

NEWSLETTER

FLOWFORCE™ ATTACKS CARBON POLLUTION (with carbon capture)

Flow Force Technologies entered a new era in 2010 with the decision to expand into the renewable energy industry. A new business unit has been formed called BioChar Technologies.

The emphasis is on carbon capture technologies where processes such as carbonisation, pyrolysis and gasification can all play a part in reducing the use of fossil fuels while producing useful but environmentally friendly products such as bio-char, bio-oil and bio-gas.

Our new Carboniser converts woody waste into biochar for use as a soil improver. The unit is transportable and designed for operation away from electricity supply lines. The demonstration unit has a capacity of 240 litres of waste and features an innovative

technique for utilising the bio gases generated during the decomposition of the waste to assist the heating process. This is one of the features of an Australian Innovation Patent recently awarded to us. Recent trials have established that the unit can produce good quality biochar resulting in a net reduction in atmospheric carbon dioxide (compared to simply burning the waste or allowing it to decompose).

Check out our back page story on our first test results with the new Carboniser.

This year we plan to complete the trials of the Demonstration Unit; ensure the design satisfies OHSE guidelines and commence direct sales.

www.flowforce.com.au

FLOW FORCE™ is an Australian registered trade mark.



The Series 1 style Batch Carboniser will pyrolyse 1 tonne of wood waste into approx. 500 kg of bio-char and simultaneously avoid approx. 1 tonne of CO2 emissions.

BUT:

HEAVY INDUSTRY IS STILL IMPORTANT TO US

Notwithstanding our new interest in renewable energy and carbon capture technologies we continue to place emphasis on our ability to supply reliable in-motion weighing products to heavy industry, together with timely and courteous service support when needed.

Accurate and reliable measurement of mass flow rate of bulk solids will always be important to many industries and processes. Without such measurements process efficiency can suffer and production costs blow out very quickly.

As part of our long-term

commitment to our customers we continue to improve our products wherever necessary to cope ever better with the rigours of bulk solids handling. But we also welcome your feedback and suggestions on how we can further improve our products or service. Tell us now!

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Points of interest:

- The northernmost Flow Force impact weighers are installed at the port of Vanino in far eastern Russia on latitude 49 degrees N measuring alumina flow from ship unloader to train wagons.
- The southernmost Flow Force impact weighers were supplied to an alumina smelter in Invercargill, New Zealand on latitude 46 degrees S.



RUSSIAN UPGRADE WITH XP CONTROLLER

Back in 1994 the port of Vanino on the east coast of Russia installed a ship to train transfer system to receive and unload alumina from Australia and India. The system included four Flow Force impact weighers. The weighers controlled the train wagon loading to a pre-specified batch weight at flow rates up to 500 T/hr per weigher. Total train loading rate was 2000 T/hr.

The weighers used our XK Controllers with instruction manuals in both Russian and English.

After successful commissioning in 1994 we heard nothing more

of the units until last year when we received a request to supply 2 new Controllers to replace two damaged XK units.

This presented a challenge on 2 fronts: firstly to find the contract documentation after 16 years! And secondly to replace the superseded XK Controllers with plug-compatible and operator compatible XP Controllers.

The first challenge was easily overcome thanks to our penchant for paperwork; all the documentation was found in the Exports filing cabinet.

The second challenge was overcome by adapting our XP Con-

troller to the mandatory front panel displays and controls. Some changes to our standard software were needed to accomplish this. The new Controllers were delivered to Vanino within the deadline set by the customer. P.S. In 1994 there was no road into Vanino. We flew in from Khabarovsk which is a very well laid out city founded in the mid 1800's shortly after Adelaide. Khabarovsk is located on the banks of the Amur River which is the ninth longest river in the world (longer than the Murray) with an annual average flow rate of nearly fifteen times that of the Murray!

More Impact weighers for Cement plants here and in DR



Flow Force impact weighers continue their role in cement plants both here in Australia and abroad with recent orders for a further two units at **Birkenhead** in South Australia and a further two for the **Dominican Republic**.

The two units at Birkenhead are replacing two old units from overseas that have become very difficult to maintain given the old technology and expense of spare

parts.

Photo at left shows one of the units on completion of factory check-out. This unit is designed for coarse returns cement flow rates up to 300 T/hr and material temperatures up to 130 deg. C. The inlet and outlet flanges were designed to match the existing old unit so as to facilitate a rapid changeover with minimum downtime of the cement mill.

The two additional units for the

Dominican Republic are also for coarse return flow rate measurement and follows the successful operation of their first unit installed in 2004 and the recent decision to extend plant capacity. We acknowledge the important part played by our agent **Master Control** based in Monterey, Mexico in obtaining this additional business and look forward to assisting them with site commissioning once again in beautiful **Santo Domingo!**

Same again for BBMALT



Geelong maltster Barret Burston Malt installed a Flow Force Series 1 style impact weigher in 2001 for truck loading. In the latter part of last year the manager of BBMalt called to ask for a quote for another unit "just like the last one" to use in an identical application arising from a plant expansion.

Photo at left shows the unit packed & ready for despatch.

The Series 1 style is designed to suit grain inlet flow from an inclined pipe or chute. In this application the inlet was 400 mm x 400 mm square to suit a silo discharge flow rate of 75 tonne/hour.

The silo outlet is fitted with a motorised gate valve so that flow can be automatically stopped when the nominated weight of grain has been loaded.

SERIES 1 STYLE FEATURES:

- **STEEP INCLINE IMPACT PLATE:** Can cope with material having high angle of repose without risk of material hang-up.
- **CUSTOM DESIGN:** Designed to suit client's existing inclined chute and corresponding material inlet velocity.

Bin Level Indicators—time to upgrade!

If it's time to upgrade your old bin level indicator then we have the answer for you.

Economical, simple design but with smart software the new FLOWFORCE XP bin level indicator is compatible with your existing strain gauges.

Just throw out the old Indicator Unit and connect in the new XP indicator.

Many of the instruments

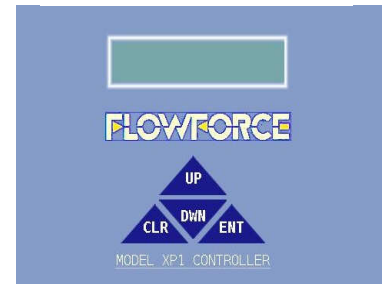
installed in the 80's and 90's are no longer supported by the original suppliers and many of the components are either obsolete or very expensive to find.

So it makes sense to purchase replacement indicators now for your existing older style units rather than wait for a failure and then find that you have to shop around for a replacement.

Shopping around takes time and time is money; especially when the installed unit is down!

Don't worry if your bin is not symmetrical or has multiple discharges. We can model the shape to derive the relationship between weight and level and program the indicator accordingly.

XP CONTROLLER



The XP Controller front panel is very simple and easy to use needing only 4 pushbuttons to access any of the user functions.

MAGNE//FLO DESIGN SUITS FEEDMILL

The MAGNE//FLO design is very suitable for the dusty types of materials used in feed mills to make animal feed pellets.

Blending of additives with the feed pellets to make batches of various sizes and ingredient combinations as per customer orders is a normal part of a

modern feed mill's daily routine.

A recent application involved retrofitting two MAGNE//FLO impact weighers into existing chutes to replace the impact weighers originally supplied with the plant.



AUSTRALIAN DISTRIBUTOR FOR FLUIDYNE GASIFIERS

In April this year Flow Force was awarded an exclusive licence to sell Fluidyne New Zealand gasifiers in Australia by the Australian manufacturing licensee Gasification Australia Pty Ltd.

The Fluidyne gasifiers use the down-draught principle and high temperatures to convert woody biomass to

wood gas with a typical gas composition of 20% carbon monoxide, 19% hydrogen, 9% carbon dioxide and 51% nitrogen. The gas is almost completely free of tar making it most suitable for use in internal combustion engines or dual fuel gas-diesel engines.

Two models are currently

available for sale as follows:

TASMAN Model with a capacity of up to 20 kg/hour of wood producing up to 45 m³/hr of gas; and

PACIFIC model with a capacity of 45 kg/hr of wood producing up to 98 m³/hr of gas.

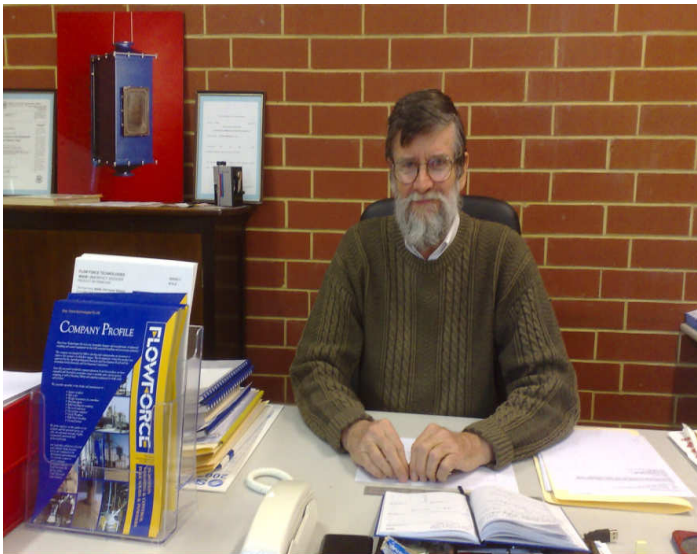




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SMART-CLEAN-GREEN



ABOUT US

Flow Force has specialised in impact weighers since the company was founded in 1988 and remains our main “claim to fame”. But we also design and manufacture a wide range of solids handling and weighing equipment including belt scales, bulk bagging systems, bin level indicators, batching systems, check weighers, dosing systems and samplers. We have been serving the minerals processing, bulk grain and stock-feed handling industries since our inception and more recently the food processing industry. In addition the use of our impact weighers for ash handling in power stations continues to make an important contribution to environmental sustainability.

Our new renewable energy division now markets the Fluidyne range of downdraught gasifiers and of course our own range of Batch Carbonisers.

We supply equipment throughout Australia from our base in Adelaide and our customer base now includes 12 other countries.

For further information contact Brian Lewis (shown at left) on Tel: (08) 8346 4006 or email to blewis@flowforce.com.au

Batch Carboniser: Pine Off-Cuts Test Summary

Initial testing of our demonstration Batch Carboniser has established the ability of the unit to produce good quality biochar while simultaneously capturing carbon.

The following summary is from a group of trials we have conducted with “green” pine off-cuts from a sawmill/pallet manufacturer.

- A) Type of biomass: Green pine offcuts.
- B) Weight of biomass: 50kg.
- C) Weight of biochar produced: 27 kg.

Typical composition of the biochar is 5% ash, 5% moisture, 15% volatiles and 75% carbon.

Molecular weight (MW) of

carbon is 12 and oxygen is 16; so MW of carbon dioxide is $12 + (2 \times 16) = 44$; so 12 units of carbon saves 44 units of carbon dioxide; and $44/12 = 3.66$.

So the 27 kg of biochar represents $0.75 \times 3.66 \times 27 \text{ kg} = 74 \text{ kg}$ of carbon dioxide diverted from the atmosphere.

D) Weight of LPG used as start-up fuel: 8.2 kg.

The specific CO₂ emission of LPG is 3 kg CO₂/kg LPG so the 8.2 kg of LPG that we used represents $8.2 \times 3 = 24.6 \text{ kg}$ of carbon dioxide returned to the atmosphere.

SO:

E) Net Weight of carbon dioxide avoided = $74 - 25 = 49 \text{ kg}$.

In summary we estimate that the process of producing this 27 kg of biochar captured 49 kg of carbon dioxide OR about the same as the weight of biomass used. (This estimate will be finalised after analysis of the biochar to determine ash, moisture and volatiles content).

TO BE CONTINUED!

