



Your obvious partner...  
in pulp and paper

*The Atrex System at M-real Hallein Paper Mill in Austria:*

“Atrex is running well and saving us money!”

M-real is one of Europe’s leading producers of paperboard and paper. M-real’s business is divided into three business areas: Consumer Packaging, Graphic Papers and Office Papers. M-real offers premium solutions for consumer packaging and communications and advertising end-users. The global sales network serves the needs of publishers, printing houses, merchants, offices, well-known brand owners and folding carton printers. In 2007 M-real’s sales totalled EUR 4.44 billion and the number of personnel at the end of the year was 9,508.

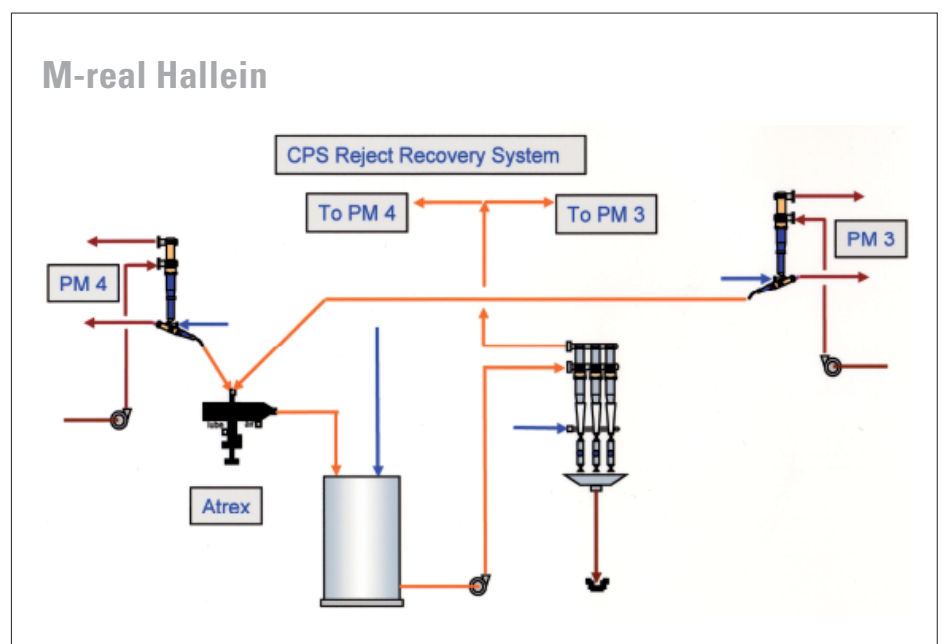
The Graphic Papers business area provides coated and uncoated graphic papers and related services for publishing, advertising and communication end-users. Annual production volumes total 3 million tons, including coated magazine papers, coated fine papers and uncoated fine papers from mills in Finland, Sweden, Germany, Austria and Switzerland.

M-real Hallein AG in Austria is an integrated pulp and paper mill producing 160,000 t/a of TCF-bleached sulphite pulp from spruce. The paper mill produces coated papers, some 310,000 t/a, with grammages ranging from 80 to 295 gsm, for graphical purposes with supreme quality requirements.

The mill is located in Hallein, 15 km south of Salzburg. The mill runs two paper machines.

Hallein produces only coated fine paper. When products are coated there needs to be an efficient

broke circulation where the coating particles return to the short circulation. These particles may be rather large and may even be visible when looking through the paper.



# Atrex success at Hallein Mill

*Last year the Atrex system was bought to reduce and minimise the volume of rejects from the cleaning process. This way the mill can reuse more fillers from the coated broke in the paper without any negative impacts on the properties of the paper, such as delamination, strength properties or surface strength. This can mean picking up small particles laying on the top of the base paper. These particles may be picked out into the printing process.*

*"This is the main advantage in terms of technology and quality, and from the economical point of view we save a lot of money by reusing our own coating broke and we thus avoid buying fresh filler," states Dr. Mark Watkins, Pulp and Paper Mill Manager.*

"Actually there were two parts to the delivery. First of all we bought a new cleaning department from GL&V for PM4, so this year we are able to separate the fibres from ash or fillers much more efficiently than we could before."

"As the first step on PM4, we replaced the old cleaner part which was designed for 60 gsm uncoated paper. PM4 is now running 80 gsm to 170 gsm coated paper. The process has been strongly developed over the years and the cleaning systems were no longer up to the challenge in terms of stock cleanliness."

"Then we realised how much of the fibres we could reuse and, on the other hand, how much filler we had that used to go to the wastewater treatment plant. So we really saw the need to have an efficient way of recovering rejects. That was the reason to hold discussions with GL&V over the Atrex system. Atrex seems to be a very established technology throughout the industry. Many mills just in M-real already have this process in use. There aren't any mills in our fleet, as far as I know, without the Atrex reject recovery system."

"We started the project in 2007 by holding discussions with GL&V's specialists. Already in 2006 we had an Atrex pilot system in the mill and during that time we were easily able to notice the efficiency of the Atrex process."

***So you had the movable Atrex pilot process installed into your production process.***

***Was it a good idea to have it installed?***

"Yes, of course. It's a good way to prove that the system works and that the particle distribution is just what has been expected. The pilot plant was definitely a good idea. For us it was also important from the point of view that earlier we had been running another supplier's system in our mill, which then failed."

"First of all GL&V could offer us a good reference list and the pilot plant which gave us the confidence and willingness to invest quite a lot of money in this system."

"After the pilot runs we were confident that this system would work and that it was going to be a really good system."

The Atrex system serves both of the paper machines. PM4 already has a new cleaner plant and PM3 will get a new cleaner part this year, so the ability to separate fibres and fillers has been significantly improved at Hallein paper mill. The rejects from the final stage of the cleaner plant by

PM3 also pass through the Atrex system and will be reused the same way as in PM4.

***How many times do you circulate the accept from the Atrex cyclones?***

"There is only one stage after the disperger. It seems to be enough for us. If we take a base sheet from PM4 which has been processed through the cleaner plant, and if you look through the base sheet before it has passed through the Atrex system, you can see the difference in this peak of coating particles in the base sheet which really show through the paper. With the Atrex online these disappear, so it really is a big step for us. It is a great improvement quality-wise. The more you can offer the customer, the more business you can get," states Mark Watkins."

***How much are you saving on fillers and fibres with the Atrex system?***

"All the targets have been fulfilled. The process is just what was expected. Compared to the older system, approximately three to four hours per day were needed for cleaning the pipes and restarting the system. Atrex is running smoothly without any need for maintenance. From the process point of view it is really a stand-alone system and it is doing its job 24 hours a day. It is a compact installation and can be built into an excellent overall package to ensure the quality of the finished stock."

***How about the investment payback time, what do you think about that?***

***You have now been running the system since November 2007.***

"The financial payback time seems to be less than two years. And this is something special for Hallein because normally rejects from the cleaner parts would have been transported to the landfill, which was very costly. We can now burn the rejects in our biomass boiler and we only have to take care of the ashes from the boiler. If we put a price on those rejects, the payback time would be under one year."

***Where did you get the idea to begin using the Atrex system?***

"After we had run the other system, and especially because the other mills in M-real are already running the Atrex system, we started up discussions with GL&V. However Atrex was already part of the discussions we had in earlier days when we

chose the other system which later on eventually failed."

***Do the rejects from PM4 and PM3 differ from each other?***

"As PM3 is running the higher basis weights the proportion of fibre to filler or coating is different from PM4. We always supply more or less the same amount of coating through the whole basis weight range. If running 80 gsm or 150 gsm paper from PM4 it has the same amount of coating as the 295 gsm from PM3. So the relation between fibre and coating and the total ash content from machine to machine stays stable. When PM 3 is loaded with more fillers it receives more coated broke as well. In that sense PM3 is more sensitive to failures in finished stock screening."

"On the other hand, the big particles are not so critical with high basis weights but in 80 gsm or 150 gsm you can really see the particles and this is something we need to avoid."

"From both machines the rejects from the last cleaner plants go directly to the Atrex system and after the Atrex, where we have three cleaners, the rejects are taken to the wastewater treatment plant and the accept from Atrex is delivered in different portions to PM3 and PM4. During shut-down all the accepts are fed into the running paper machine."

***Can you see any improvements in the final products or in the running of the paper machine?***

"No changes have been noticed in the paper machine but definitely quality-wise in the paper."

***How about the service you received from GL&V during this process?***

"I would like to thank them all for all the good work that was done. It was hard sometimes, we had several long discussions to get the project to move forward but because it was a win-win situation, we could get things solved smoothly. Both of the partners learned a lot. Now the system is running and saving us money and turning out good quality paper. This is a good way to do profitable business," says Dr. Mark Watkins, Pulp and Paper Mill Manager.

## **ATREX Systems at M-real Hallein Paper Mill**

### **Hallein PM4**

*Existing cleaner, Technical specification*

Stage 1 Vorject 410 Cleaners

Stage 2 Vorject 410 Cleaners

Stage 3 Vorject 410 Cleaners

Stage 4 Vorject 206 Cleaners

*Cleaner upgrading*

Stage 1 Vorject 410 Cleaners

Stage 2 Cleanpac 700 HQ Cleaners

Stage 3 Cleanpac 700 HQ Cleaners

Stage 4 Cleanpac 700 HQ Cleaners

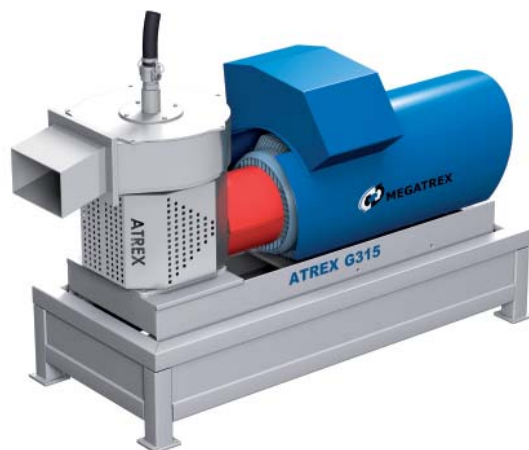
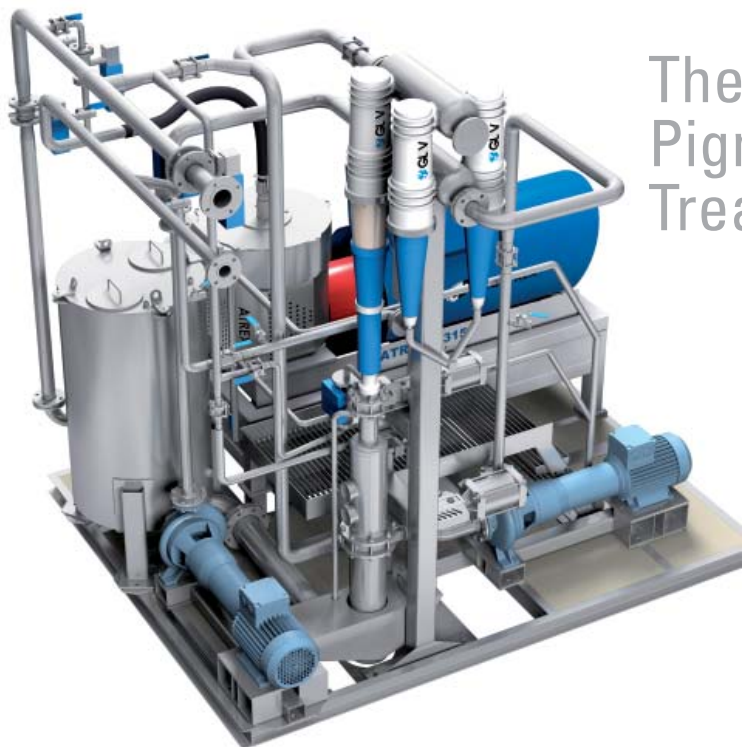
Final stage Fibermizer unit

*Reject treatment at PM 3 & PM 4*

Atrex, CD 700-132/132 Unit

Cleaner Albia 1600 Cleaner

# The ATREX™ technology for Pigment Dispersing, Reject Treatment and Disintegration



The cleaner reject consists of valuable raw materials that can be reused in the process after treating them with ATREX™ system. With the ATREX most of the valuable minerals and fibers can be recovered and reused in the process.

Paper mills producing coated grades have a lot of coating flakes in their current reject streams. The heavier the coating is the more difficult is deflaking with existing machinery. Double coated grades or coated board are good examples. Another group of paper production lines that suffer from loss of fillers through this reject stream is the SC paper mills.

## Efficient results with low energy

The ATREX works by feeding material into the center of two counter rotating rotors. Each rotor has several rings of vanes. In the gaps of the rotor vanes and circumferences very strong shear, turbulence and impact forces have an effect on the material to be processed even on the micro level.

The treatment is directly right on target after one single pass and every single input volume unit gets an equal and very strong energy input. By means of the rotors construction and rotating speed the process efficiency can be easily controlled to suit different applications.

When the stream is processed with ATREX the target is to reach the original particle size distribution of coating pigments and fillers. At the same time fiber knots are disintegrated and shives grinded. It has been shown that all the fibers and more than 95% of total reject stream can be recovered back to process. The pigment works as filler and the use of native filler can be subsequently reduced.

In the process ATREX grinder with an additional cleaner is installed after the last, typically the 6<sup>th</sup> centrifugal cleaner stage. The accept of the additional cleaner will be returned to the 2<sup>nd</sup> stage feed and the reduced amount of residue will be the final reject.

## The economical impact of ATREX is huge

The payback time of ATREX system can lead to 2 to 4 months when taking in account the value of the recycled raw materials and the savings of the transportation of the reject and the charges for landfilling.

The ATREX units are available to cover capacities up to 30 cubic meters/h (130 gpm).

## Revolutionary ATREX G-series

The new generation ATREX™ G-unit assures highly efficient material treatment in a simple, flexible and compact process. Stable operation and effective grinding, mixing, homogenization, and dispersing results are ensured by unique design of the ATREX G-series.

The G-unit is an improved version of the CD-unit which has moved on from the double-motor drive (CD) to a single-motor drive and gearbox (G). It has lowered energy consumption by around 20%

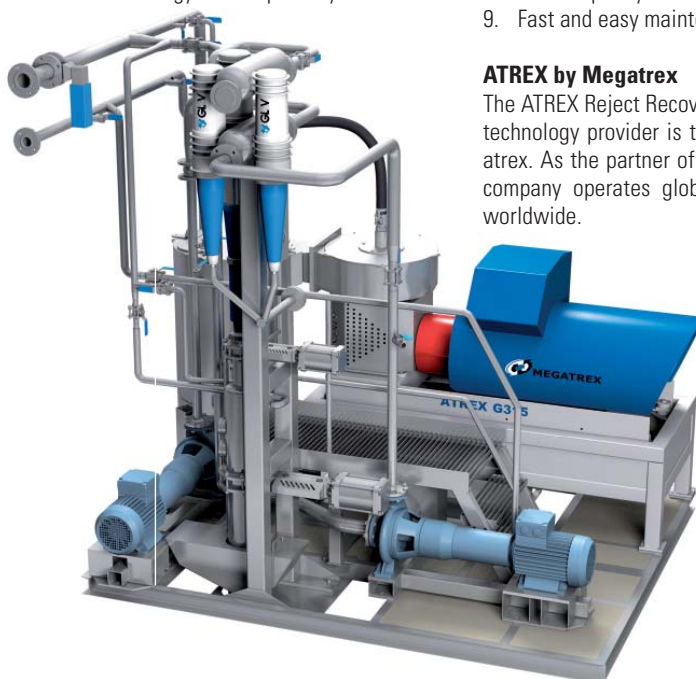
in comparison with the CD-unit. The G-unit is delivered as a complete package with all the essential parts, such as the ATREX, cleaners, pumps, motors, valves, pipes etc. included. The CD-unit was delivered as individual components and the customer had their own pumps, motors, pipes and valves. Megatrex and GL&V's units offer higher cost-efficiency and shorter payback times and are suitable for smaller-scale production.

## The key benefits of ATREX systems

1. Stable operation and uniform treatment results
2. Extremely reliable, safe and user friendly
3. Easy input and output
4. No clogging problems
5. Compact and durable design
6. Low energy consumption
7. Reduced total investment costs
8. Wide capacity area
9. Fast and easy maintenance

## ATREX by Megatrex

The ATREX Reject Recovery Process developer and technology provider is the Finnish company Megatrex. As the partner of GL&V Pulp and Paper the company operates globally serving the industry worldwide.





*GL&V Pulp and Paper Division:*

## Experience – Innovation – Solution

*GL&V Pulp and Paper, a division of the Canadian based company GLV Inc., is a global enterprise in technology and processes for manufacturing of pulp and paper as well as in production and treatment of fresh, process and waste waters*

*The GL&V Pulp and Paper group is one of the largest suppliers of pulp and paper production equipment and a world leader in equipment rebuilds, upgrades and optimization.*

*GL&V Pulp and Paper group provides complete solutions for production and management of fresh and process waters as well as for efficient treatment of waste waters and effluents in the pulp and paper industry. The GL&V technology and processes are designed for accomplishing the lowest capital and operating expence combined with the highest feasible total efficiency of the supplied components and process systems.*

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