

Revision # 1

Water Dousing System

| Engr. Spec. # | Importance | Source (CN#) | Specification (description) | Unit of Measure | Marginal Value | Ideal Value | Comments/Status |
|-------------------------------|------------|--------------|---|----------------------------|----------------|------------------------|-------------------------|
| Fully Automated System | | | | | | | |
| 1 | 1 | 1 | Zero human interaction when loading and unloading occurs | person/task | 0 | zero | 1 person for initiation |
| 2 | 1 | 2 | Zero amount of bending, twisting, lifting, and turning | degrees | < 15 | zero | |
| Functionality | | | | | | | |
| 3 | 1 | 3 | Robust, Reliable and Dependable | downtime: min/week | < 40 | 0 | |
| 4 | 1 | 4,16 | Maximum of 40 seconds to fill the 8th pan | seconds | < 40 | 35 | |
| 5 | 2 | 5 | System can be set up and torn down quickly | minutes | < 60 | 45 | |
| Cost | | | | | | | |
| 6 | 1 | 6 | Budget set to \$5000 | dollars | < 10000 | \$5,000 | |
| 7 | 2 | 7 | Components are off the shelf components and minimal lead time | day/weeks | < 2 weeks | 1 week | |
| 8 | 2 | 8 | System requires minimal energy to run | KW | NA | NA | |
| Safety and Quality | | | | | | | |
| 9 | 1 | 9 | Material is "food grade" for production | Material grade | "food grade" | "food grade" | |
| 10 | 1 | 10 | System functions and locations should not create person/ product safety hazzards | accidents/month | zero | zero | Parts falling in food |
| 11 | 1 | 11,12 | Will not spill more than 0.1 cup of water per pans | cups | < 0.1 | zero | |
| 12 | 2 | 12 | System will consistently dose 2.5 quarts of water per pan with minimal variance | Cups variance | < 1 | 0.5 | |
| Maintenance | | | | | | | |
| 13 | 1 | 13,15 | Downtime | percentage/ weekly | < 4% | 2% | |
| 14 | 1 | 13 | Insure small components fail before large components to insure low cost for repairs | dollars | | \$100 or less | |
| 15 | 2 | 13 | Repairs can be fixed by one person | person / # of repairs | < 2 people | 1 person | |
| 16 | 2 | 13 | Minimal special training needed for repairs | hours of training | < 3 hours | 1 hour | |
| 17 | 1 | 13 | No specialty tools needed to fix system | tools | | Standard Parts | |
| 18 | 2 | 13 | Components are readily accessible (aplicable when repairs are needed) | space (inches) | 6 inches/part | 12 inches/part | |
| 19 | 1 | 14 | Control systems and its components are adjustable for many setup configurations | NA | | NA | |
| 20 | 2 | 14 | Control system is easily integrated into existing system | NA | | NA | |
| Capacity | | | | | | | |
| 21 | 1 | 16 | Minimum of 21 quarts of water deliverable from system | quarts | > 21 | 24 | |
| 22 | 1 | 17 | System can hook up to main water line or water source for filling | NA | NA | NA | |
| 23 | 1 | 18 | System can aquire 21 quarts of water in under 4 minutes | minutes | < 4 | 3 | |
| Stability | | | | | | | |
| 24 | 1 | 19 | Will not have excessive vibration/translation/rotation while performing job | NA | NA | NA | |
| 25 | 1 | 20 | Components will remain intact and properly working while performing task | NA | NA | NA | |
| Manipulation | | | | | | | |
| 26 | 1 | 21 | Removal of parts to clean will take minimal ammouts of time | minutes | < 15 | 10 | |
| 27 | 2 | 22 | Time required to break down water dispenser in order to remove from line | minutes | < 20 | 15 | |
| 28 | 3 | 22 | System is movable and adoptable to different parts of the line | hours | < 2 | 1 | |
| Impact Resistance | | | | | | | |
| 29 | 1 | 23 | Time system needs to operate before major repairs (change broken nozzle/ pipe) | hours of operation/repairs | | 1700 hrs./repair | 1 year of operation, |
| 30 | 2 | 23 | System needs to be able to take an impact from a forklift | pounds of force | | 500 pounds of force | |
| 31 | 1 | 24 | System must be built of water and heat resistant materials | Material | | Rubber,Stainless, ect. | |

Engr. Spec. #: enables cross-referencing (traceability) and allows mapping to lower level specs within separate documents

Source: Customer need #, regulatory standard (eg. EN 60601), and/or "implied" (must exist but doesn't have an associated customer need)

Description: quantitative, measurable, testable details

Importance: Sample scale (1=must have, 2=nice to have, 3=preference only), or see Ulrich exhibit 4-8.

*This table can be expanded to document test results