in all CBK welding procedures.		
Water-tube	Ability to change out (retube) a watertube boiler.		
Refractory	Ability to change any refractory in any boiler (arches, rings, bull rings, seals).		

The preceding outline is based upon a structured plan for apprenticeship growth. Each apprentice will be assigned to a senior technician who will be responsible for the

development of the current phase of the program. In addition, the senior technician's performance evaluation will be based partially on the performance of the apprentice.

Safety – Safety issues have specifically been omitted from this outline because the employee will be required to conform to all safety policies regardless of level of performance.

Customer Service Skills – These skills will be evaluated as part of the annual review process and are rated on the annual review form.