Acetylene Generators
New Rules
3-22-12

NOTE 1:Print this section in Division 2Q

NOTE 2: Reference
2H, 3F and 3J to this section rather than reprint it in the other subdivisions

(14) OAR 437-002-3253 General requirements for Acetylene generators (currently 253(f)

(a) When using acetylene generators you must:

(A) Use those that are of approved construction.

(B) Ensure they are plainly marked with: (253(f)(1)

(i) Maximum weight and size of carbide necessary for a single charge.

(ii) Manufacturer's name and address

(iii) Name or number of the type of generator.

(iv) Size of the carbide to be used on the generator nameplate.

(v) Rating and pressure limitations (253 (f)(2).

((C) Limit the total hourly output rate for which it is approved and marked.

NOTE: Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot (0.028 m3) per hour per pound of carbide required for a single complete charge.

(D) Require regular operating of relief valves . 253(f)(2)(ii)

(E) Set relief valves to open at a pressure not in excess of 15 psig. 253(f)(2)(ii)

F) Set hydraulic back pressure valves to open at a pressure not in excess of 20 psig. 253(f)(2)(ii)

(G) Locate the generator where the operator can maintain ample free, unobstructed operation and maintenance space around the generator to permit ready adjustment and charging. (currently 253(f)(3))

(H) Ensure that all non-automatic generator water overflows are visible. 253(f)(2)(iii)

(I) Ensure that non-automatic generators are not used to generate acetylene at pressures exceeding 1 psig. 253(f)(2)(iii)

(b) When using **stationary acetylene generators** (automatic and non-automatic) you must: (currently (253(f)(4))
253(f)(4)(i)(A)

(A) Place on a foundation where:(i) The generator(s) is level.

(ii) No excessive strain will be placed on the generator or its connections.

(B) Ensure the generator(s) is grounded.

(C) Place generators where water will not freeze. 253(f)(4)(i)(B)

(D) Ensure there are no prohibited sources of ignition in outside generator houses or inside generator rooms unless the generators are prepared in accordance with paragraph) (h)(H)(i) thru (iv) of this section: 253(f)(4)(i)(C).

(E) Ensure that when a non-continuous connection to the water supply is used, the supply line must terminate at a point not less than 2 inches above the regularly provided opening for filling so that the water can be observed as it enters the generator. 253(f)(4)(i)(D)

(F) Discharge generators through an open connection into a suitably vented outdoor receptacle or residue pit. 253(f)(4)(i)(E)

NOTE: An open connection for the sludge drawoff is desirable to enable the generator operator to observe leakage of generator water from the drain valve or sludge cock.

(G) Provide a vent pipe for each generator. 253(f)(4)(ii)(A)

(H) Rigidly install the escape or relief pipe: 253(f)(4)(ii)(B)

(i) Without traps

(ii) So any condensation will drain back to the generator.

(I) Carry the full size escape or relief pipe to a suitable point outside the building. 253(f)(4)(ii)(C)

(J) Terminate the escape or relief pipe in a hood or bend located at least 12 feet (3.7 m) above the ground. 253(f)(4)(ii)(C)

NOTE: It is preferable to terminate the escape or relief pipe above the roof, and as far away as practicable from windows or other openings into buildings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives.

(K)Route the generating chamber relief pipes separately to the outside so they are unobstructed by rain, snow, ice, insects, or birds253(f)(4)(ii)(C)

(L) Locate the end of the relief pipes at least 3 feet (0.9 m) from combustible construction. 253(f)(4)(ii)(C)

(M) Use gas holders constructed on the gasometer principle that has the bell suitably guided. 253(f)(4)(iii)(A)

(N) Ensure the gas bell moves freely without tendency to bind and it has at least 2 inches (5 cm) clearance from the shell. 253(f)(4)(iii)(A)

(O) Provide a compressor or booster cutoff at a point 12 inches (0.3 m) or more above the landing point of the bell. 253(f)(4)(iii)(B)

(P)Ventilate the room in accordance with paragraph (d)(J) of this section when the gas holder is located indoors,. 253(f)(4)(iii)(B)

Comment [csm1]: check this reference

(Q)Heat and light the room in accordance with paragraphs (d)(K) and (d)(L), (M), (N), (O), and (P) of this section when the gas holder is located indoors. 253(f)(4)(iii)(B)

Comment [csm2]: Check this reference

(R) Protect gas holder seals against freezing when the gas holder is not located within a heated building. 253(f)(4)(iii)(C)

(S) Provide means to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel. 253(f)(4)(iii)(D)

(T) Ensure that the gas capacity of the gas holder is not less than one-third of the hourly rating of the generator when the holder is connected to only one generator. 253(f)(4)(iii)(E)

(U) Ensure if acetylene is used from the gas holder without increase in pressure at some points, but with increase in pressure by a compressor or booster pump at other points, then you must: 253(f)(4)(iii)(F)

(i) Install approved piping protective devices in each supply line.

(ii) Locate a low-pressure protective device between the gas holder and the shop piping.

(iii) Locate the medium-pressure protective device between the compressor or booster pump and the shop piping (see Figure 1).

NOTE 1: Approved protective equipment (designated P_F) is used to prevent backflow of oxygen into the fuel-gas supply system, passage of a flashback into the fuel-gas supply system; and excessive back pressure of oxygen in the fuel-gas supply system.

NOTE 2: The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

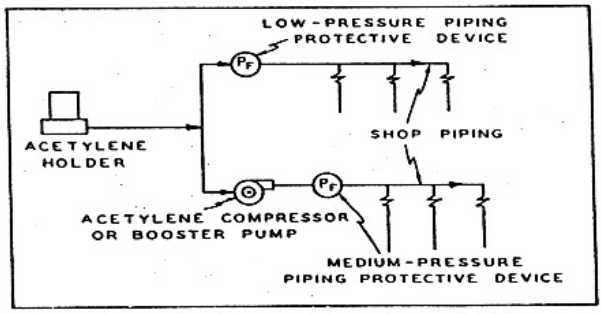

Figure 1

(V) Use approved compressor or booster systems only. 253(f)(4)(iv)(A)

(W) Ensure that wiring and electrical equipment in compressor or booster pump rooms or enclosures conform to the provisions of Subdivision S, Electrical, Class I, Division 2. 253(f)(4)(iv)(B)

(X) Locate compressors and booster pump equipment: 253(f)(4)(iv)(C)

(i) In well-ventilated areas and

(ii) Away from ignition sources including, but not limited to, open flames, electrical or mechanical sparks.

(Y) Provide compressor or booster pumps with pressure relief valves which will relieve pressure exceeding 15 psig: 253(f)(4)(iv)(D)

(i) To a safe outdoor location as provided in paragraph (b)(G), (H), (I), (J), (K), and (L) of this section, or

(ii) By returning the gas to the inlet side or to the gas supply source.

Comment [cnw3]: Sue: (similar issue here with whether or not to include the subparts)

(Z) Provide compressor or booster pump discharge outlets with approved protective equipment. 253(f)(4)(iv)(E)

Comment [w4]: Reference this section that speaks to protective equipment

(c)) When using **stationary acetylene generators** (automatic and non-automatic) you must not: (253(f)(4)(i)(B)

(A) Use common salt (sodium chloride) or other corrosive chemicals for protection against freezing. 253(f)(4)(i)(B)

(B) Supply water through a continuous connection to the generator unless the generator is provided with an: 253(f)(4)(i)(D)

(i) Adequate open overflow, or

(ii) Automatic water shutoff which will effectively prevent overfilling the generator.

(C) Fit generators with continuous drain connections leading to sewers unless otherwise specifically approved. 253(f)(4)(i)(E)

(D) Interconnect generating chamber relief pipes. 253(f)(4)(ii)(C)

(d) When outside generator houses and inside generator rooms for stationary acetylene generators are used, you must. (f)(6)

(A) Ensure that the walls, floors, and roofs of outside generator houses are of noncombustible construction. 253(f)(6)(i)(B)

(B) Separate the storage or manifolding of oxygen cylinders from the generator or carbide storage section by partition walls continuous from floor to roof or ceiling, of the type of construction stated in paragraph (d)(H)(i) thru (iii) of this section. 253(f)(6)(i)(C)

(C) Ensure that separation walls are:

(i) Without openings,

(ii) Joined to the floor, other walls and ceiling or roof in a manner to create a permanent gastight joint.

(D) Locate exit doors so they are readily accessible in case of emergency. 253(f)(6)(i)(D)

(E) Provide explosion venting: 253(f)(6)(i)(E)

(i) For outside generator houses and inside generator rooms in exterior walls or roofs.

(ii) In areas equal to not less than 1 square foot (0.09 m2) per 50 cubic feet (1.4 m3) of room volume.

(iii) That consists of one or any combination of the following:

(I) Walls of light, noncombustible material preferably single-thickness,

(II) Single-strength glass;

(III) Lightly fastened hatch covers;

(IV) Lightly fastened swinging doors in exterior walls opening outward;

(V) Lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot (0.001 MPa).

(F) Restrict the installation of acetylene generators inside buildings to buildings not exceeding one story in height. 253(f)(6)(i)(F)

NOTE: This does not prohibit such installation on the roof or top floor of a building exceeding such height.

(G) Enclose generators installed inside a building in a separate room. 253(f)(6)(i)(G

(H) Ensure that the walls, partitions, floors, and ceilings of inside generator rooms: 253(f)(6)(i)(H)

(i) Are constructed from noncombustible materials having a fire-resistance floor to ceiling.

(ii) Are securely anchored.

(iii) Have at least one wall of the room be an exterior wall.

(I) Protect openings from an inside generator room to other parts of the building: 253(f)(6)(i)(I)

(i) By a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour.

(ii) With wired glass windows in partitions that are in approved metal frames with fixed sash.

(iii) By completing Installation in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80-1970,

NOTE: Inside generator rooms built after (a monthly date) 2012 must comply with NFPA 80-2010.

(J) Ventilate inside generator rooms or outside generator houses with vents located at floor and ceiling levels. 253(f)(6)(ii)

(K) Heat by steam, hot water, enclosed electrically heated elements or other indirect means 253(f)(6)(iii)

(L) Ensure that generator houses or rooms have natural light during daylight hours. 253(f)(6)(iv)(A)

(M) Restrict installation of electric lamps to fixed position where artificial lighting is necessary. 253(f)(6)(iv)(A)

(N) Provide lamps with enclosures of glass or other noncombustible material so designed and constructed to prevent gas vapors from reaching the lamp or socket and to resist breakage. 253(f)(6)(iv)(A)

(O) Use rigid conduit with threaded connections. 253(f)(6)(iv)(A)

(P) Install lamps outside of wired-glass panels in gas-tight frames in the exterior walls or roof of the generator house or room. 253(f)(6)(iv)(B)

(Q) Locate electric switches, telephones, and all other electrical apparatus which may cause a spark, outside the generator house or in a room or space separated from the generator room by a gas-tight partition, except:
253(f)(6)(v)

(i) If they are specifically approved for use inside acetylene generator room. 253(f)(6)(v)

(ii) Where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and253(f)(6)(v)

(iii) When residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room, and253(f)(6)(v)

(iv) Where electrical equipment in the generator house or room shall conform to the provisions of Subpart S of this part for Class I, Division 2 locations253(f)(6)(v)

Comment [w5]: Can we update this

(S) Ensure that unauthorized persons do not enter outside generator houses or inside generator rooms. 253(f)(7)(i)

(e) When outside **generator houses and inside generator rooms** for stationary acetylene generators are used, you must not.

(A) Locate openings in any outside generator house within 5 feet (1.5m) of any opening in another building. 253(f)(6)(i)(A)

(B) Use flames or fire to heat outside generator houses or inside generator rooms, or in any enclosure communicating with them. 253(f)(6)(iii)

(f) When using **portable acetylene generators** you must: (currently 253(f)(5))

(A) Use those that are approved for portable use. 253(f)(5)(i)

~~(~~B) Use them further than 10 feet (3m) from combustible materials other than the floor. 253(f)(5)(i)(B)

(C) Protect them against freezing. : 253(f)(5)(i)(D)

(D) Clean and recharge them and blow off the air mixture outside of buildings. 253(f)(5)(ii)(A)

(E) Anchor them to the vehicles they are to be transported and used ~~i~~on. 253(f)(5)(ii)(D

(F) Turn off the vehicle motor during charging, cleaning, and generating processes. 253(f)(5)(ii)(D

(G) Locate portable generators at a safe distance from the welding position so they will not be exposed to sparks, slag, misdirection of the torch flame or over heating from hot materials or processes. 253(f)(5)(ii)(E)

(g) When using **portable acetylene generators** you must not:

(A) Use them in rooms having: 253(f)(5)(i)(C)

(i) A total volume less generators in the room (to obtain the gas-generating capacity in cubic feet per charge, multiply the pounds of carbide per charge by 4,5).

(ii) A ceiling height less than 10 feet (3 m).

(B) Use salt or other corrosive chemical to prevent freezing. 253(f)(5)(i)(D)

Comment [cnw6]: This doesn't make total sense. This is what feds say

(C) Move those charged with carbide by crane or derrick. 253(f)(5)(ii)(B)

(D) Store those that are not in use in rooms where open flames are used unless the: 253(f)(5)(ii)(C

(i) Generator contains no carbide.

(ii) Generator has been thoroughly purged of acetylene.

(iii) Rooms are well ventilated.

(h) When providing maintenance and operating acetylene generators you must:(f)(7)

(A) Post operating instructions in a conspicuous place near the generator or keep them in a suitable place available for ready reference. 253(f)(7)(i)(A)

(B) Follow the order of operations specified in the manufacturer instructions when recharging generators. 253(f)(7)(i)(B)

(C) Flush out batch-type generators with water; 253(f)(7)(i)(C)

(i) When the charge of carbide is exhausted.

(ii) Before additional carbide is added to the generating chamber, and

(D) Renew the water supply according to instruction card furnished by the manufacturer

(E) Add enough carbide each time the generator is recharged to refill the space provided for carbide without ramming the charge. 253(f)(7)(ii)

(F) Keep the generator water chambers filled to the proper level at all times except while draining during the recharging operation. 253(f)(7)(iii)

(G) Fill the water chamber to the proper level whenever: 253(f)(7)(iv)

(i) Repairs are to be made.

(ii) The generator is to be charged.

(iii) Carbide is to be removed.

(H) Do the following before making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition: 253(f)(7)(v)

(i) Completely remove the carbide charge and feed mechanism.

(ii) Expel all acetylene by completely flooding the generator shell with water.

(iii) Disconnect the generator from the piping system.

(iv) Keep the generator filled with water, if possible, or positioned to hold as much water as possible.

(i) When maintaining or operating acetylene generators you must not:

(A) Discharge water-carbide residue from the generator: 253(f)(7)(i)(D)

(i) Into sewer pipes, or

(ii) Store in areas near open flames.

NOTE: Clear water from residue settling pits may be discharged into sewer pipes.

(B) Use steel or ferrous tools while distributing the charge, 253(f)(7)(ii)

(C) Make hot repairs in a room where there are other generators unless all the generators and piping have been purged of acetylene. 253(f)(7)(vi)