



SAMPLING CASE STUDY

VESSEL SAMPLING IN A CHEMICAL PILOT PLANT

Sampling

A sample taken from a process pipeline or reactor should represent the exact constituents of the process without any contamination. Contamination of a sample can create incorrect test results and cause further process problems. DDPS' range of samplers has several design features built in to overcome contamination problems and provide a true representative sample. Our range of sample dispensing options and secondary containment solutions are designed to suit the process needs of the pharmaceutical, chemical, biotechnology, food and beverage and petrochemical industries. Sampling solutions of all levels of sophistication are available from simple manual sampling to remote automated sampling and analysis systems. Toxic, flammable and corrosive media are safely sampled using systems with all wetted parts in a variety of materials of construction. Types of samplers available include:

Inline Samplers: designed to take representative samples from process pipeline. Inline Samplers are commonly used where chemicals are being introduced into the process or between process steps where it is difficult to obtain a sample from a vessel without creating hazards or additional contamination.

Surface Mounted Samplers: a new type of sampling valve which can be bolted on to the side or bottom of a vessel or large pipeline. Surface mount samplers are commonly used for taking samples from large pipelines or from the side-wall of vessels.

Vessel Mounted Samplers: allows samples to be taken from a dip pipe mounted at the top of a vessel. The vessel sampling systems are ideal for the sampling of batch processing within reactors or storage vessels holding intermediate product or bulk chemicals.

The following case study demonstrates our ability to create a customized solution that meets the specific needs of the customer. For further information please visit the sampling section of our website: www.ddpsinc.com/sampling

The Customer

An international pharmaceutical company

The company has a number of chemical pilot plants around the world which are used to improve and scale up active pharmaceutical ingredients manufacturing processes and to produce kilo batches of product for clinical testing as part of the product approvals process.

The Problem

The processes are carried out in a number of specially constructed plant units which enable a great deal of flexibility of both the quantities of materials processed and the reaction steps operated.

A wide range of reaction vessels needs to be used, varying from a few hundred liters up to a few thousand liters. The nature of the process and the need for accurate time-based process data requires frequent sampling of the reaction from the vessels.

Standard vessel sampling systems widely used in production scale plants for this purpose are too large to be of use in this application. Up until now the sampling has been carried out by opening the vessels and drawing out the samples into containers using manually operated suction equipment.

The highly active nature of some of the materials processed requires each operator to put on special personal protection equipment including self contained breathing apparatus in order to obtain a sample. The time required to do this was incurring a high cost of man hours as well as increasing production down time and personnel hazards.



The Solution

The client was supplied with two free mount sampling units which are compact, safe and easy to operate, cost effective and efficient for use with smaller scale vessels where space and sampling volumes are key issues. At the heart of the unit is a special 4-way valve with the opening and closing sequence controlled by a simple turning handle. By turning through the cycle and back, a purge, sample, rinse (if required) and close sequence is achieved. The valve can only be closed by turning back to the starting position in the counter direction thus offering “foolproof” operation. One unit has been supplied with a septum system for sample collection, the other with a simple bottle system to evaluate which is most appropriate for the plant.

As a result of using the free mount sampling system operator safety has been improved and the costs of operating the pilot plant unit have been reduced.

