OGURA ON THE MOVE

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OGURA ACQUIRES KYOWA PRECISION MACHINE COMPANY

Kiryu, Japan

Earlier this year Ogura purchased Kyowa Precision Machine Company in Kiryu, Japan. Kyowa was established in 1962 as a specialty machine shop. In 1981 they started doing subassembly for parts for Ogura's small industrial clutches. Throughout the years they did subassembly work for four different clutch models.

As Kyowa grew doing more subassembly work for Ogura, the need grew to have them aligned with Ogura's production control and quality control systems. It was decided by Ogura's Board of Directors that the best way to achieve this alignment was to acquire the company.

In April of this year Ogura took over control of the plant operation and started making changes to allow the plant to comply with Ogura's strict quality control guidelines.

Ogura's new plant # 5

Plant #5's new employees wearing their Ogura uniforms

The micro clutch area used to have production taking place in four different sections. It is now combined into three different sections, which flow from assembly to inspection, to shipment. This has reduced the amount of space required for assembly, the amount of personnel and has simplified production flow. A similar transformation took place in the small industrial clutch assembly area.

The changes made reduced the workforce from 33 employees to 22 employees.

In upcoming months all documentation and quality controls will match Ogura's. Once this is achieved the plant will then be able to be certified under ISO9001 and ISO14001.

"MERELY MAINTAINING THE STATUS QUO IS NOT GOOD ENOUGH FOR OGURA"

Kiryu, Japan

The above phrase from Ogura management is driving many of the changes occurring at Ogura's manufacturing plants worldwide. One of the recent changes took place on the armature assembly line at the Akabori manufacturing facility in Japan. (The Akabori plant manufactures all PTO, mobile and general purpose clutches for Ogura Industrial.)

The previous layout had three separate automatic armature assembly lines. Two of those lines handled similar armature sizes, but the lines were located in

Continued on next page (Changes)

Final combined armature assembly layout

OIC PROFILE

Atsushi Amemiya
Application Engineer

Atsushi Amemiya

Hi, my name is Atsushi Amemiya. I'm the new application engineer at OIC.

I joined Ogura on July 2nd. It has already been a very interesting learning experience. Challenging, yes, but enjoyable also. And I am really looking forward to becoming able to contribute my something to the company.

Before joining Ogura, I was a technical interpreter for another clutch manufacturer, called FCC (they make clutches for Honda) in the state of Indiana. Before FCC, a clutch was a subject of little interest to me. But, being involved with technical discussions between Japanese and American engineers for two years made me want to get more deeply involved with the engineering aspect of the clutch business.

I graduated from Chiba National University of Japan with M.S. in the field of Architectural Structural Engineering in 1992, and my thesis was based on a 3-D Finite Element Method structural analysis program, which I wrote in FORTRAN (Does anyone remember FORTRAN?). Certainly, my computer and mathematical skills came in handy at FCC. This skill provided me with an opportunity to manage a small department called Data Management. I believe that my strength is the combination of language skills and technical background.

I have lived in the states for 15 years, and for the first 13 years, I lived in Connecticut. When I was in Indiana, I really missed the east coast, so it is fantastic to be back here. In my spare time, I play traditional Irish music with fiddle. Because there are not many Asian people who play Irish music, I'm kind of famous in the Irish musicians' community (but not for my skills, unfortunately).

I am excited to be here!

Changes

different buildings. It was decided to consolidate both lines into the new building, which resulted in a complete layout change

A total of 69 improvements were made to the line. Some of the highlights are:

- A new loading robot which is now capable of handling 70,000 pieces per month.

- A new balancing inspection machine: The new machine uses Servos to make changeover very fast. (The old machine needed to be adjusted manually for different armatures.)

- Locator changed: To detect the armature position, the old assembly machine used proximity sensors. This caused problems in detecting different sized armatures, so the jig and the program were modified to detect the armature bridge, which was more accurate and eliminated any line stoppages.

New armature adjustment module

- Rubber dampener insertion: Mis-insertion on the rubber dampeners was causing rejects at about 100 pieces per day, so the assembly process was changed so that the bottom cylinder inserts a force two times greater than the upper cylinder pressure. This reduced any occurrence by a factor of ten.

The overall result was that efficiency of the line is now running above 80% and the entire line can be run by one person.

Ogura Industrial receives thank you from Ohio State Engineering team

Ogura Industrial received a "Thank you" plaque from the Ohio State University Dept. of Food, Agriculture and Biological Engineering. This was for both product and design assistance for their quarter scale tractor design competition. The team finished first place in ergonomics judging and 11th out of a field of 27 other schools being judged on manufacturability, safety, serviceability, ergonomics and maneuverability.

Thank you plaque from Ohio State University

APPLICATION STORY

THIS OGURA PRODUCT REALLY BLOWS

For 2007 Kawasaki has introduced their Jet Ski® Ultra® 250X personal watercraft as the most powerful production personal watercraft in history. The 250X achieves amazing 250 horsepower from only a 1.5 liter engine. To achieve this phenomenal increase Kawasaki is using Ogura's high efficiency Supercharger. The Ogura Supercharger compresses the air up to a maximum of 11.4 PSI. This gives the Jet Ski® almost instantaneous acceleration. Unlike turbochargers, which are more efficient at high speeds, the Ogura Supercharger is very efficient at low speed.

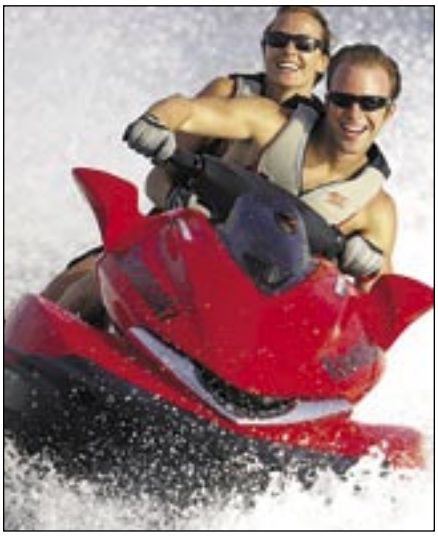
The Ogura Supercharger compresses the air up to a maximum of 11.4 PSI. This gives the Jet Ski® almost instantaneous acceleration.

The Ogura Supercharger is a Roots type positive displacement blower that works by pulling air through a pair of smoothly meshing rotors. These rotors are connected to each other by gears and are set 90 degrees from each other. As the rotors turn in opposite directions, air is trapped in the pockets formed between the rotors and the housing. For every revolution of the rotor a volume of air (depending upon the supercharger's size) gets pumped from one side to the other.

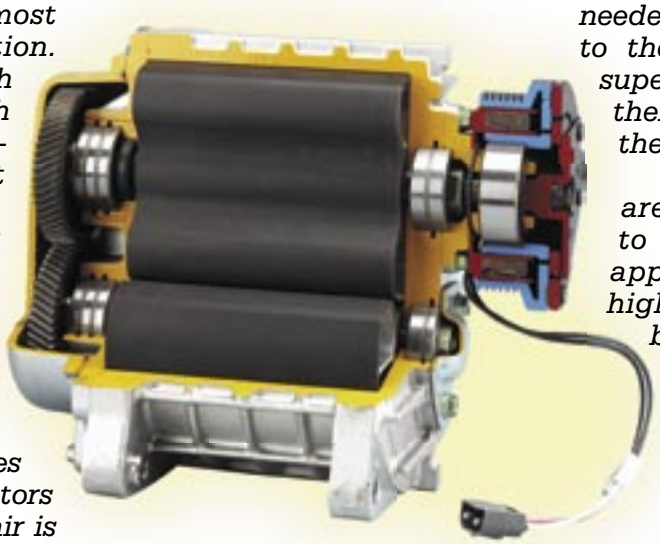
By feeding the Kawasaki engine 2 liters of air with every revolution the Supercharger provides stable, high pressure air intake at all speeds avoiding any lag normally associated with turbochargers.

The Ogura Supercharger is custom built into the Kawasaki engine

Air flow chart



The Ogura Supercharged Kawasaki Jet Ski boosts the 1.5 liter engine to 250 horsepower



Cutaway of Ogura Supercharger with electric clutch showing high efficiency coated rotors

In other applications the rotors are driven by an electric clutch with a pulley as its input; the clutch pulley is driven by a belt connected directly to the engines crank shaft. When supercharging is needed, the electric clutch is engaged to drive the supercharger. When supercharging is no longer needed, the power is shut off to the clutch and the clutch/supercharger is disengaged. So there are no parasitic losses on the engine.

Ogura's Superchargers are ideally suited for small to mid horsepower engine applications that require higher horsepower output but want to limit either the engine size or weight. Ogura's high efficiency Superchargers can also act as industrial blowers and/or vacuums. These have been used in everything from elevating shuttle trains via an air curtain or as a vacuum for carpet cleaning equipment. In more recent applications the Ogura Superchargers have found their way into fuel cells where air handling efficiency is extremely important.

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Wishing you a fun Fall! from the staff of **Ogura Industrial**

OGURA IN THE NEWS

OGURA EMPLOYEES PARTICIPATE IN YAGIBUSHI FESTIVAL

Kiryu, Japan

Dancers with Ogura's large float in the background

In August employees of Ogura participated in the 44th annual Yagibushi Festival. Besides the parade participants and the huge float that Ogura had in the parade, there was also a 24 member drum team that performed traditional Japanese folk music. The drum team performed so well that they were featured on the front page of the Kiryu paper and were enthusiastically encouraged by the spectators to play three encores.

OGURA EXHIBITS AT MACHINE ELEMENT TECHNOLOGY TRADE SHOW

Tokyo, Japan

Show attendees watch Ogura technician explain products on combination motion control/tension control demo machine

Ogura clutches and brakes on display

Approximately 82,500 attendees visited the combined Machine Element Technology and Design and Manufacturing Solution trade show. Almost all of Ogura's industrial clutch and brake product line was on display at the show. Besides the normal interest in clutches and brakes, there was also strong interest in the oil mist separator. With many companies looking to improve the working environment for factory workers, oil mist separators are quickly gaining popularity.

BOBBY CLEVELAND TAKES 2ND PLACE IN 2007 NATIONAL POINTS CHAMPIONSHIP

Bobby Cleveland holding the 2nd place trophy

Delaware, Ohio

On September 2nd the finals for the US Lawnmowers Racing Association was held in Delaware, Ohio. The weather and track conditions were excellent, which provided some impressive lap times for the drivers. This season Bobby Cleveland was in a very tight race with a driver from Florida by the name of Pat Sullivan. Pat had an impressive record this year finishing first in almost all the races he entered, but in the two races where he went up against Bobby Cleveland, Bobby finished first in one race and Pat finished in front of him in another race. This led for an exciting final race in Ohio. But in the end Pat kept up his winning ways, winning the race and capturing the series points title, with Bobby finishing in second place, out of approximately 70 drivers.

Besides the IMOW division, Bobby also competed in the BP division and despite having engine problems in the final race, ended up in fourth place in the overall points total, out of 49 drivers.