

# AutoPilotFeed



## AutoPilot4Feed Advanced Control System

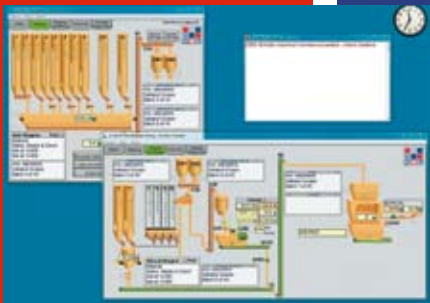


Animal feed mills

Premix plants

Pet food plants

Biomass plants



AutoPilot4Feed is the process control system designed specifically for animal feed mills, pet food plants, biomass plants and premix plants.

AutoPilot4Feed provides the following benefits:

- Optimisation of the process in key areas of the plant
- 24/7 support and built-in redundancy to minimise downtime
- Minimises costly errors
- Improves and ensures consistent quality
- Reduces operator workload
- Expandable for any future plans

AutoPilot4Feed is simple and intuitive to operate yet provides highly sophisticated techniques to optimise production and to allow unmanned operation where possible.

## Fully configurable, flexible & modern system

AutoPilot4Feed is fully user-configurable and built from a number of modular blocks to control the required areas of production.

This includes the intake of raw materials, blending, grinding and mixing of batches, pellet press / extruder control and bulk outloading / packing.

The system is fully scalable and can be configured for all mills from the smallest to the largest of plants. It may be used to control one area of a plant initially and then be extended as circumstances permit.

Many modifications can even be made to the system while production is running.



## Front to back control

AutoPilot4Feed may be used to control:

- Weighbridge in
- Intake / Receiving
- Silo transfer
- Weighing and batching
- Hand weighing
- Grinding
- Mixing with liquids control
- Pellet Press control
- Routing to finished product bins
- Fats coating
- Bulk outloading
- Packing
- Warehouse
- Weighbridge out

AutoPilot4Feed has a built-in simulation which is a very useful testing and training facility.

When the system is configured with real-time simulation parameters it can be used to help engineers re-design a plant and to diagnose potential bottlenecks.



**Optimising your plant**



## Standard hardware

AutoPilot4Feed is based on one or more standard Microsoft Windows 7 Pro PCs and readily connects to most common PLC and Input / Output systems.

This allows the older process control systems to be upgraded with minimum disruption and wiring changes by re-using the existing PLCs.

Windows Server may be used for larger systems with Thin Client PCs used for operator workstations.

Thin clients are very suitable for industrial environments as they do not have a hard disk which makes them easier to set up, more rugged and more reliable.

Control room workstations typically take advantage of the multi-screen capability of Windows so that the entire plant can be viewed without having to change graphics pages.

## Robust and reliable

AutoPilot4Feed's software is now well proven with many installations world-wide.

AutoPilot4Feed has a secure menu system and prevents unauthorised access. In the unlikely event of a serious fault with the Control PC, a Standby PC can take over control to minimise downtime.

## Worldwide 24/7 support

Telephone and remote access support, via broadband, is included with every system.

DSL Systems provide 24 hour 7 day support for the warranty period and thereafter by contract.

Remote access also allows upgrades and modifications to be installed remotely normally without even stopping the plant.

## Simple and intuitive

AutoPilot4Feed is simple to operate and operators are provided with clear and consistent graphics showing exactly what is happening.

Clicking on the screen with the cursor gives the operator access to most commonly used functions. A simple menu/password system is built-in for access to other options and is fully user configurable.

Alarms are displayed in clear language and unnecessary alarms are not generated.

Powerful manual override controls are easy to use by moving the cursor on the graphics to the faulty item.

One click allows an alarm to be accepted or the item to be forced to any state, access level permitting. Variable speed drives are configured with a manual override box on the graphics. Clicking on the box "lights" it up allowing the up and down arrows to manually adjust the required value.

Every operation performed by the operator is logged to the audit trail providing a long-term record of what happened when. A powerful utility is provided to search and view these audit messages which may be stored for 7 years on-line..

# 4 Intake and receiving



AutoPilot4Feed's intake control is designed to be very simple to operate, prevent mistakes, reduce keying and provide comprehensive operational and stock information.

AutoPilot4Feed may be configured to control multiple tipping bays and complex routes to bins and silos.

AutoPilot4Feed can directly connect to weighbridges eliminating double keying and operator errors. The system readily connects to most weighbridge indicators. Quality results and truck previous load details may also be stored.

All intake operations are logged to the audit trail and all intake transactions are logged to the database.

Viewing and reporting tools may be used to view all operations. The database also stores the details of all trucks, hauliers and suppliers.

AutoPilot4Feed has advanced intake control features including "truck follow-on" to minimise cleanout between deliveries of the same material, cross contamination checking, GM and organic tracking and automatic flushing options.

## Driver operated intake

AutoPilot4Feed has a very user-friendly method of driver-operated intake of bulk raw materials to minimise labour requirements and to prevent mistakes.

Each bulk intake pit has a small, simple driver-operated terminal which has a four line display and industrial keypad.

Operation is straightforward yet almost foolproof. When a raw material truck arrives on site, the driver goes onto a weighbridge for the first weight to be logged.



The weighbridge operator enters details about the truck load and a random 4 digit number or a swipe card is issued to the driver. When an intake pit is free, the driver backs the truck up to the pit and uses the issued number or swipe card to start the intake from the terminal.

When the truck is emptied, the driver returns to the weighbridge to obtain the second weight and once the exact weight is known, the stock in the bin is corrected.



Intakes being controlled using a wireless Hand Held PDA

**Bagged and bulk materials are all tracked**

**Data is stored on-line for up to 7 years**

## Logging and traceability

AutoPilot4Feed as standard comes with comprehensive logging including all intake transactions, batch records, usages, production, pellet press runs and outloading transactions.

This data is stored on-line for up to 7 years and can be viewed with AutoPilot4Feed's simple-to-use facilities. This satisfies most sites' requirements and helps mills to achieve the required quality standards and approvals.

Full lot traceability is an option that provides the facility of tracking each delivery (lot) of all raw materials through the plant and into each delivery of finished product.

Bagged and bulk materials are all tracked. Lots are tracked through bins on a first in first out basis.

With full lot traceability, the system allows the identification of the products and customers where each raw material delivery went.

In reverse, you can enter a particular finished product load and AutoPilot4Feed will display the raw material lots that went into it, letting you trace it back to the source. You can then use this to see which other customers may be affected by a problem.

Data may be printed, exported to a spreadsheet or exported to another computer system.



Materials | Details | Standard Substitutions | Logged Values |

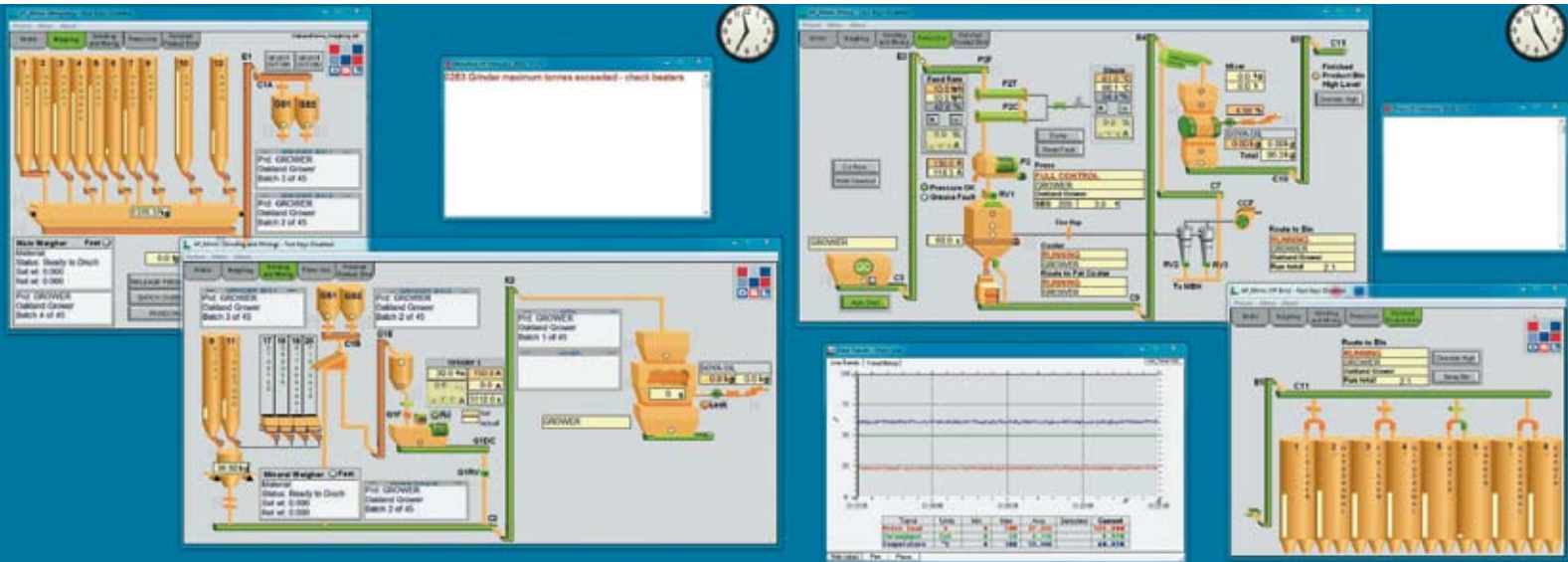
Sequence Number 11 Last 11 Tones 18 of 12  
Product 88542 Roller 55 Recipe 854  
Comment Hi-Par Roller 55  
Destination 4 - Press Line 84  
Start Time 7/3/10/2008 13:41:18 End Time  
Run No. 798287 Max line 8.1  
Order Lot Number P76519316 Batching Line 8.1/2

**Materials**

Material Code	Bin #	Alt. Val. (kg)	% Deviation	Scale / Device	Bin	Alt.	Cost Per Tonne	Lot Number
WJZE	208.200	180.892	-8.728	W1	802		122.888100021	
WJPE EXT	212.888	192.753	-9.756	W1	824		8.88829788521	
WJ88	68.888	68.788	-1.238	W1	882		8.88	
WJ97	158.888	138.895	-12.978	W1	828		8.88	
WJ8T	368.388	361.576	-7.892	W2	828		8.88829788521	
WJ65	458.988	462.526	+3.537	W2	822		122.88810001	
WJZ GRATH	115.298	188.188	+6.229	W0	817		8.88829788521	
WJZE GLTHER	458.888	432.692	-5.896	W4	819		8.88829788521	
WJZ LOWER	218.888	266.894	+4.894	W4	828		8.88829788521	
WJZE HULLS	388.888	281.592	-8.136	W4	821		8.88829788521	
<b>Totals</b>	<b>2999.999</b>	<b>2982.692</b>					<b>Total Cost 182.57</b>	

**Optimising your plant**

# 6 Weighing and batching



## Weighing and blending

AutoPilot4Feed includes advanced control for weighing, batching, hand additives and metering. This can be implemented as a stand-alone system or as part of a plant wide control system including intake, pellet press control and out-loading modules.

## Production scheduling

Batches can be scheduled to optimise production on the pellet press lines by monitoring the plant status. This ensures that the pelleting lines are kept running.

## Advanced weighing algorithms

To achieve fast and accurate weighing, AutoPilot4Feed includes Intelligent In-Flight (IIF) compensation, automatic jogging, pre-discharging, multiple feeders, weigher load balancing and intelligent feeder speed control.

## Cross Contamination

An advanced cross contamination matrix can be set-up to prevent cross contamination or to automatically flush the plant by producing a "Self-flushing" batch. This holds back a small non-contaminating part of the last batch of a run to self-flush the plant.

## Substitutions

Substitutions can be configured with up to 5 alternative materials with different percentage values. Different substitutions can be enabled for different product groups.

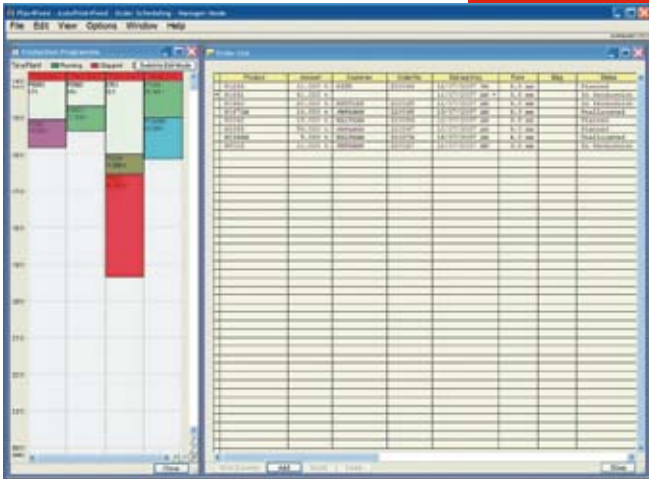
**'The technology in AutoPilot4Feed is 10 years ahead of the competition'**



**Optimising your plant**

## Plan4Feed

Plan4Feed is designed to simplify the process of scheduling orders for production by graphically displaying the production programme and highlighting any potential future problems.



Plan4Feed makes scheduling and planning simple and quick, prevents scheduling mistakes, warns of orders which are going to be late and minimises flush batches and die changes.

Plan4Feed gives the user an ability of seeing exactly what the plant will be producing when. Orders are automatically imported (by a variety of methods) so that orders cannot be incorrectly entered, lost or forgotten.

The program shows simply what orders will be produced when and colour is used to highlight orders which will be late, which require a die change, which could cause a cross contamination problem and so on. The operator uses simple “drag and drop” to move orders around to optimise the mill production.



## Masterweigh

Batch Weighing of Masterweigh.NET

Product	B385AA1	2:5 SOW PY+3KG AUROFAC
Batch	1 OF 12	Charge 1 OF 1 Sequence No 00000019

Material Code	Material	Required Weight (kg)	Actual Weight (kg)
SALT	Salt (Micro)	2.800	0.000
AUROFAC	Aurofac	4.000	0.000
RED_001	Red pigment	2.000	0.000

Material	Required Weight (kg)	Actual Weight (kg)
SALT	2.800	2.760

ACCEPT this Weight

Masterweigh is designed to supervise the preparation of manually weighed ingredients prior to automatic production. It ensures weighing accuracy, prevents mistakes, is simple and easy to use and all operations are logged.

Masterweigh comprises of a PC operator station linked to one or two platform scales to suit the application.

Operation of Masterweigh is designed to be very simple and normal operation can be performed with a single confirmation button.

A full or reduced keyboard is provided for less frequent and management tasks.

Masterweigh may be attached to a barcode label printer to allow containers to be labelled and ensure the correct ingredients are tipped into each batch.

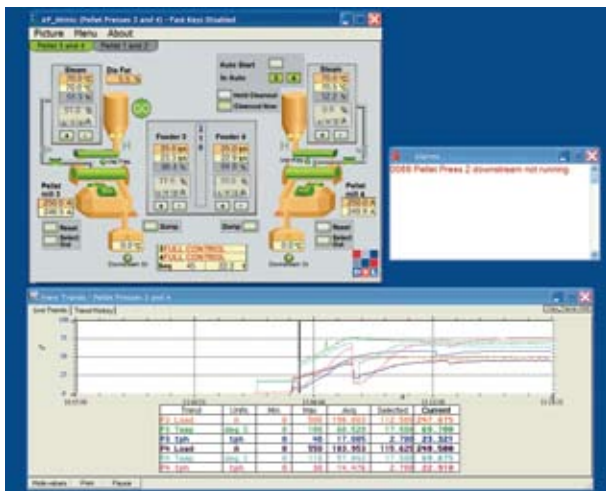


## AutoPilot4Feed incorporates features that optimise pellet press control

AutoPilot4Feed's pellet press control module is designed to optimise pellet quality, improve throughput and eliminate blockages.

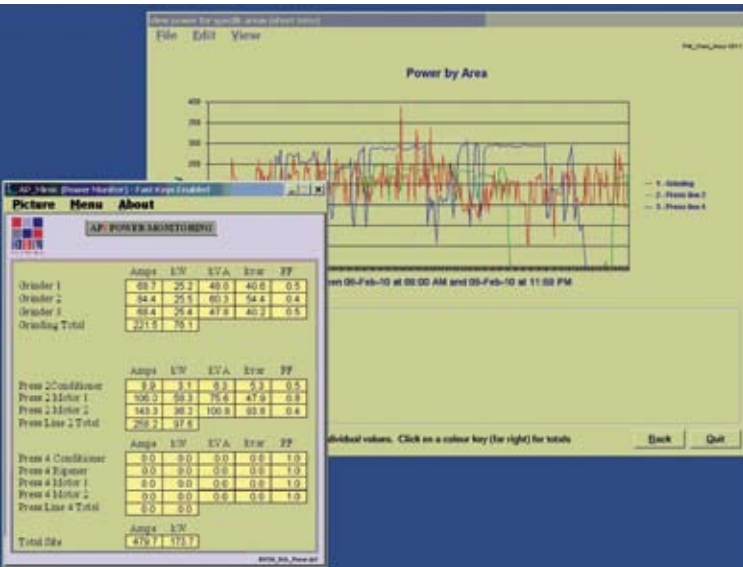
AutoPilot4Feed has a number of features to optimise pellet press control including automatic start-ups, flying bin-swaps, cooler fan speed optimisation, cold start-ups, anti-blockage detection, layered change-overs and automatic flushing.

**‘Changing control of our presses to AutoPilot4Feed has increased throughput by 15%’**



All configurations of pellet mills, extruders and expanders are catered for:

- Single pellet mill, Double side by side, Double in line, 3 pellet mills per line
- Up to 8 pre-pellet press bins per production line
- All forms of conditioner, expander, HFC and BOA
- Kettle or Ripener
- Extruder
- Cooler control
- Fats spray at the die (or downstream)
- On-line pellet tester



**AutoPilot4Feed has been successfully integrated into a wide variety of systems**



## PowerMonitor4Feed

PowerMonitor4Feed is a complete power monitoring and costing system. It allows you to monitor, analyse and report on a site's power including electricity, steam, gas and oil. PowerMonitor4Feed logs what you have used and when.

It allows you to compare different products' requirements and costs. Historical trends let you look at total power as well as power in different areas.

## Complete power monitoring and costing system

## Integration

AutoPilot4Feed can be integrated to a variety of commercial and least cost formulation computer systems in the following areas:

- Intake / Receiving
- Order and production
- Batch production details export
- Outloading truckoperation
- Bin / Silo contents
- Formulation, declaration and product information

AutoPilot4Feed has been successfully integrated to the following systems:

- Format International
- Microsoft Dynamics AX (FeedAx)
- BMS
- CAL
- SAP
- Pegasi
- ICS Perito
- Feed Management Systems (FMS)
- Brill
- Agris
- Many bespoke and local systems

**Optimising your plant**



## Outloading control

AutoPilot4Feed has a simple to use bulk outloading system which may be operated by a site operator or even by the truck driver. This fully automated system ensures accurate loads using advanced in-flight compensation and weighing techniques. When combined with automatic filling of the finished product bins the bin stock is tracked accurately. The system ensures the wrong product cannot be taken from the wrong bin. All transactions are recorded for later analysis and reports. The system may also be configured to print out weighbridge tickets and sample labels.

The system has an equivalent (sometimes called “shadow” or “badged”) product facility which is useful when one product runs out or it is more efficient to use a higher specification product.

There are many options to allow the outloading module to be configured to different site requirements e.g. multiple bays, weighbridge platform or scale above truck, blending systems etc.



**Bin stock is tracked accurately; all transactions are recorded**

## Packing and bagging

AutoPilot4Feed can be configured to transfer finished product to a packing system. To minimise errors the system can link to the packer, palletiser and wrapper machines to send the required programmes for the particular product. AutoPilot4Feed can also be configured to trigger “print and apply” label machines and inkjet marking printers with the correct information.

Bulk Outloading Operation		Bay 7 (WB7)		EOL_OPRT V001	
Registration	M636TNU				
Order / Load list	001				
Product	6490				
	MP STAGE 2 BREEDER CRUMB				
Compartment	1	Load list	1		
Approx. weight	5.50 tonnes				
Required weight	6.00 tonnes	Bin	428		
Cleaning out					

## Warehouse stock tracking

The Warehouse Stock Tracking option is simple to operate and yet provides substantial benefits.

Every time a pallet is produced, a barcoded ticket is printed which is stuck onto the pallet. When a truck arrives to collect a delivery, a wireless Hand Held PDA is used by the forklift truck (FLT) driver.

After entering the customer code, the FLT driver wands the barcode of the pallets or part pallets collected. Codes and stock levels are instantly checked, preventing incorrect operation such as shipping the incorrect pallet.

Thus a complete and accurate stock record is maintained at all times and details of all deliveries are logged. A variety of reports and printouts are available as standard.



## Asset Master

Asset Master provides a method of recording information on all site equipment which may be used as an aid to planned and unplanned maintenance. It also provides a means of storing supplier information and sub-assemblies in stores.

If linked to an AutoPilot4Feed control system, equipment run times and other totals such as the number of times a certain item has been started are updated automatically; therefore maintenance schedules are automatically updated too.

Asset Master also provides reports such as the current maintenance schedule showing maintenance jobs that are due / overdue on individual items of equipment.

## Hand Held PDA

DSL's Hand-Held PDA provides a method of controlling the plant remotely using a wireless Hand-Held Pocket PC device.

It integrates seamlessly into the AutoPilot4Feed control system, allowing the operators or maintenance staff to monitor and make changes from anywhere around the plant

The AutoPilot4Feed Hand Held software may be installed on any Windows Mobile compatible device including some mobile phones. The software has been specifically designed for these type of devices with touch screens.

DSL recommends Intermec rugged units which incorporate a barcode reader.

These are made to a robust specification well suited for harsh environments that also protects them against dust, moisture and drops.

Facilities available on the Hand Held PDA include:

- Day (production) programme view
- Hand additives requirements view
- Alarms view
- Item override
- Bin stock view / modification
- Bag stock receiving
- Carousel bin filling
- Intake control
- Pellet press control





John Thompson & Sons, Belfast - The world's most complex feed mill uses AutoPilot4Feed.

## DSL Systems

DSL Systems, founded in 1979, is a leading provider of advanced, integrated control systems.

DSL operate globally through a network of partners and agents.

Support for our control systems is provided 24/7 all over the world.

DSL has a policy of continual product development to provide the latest in control systems for every client.

DSL provide a variety of on-site and off-site training courses to meet your needs. Training may be provided for operators, maintenance staff and management. In addition, hands-on training is provided for operators during commissioning.

## AutoPilot4Feed

- Comprehensive
- Advanced
- Simple-to-use
- 24 hour support



**DSL Systems Limited**  
 Adbolton Hall, Adbolton Lane,  
 West Bridgford, Nottingham,  
 NG2 5AS, England  
 T: +44 (0) 115 981 3700  
 mail@dsl-systems.com  
 www.dsl-systems.com

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