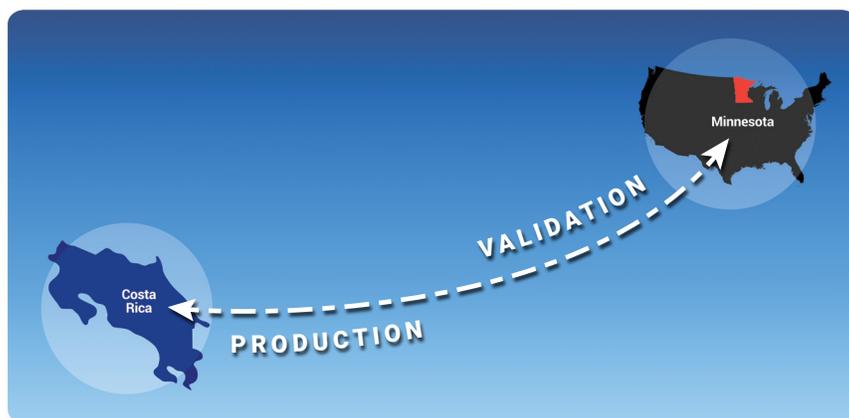
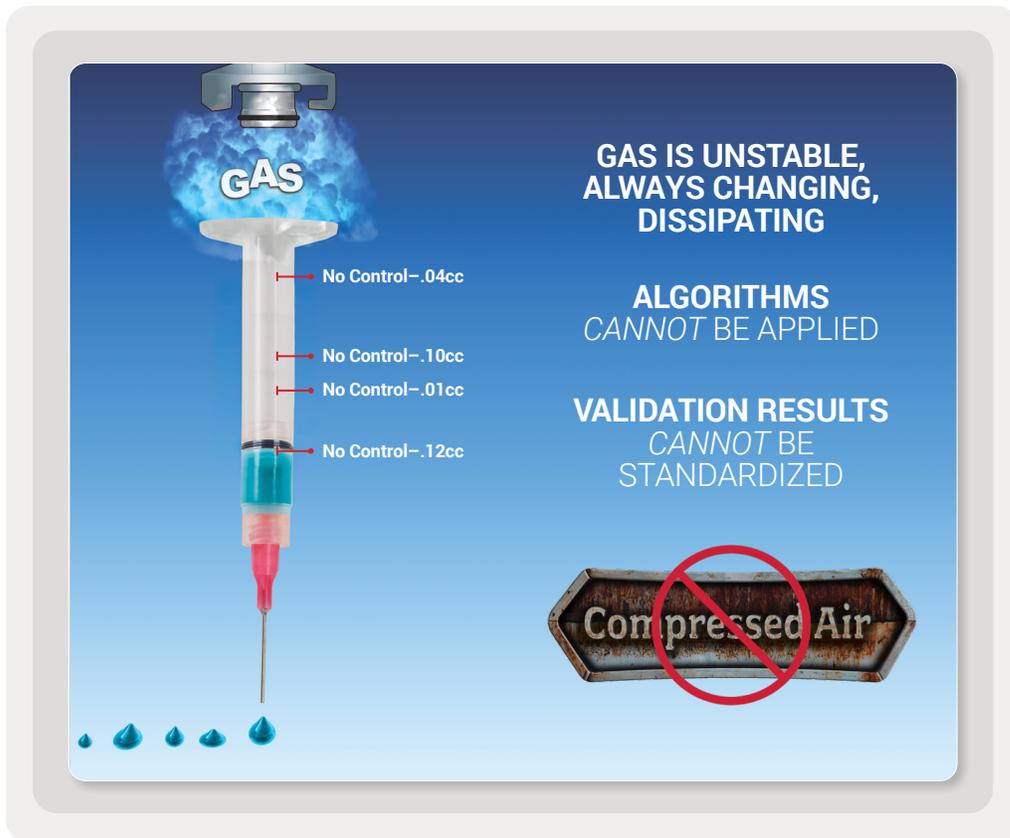


The Validation To Production Process Is In Dire Need Of Improvement

Fishman[®] Corporation, maker of innovative assembly fluid dispensing systems for the medical device, electronics, fiber optics, automotive and aerospace industries, addresses the need for improving the validation to production process with its patented AirFree[®] Technology.

The Logistics Of Getting A Process Where It Needs To Go Isn't Simple

The place where the process is validated and where the product will actually be made are very often in different locations. And, the distance between those points is not always a straight line. In fact, it is a road most often paved with challenge after challenge.

GAS IS UNSTABLE, ALWAYS CHANGING, DISSIPATING

ALGORITHMS CANNOT BE APPLIED

VALIDATION RESULTS CANNOT BE STANDARDIZED

Compressed Air

No Control-.04cc
 No Control-.10cc
 No Control-.01cc
 No Control-.12cc

Compressed Air Puts Up Many Of The Roadblocks Manufacturers Face

The problems begin with the fact that compressed air is a gas and as such it is constantly changing. In the erratic environment it creates, the validation to production process becomes infuriatingly difficult to duplicate. This happens because the instability of gas prevents algorithms from being applied to it. And without the assuredness that algorithms provide, validation results cannot be standardized with complete confidence.

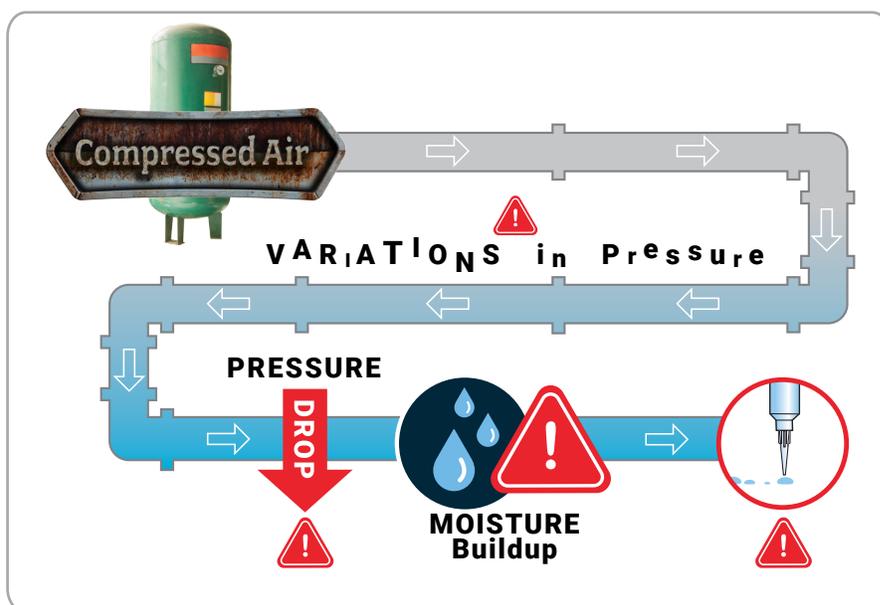
Key Data Required To Set The Performance Of Dispensers Cannot Be Entered Into The Settings Of Air-Driven Fluid Dispensers

- ▶ **What Syringe Size?**
- ▶ **What Fluid Deposit Volume?**
- ▶ **What Speed?**
- ▶ **What Reverse Motion?**

Many Questions With No Reliable Ways To Get Answers

When manufacturers only have air-driven fluid dispensers, the validation settings are based on air pressure (PSI), time and vacuum via a venturi. These parameters are very difficult to document in a work instruction. Part of the reason for this is that they need to be reset frequently by the production manager due to factors such as changes in air compressor size, differences created by compressor plumbing, which produce pressure drops, as well as the number of dispensers on the production lines drawing from the supply of compressed air. With so much to contend with, it is clear to see how all this makes validating a process a futile exercise of trial and error, made more difficult by human intervention and miscalculation.

- ▶ When compressed air is supplied over long distances, it produces unpredictable pressure drops
- ▶ It is common for moisture to build in the compressor and lines, which can contaminate dispensers and fluids in the barrels
- ▶ When using large equipment with high air pressure requirements, variations in pressure to the dispenser occur because of constant starting, running and stopping

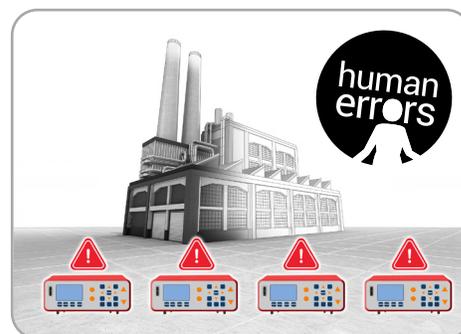


The Issues Do Not Improve, They Actually Go From Bad To Worse

The problems do not lessen after validation has been completed because six months to a year into production the instability of compressed air does not go away, it only worsens. The results provided by small batch run validation trials cannot be used to get around the problem because they cannot be duplicated when compressed air systems installed into production are cycling every 3 seconds, and facilities are running three shifts a day and producing millions of parts.

In environments like these, fluid deposit volumes are constantly shifting requiring daily operator adjustments to be made. Inevitably this leads to human errors.

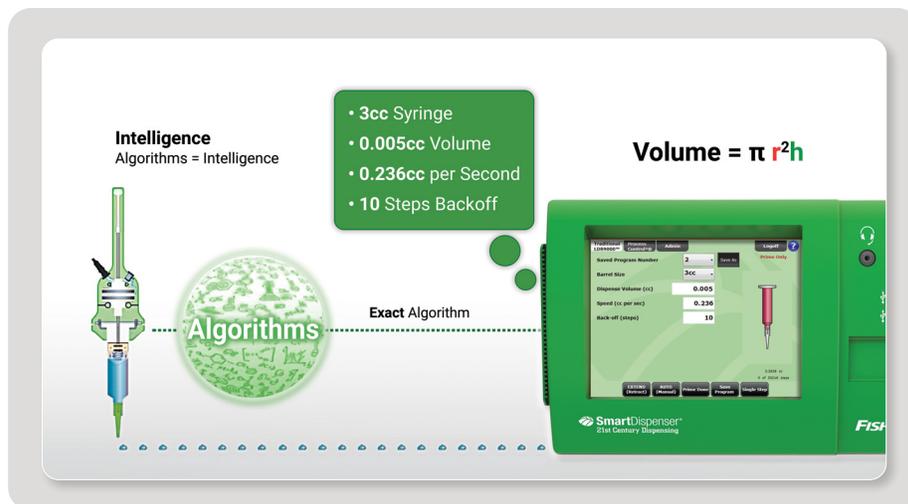
At this point in the cycle, production managers find themselves in a quandary that leaves them with no option for change because the equipment they are using has been "validated" to the process. Revalidation is not usually a choice either due to budget constraints, lack of available personnel and the infeasibility of shutting down production. All these conspire to create a true production nightmare.



AirFree[®] Technology Featuring AlgorithmicControl[™]

Until the emergence of AirFree[®] Technology, manufacturers were at a great disadvantage. The reason for this is they had no choice but to use compressed air to run their assembly fluid dispensing systems. The SmartDispenser[®] from Fishman[®] Corporation changes all that because it eliminates the need for compressed air, replacing it with a mechanical drive system that can be controlled by algorithms.

Algorithms may not be new, after all, they are used in an enormous number of devices, from Smartphones and self driving cars to GPS and countless more. Thanks to AlgorithmicControl[™], the SmartDispenser[®] provides the highest levels of precision and control to deliver the exact performance manufacturers need to ensure fluid deposit repeatability.



 **AlgorithmicControl[™]** +  **AirFree[®] Technology**

Unlike Compressed Air Technology, Key Data Required To Set The Performance Of Dispensers Can Be Entered Into The Settings Of Air-Free Fluid Dispensers

Validation In Half The Time—And At Half The Cost

This dramatic drop is possible because once one SmartDispenser[®] is validated all that needs to be done is to enter the same program values into the other AirFree[®] dispensers to be used. This simple and speedy procedure assures exact performance up and down the assembly line. Moreover, because the dispense program of the SmartDispenser[®] is numeric, it can be easily documented in a work instruction, making the transfer to production astoundingly quick.

Exact Replication Of Validation Performance In Production Is Now A Certainty

Now that compressed air is no longer needed as the delivery mechanism for dispensing assembly fluids, the SmartDispenser[®] with AirFree[®] Technology and AlgorithmicControl[™] assures 100% compliance with validation testing that stands steady for every cycle, three shifts a day, which results in no rejects, rework or scrap product. With the SmartDispenser[®], the burden of validation is at last lifted off of production managers, compliance is easily met and company profits have no where to go but up.

Fishman[®] Corporation invites you to learn more about how the SmartDispenser[®] with patented AirFree[®] Technology and AlgorithmicControl[™] can take you seamlessly from validation, to installation, to production at one or multiple facilities. Find out all there is to know by contacting a Fishman[®] sales representative at 800.433.2115.

