



PROCESS MEASURING EQUIPMENT

**Saving money in the potting soil and substrate industry.
Not by working harder but by working smarter**



Author: Theo Coolen
INADCO
The Netherlands
www.inadco.nl
theo.coolen@inadco.nl
+ 31 497 51 72 91

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Introduction

At first let me introduce myself, Theo Coolen. After having worked for more than a decade in supervising rebuilding and upgrading projects in animal food installations I decided to start my own business, INADCO, in 1996. Process measuring is key in the animal food industry and I wanted to spread that knowledge into other industries to bring them also to a higher level. In 2000 we introduced the Bulk Density meter to the horticultural industry. A device specially developed for determining the bulk density according to the European standard EN12580. Today INADCO is in west Europe the leading supplier of several special developed measuring equipment for potting soil and substrate producers.

Bringing the horticultural industry to a higher level is still the main focus of INADCO.

Developments in the horticultural industry

Nowadays it is harder to produce potting soil and substrates in good and consistent quality at reasonable costs as new raw materials are introduced to replace peat and cost of raw materials, additives, energy and transport tend to increase. The wider range of raw materials in a mix makes the probability of variations in bulk density and flow on the line more likely. In my experience a variation of 5% to 10% is quite common.

Production of the potting soil and substrate

In Western Europe it is common to produce potting soil and substrates on a mixing line. According to recipe raw materials and additives are dosed and put on a mixing line. If a mixing line consists of one conveyor belt only then potting soil and substrate will be in layers on a conveyor belt.

The requested amount of additives is dosed in a constant amount during the production of a specific recipe. As it happens dosing is not adjusted when variations in the product flow occur so either too much or too less additives will be applied.
on your raw material on that moment.

Variations in bulk density and the applied amount of additives will not be a very big issue as long as mixes are kept in bulk, big bags or big bales because these mixes will be handled numerous times during processing and use thereafter and so guaranteeing good blended products. This is different for bagged products for the market. Raw materials for this purpose are not handled as much before bagging and then variations in bulk density and additive dosing will play a much bigger role.

Bagging for the retail market

Producing blends for bags requires just a limited number of production steps. No blending is done in the small bunker in front of the bagging line. On basis of 'first in, first out' potting soil will be transported to the packing line for bagging with the likely consequence that bags will not have the correct dosing of additives.

More importantly is the matter of volume per bag. Every single bag is supposed to comply with the EN12580 volume as stated on the packaging. The packing machine



is using either time or weight as a setpoint for filling bags. These settings are calculated on basis of average bulk density of the mix. As stated above bulk density often shows a variation of 5 to 10%. Usually settings of a filling machine are not adjusted with the result that bags will be either overfilled or underfilled. In order to prevent underfilling from happening an operator will set the filling machine in such a way that the amount of product in a bag will never be too low. Basically, the operator is giving product away for free.

The only way to secure every single bag not to be overfilled and overdosed is to make a consistent blend during the production run. In order to achieve this one has to measure prior to bagging and adjust accordingly and this might lead to substantial cost savings.

Examples of cost savings

Raw materials:

Let's assume that the mix of raw materials will go at a cost of € 35.00/ENm³. If 300.000 ENm³/year is produced then total costs for raw materials will be € 10,500,000 per year.

5% Too much volume per bag equals € 525,000 per year, 10% too much volume per bag equals more than € 1,000,000 per year.

Additive like fertilizer:

Let's assume fertilizer dosing at 2kg/ENm³ at € 2.50/kg which means € 5.00/ENm³.

If 300.000 ENm³ per year is produced then total costs for fertilizer will be € 1,500,000 per year.

5% too much volume per bag means 5% overdosing of fertilizer which is equal to € 75,000 per year. 10% too much equals € 150,000 per year.

How to make the bulk density more consistent?

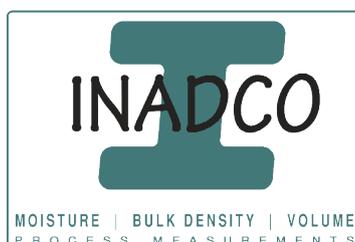
Measuring of bulk density is key and that happens to be our speciality. Knowing the bulk density at all times will give you the possibility to adjust with a low-cost product like water so giving you a more consistent bulk density and less usage of additional raw materials.

Of course, there are upper limits on water dosing. Bulk density can be raised as long as it does not exceed the upper limit of the bulk density.

Water is extra weight to transport. The maximum load weight per truck is a given as is the maximum number of pallets that can be loaded per truck and these limits cannot be exceeded. The maximum number of pallets per truck and the known number of bags per pallet will give the upper limit of the bulk density of the soil in the bags.

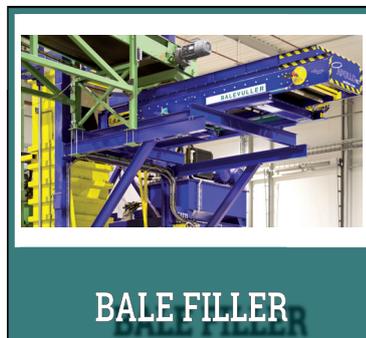
The cost of the soil mix per kilogram is way higher than the costs of the same weight of water! Therefor producing a consistent bulk density will raise your profit line substantially.

So, let us advise you also how to optimise measuring in your process and saving money!



OUR TOOLS

Several tools we developed for the horticultural industry. Let these tools help you and save money.



INADCO - Meerheide 18 - 5521 DZ Eersel - The Netherlands
+31 (0) 497 517 291 - sales@inadco.nl - www.inadco.nl