

SFH

# Everything is ready for implementation of this recovery channel

SFH, in collaboration with Cetim, has developed a range of briquetting machines for machining sludge. This process allows reuse of most of the cutting fluid and recycling of metals contained in the sludge.



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## OUR PARTNER

**Company name**  
SFH

### Activity

Power hydraulics specialist, SFH has developed a range of briquetting presses for machining chips and sludge to highlight their economic as well as environmental value.

**2013 turnover**  
6.3 million Euros

**Staff**  
44

“Today, SFH is able to compact up to 95% of machining sludge” has declared Yves Marnas, SFH Managing Director. Since the technical expertise is already available, the first step to a sludge recovery process is taken. The next step shall include getting answers to the following questions: How can the briquettes produced from compacted sludge be recycled? What are the available channels? That's the major issue for the Valbom project.

### Constructive collaboration

The Valbom project brings together the various players from this future industry in order to find solutions

to recycle the sludge. Constructive and concrete work has led to semi-industrial and industrial tests. “There is a massive difference between designing the machine and working with a full-scale plant”, Yves Marnas continued. “The tests allowed us to understand the clients' needs, work together and improve the machine. Its design has now been finalised”. The recycling channel just needs to be developed...

### Economic viability is the key element

“For implementation and structuring of this economic channel, foundries and steel manufacturers must guarantee this new raw material will be used consistently...”. Aside from

the barriers due to existing practices and habits, according to Yves Marnas, the economic criterion is the main lever. Even though environmental issues are a priority for many companies, the economic profitability will justify their commitment to this approach. Public organisations and legislators may play a decisive role in boosting this new channel. Meanwhile, SFH is willing to adapt to any potential economic scenarios: sale or rental of the machine, related services and other in order to create a sustainable recycling channel.

## The VALBOM project



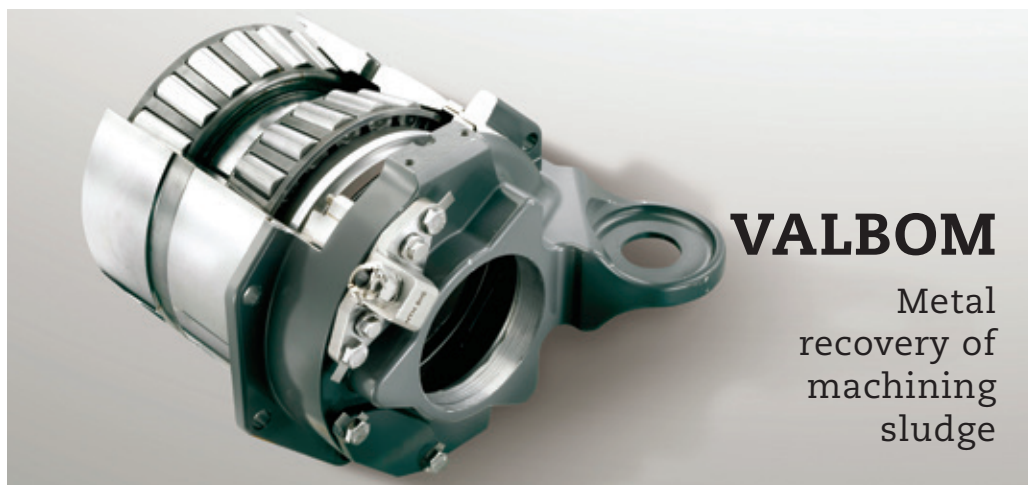
**Metal recovery of machining sludge**

from the mechanical engineering industry has become a necessity and Valbom project structured their sustainable recovery. The key points were to ensure traceability and quality for the briquettes as a new raw material by foundries and steel manufacturers, as well as develop relevant economic and organisational models.

NTN-SNR

# Briquette characterisation for a rational and structured approach

The NTN-SNR group is a major player in the manufacture of mechanical bearings and has been committed to recovering its machining sludge for a few years using its own briquetting machines installed on two of its sites.



VALBOM

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recovery of  
machining  
sludge

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## OUR PARTNER

**Company name**  
NTN-SNR

**Activity**  
NTN-SNR manufactures automotive, industrial and aerospace bearings and is part of NTN Corporation, the third largest bearing manufacturing group. 11 production sites and 23 sales offices in the world.

**2013 turnover**  
838.2 million Euros

**Staff**  
4,272

**N**TN-SNR joined the Valbom project to share their experience with the rest of the group and to assess this potential market for machining sludge briquettes.

## A boosting project

The Valbom project collaborative approach is in line with the objectives of the NTN-SNR group: "Getting everyone to move forward together is a good thing and gives more weight to the process." has declared Alexandra Boucher, NTN-SNR Environmental Manager. "If Cetim hadn't initiated this project, each one of us would have carried on separately and no recovery channel would have been set up."

## A technical datasheet as a traceability tool

One of the key steps of the project, crucial for validating this new sector, is the definition of a technical datasheet which can be used to characterise the briquettes according to specific criteria. "At the moment, we know what our briquettes contain, but no one has been able to tell us whether it is suitable or not", has explained Alexandra Boucher. The technical datasheet can be used to clarify the offer, compare the characteristics of the briquettes with the steel manufacturers and foundries' specifications and consider measures to better adapt the briquettes to specific buyer needs. Obviously it will also ensure supply quality monitoring over time.

## Find the right scenario

With these encouraging first prospects and the belief in the profitability of this sector, NTN-SNR is considering the deployment of this process to their other sites. Installing compacting machines if sludge production is large enough, sharing compacting machines between several sites, or even requesting an external company to produce the briquettes are the potential scenarios. The economic scenarios and models assessed as part of the Valbom project will be a valuable aid when making these decisions.

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ArcelorMittal

# A new channel which makes sense

This international leader in the steel industry joined the Valbom project for two reasons: firstly because of its rolling mill cylinder grinding activity and therefore as a producer of machining sludge, and secondly, because of its activity as a steel manufacturer and, as such, as a potential user of this sludge.



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## OUR PARTNER

**Company name**  
ArcelorMittal

**Activity**  
World leader in steel manufacturing and mining, ArcelorMittal has 11 R&D sites throughout the world. ArcelorMittal Maizières is the group's largest research campus.

**2013 turnover**  
79.4 billion dollars

**Staff**  
220,000 worldwide

*“We use millions of tonnes of scrap metal every year, so any new material will of course be of interest to us”* has declared Philippe Russo. The recycling engineer from the Maizières research campus has explained that this project naturally fits into the process of searching for new iron sources, such as the recovery of scrap metal from incinerators 30 years ago, the recovery of steel wires from end of life tyres or even taking advantage of waste sorting at source. These are many recovery channels which have proven useful.

### Promising tests

The Valbom project has allowed ArcelorMittal and its partners Asco Industries,

Vallourec and Winoa to carry out pilot and industrial tests to validate the potential of this new resource. An SFH briquetting machine has been made available in their test labs: several tonnes of sludge briquettes have been smelted. The results are interesting both in terms of quality and environmental impact.

### Conditions for success

As pointed out by Philippe Russo, this new resource must meet the specifications given by each steel manufacturer or foundry, but the most important is the material stability and traceability. *“Those upstream must determine the right parameters to produce a consistent and acceptable quality when*

*compared to our requirements”.* After that, the economic issue comes into play, with the right balance between buyers and producers so it becomes a win-win situation for everyone.

### The process is under way

Once the technical and economic conditions have been established, ArcelorMittal intends to use this new raw material. They are seriously considering using these briquettes and even processing their own sludge or getting them processed by a third party. Machining companies and other waste treatment companies have been contacted. This just needs to be put into practice!

## The VALBOM project



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# CTIF Validating a new raw material for arc furnaces

The French technical centre for the foundry industry (CTIF) has been involved in the Valbom project to carry out smelting tests on machining sludge briquettes and assess this new raw material for foundries.



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## OUR PARTNER

### Company name

CTIF  
(Centre Technique des Industries de la Fonderie)

### Activity

The CTIF is an industrial technical centre developing solutions for the French foundries as well as industrial sectors in the following three branches: innovation, R&D and consultancy / tests, analyses and expertise / standardisation, training, certification and technological watch.

### 2013 turnover

12.9 million Euros

### Staff

115

“At first we collected briquettes from grinding professionals, then we analysed them at CTIF to determine their smelting behaviour” explains Jean-Bernard Virolle, project manager at CTIF. At the same time, the different smelting furnaces were assessed by metallurgy experts. These preliminary analyses of the furnace used and the family of parts produced led to identify the type of foundries which could be interested in the briquettes. As no technical constraints have been detected for arc furnaces, a foundry equipped with this type of furnace, Manoir Industries, has naturally joined the Valbom project working

group and launched a series of industrial tests. The tests were conclusive in terms of mechanical strength and quality of the castings.

### Final barriers

Following these promising first tests, additional validations have been carried out, especially in terms of environmental impact. Other key points for the success of this project are as follows: consistent quality of the briquettes and, of course, the right balance between use value and purchasing cost.

### What about the future ?

Recovery tests are always carried out to find a more

advantageous raw material (in terms of time, energy, quality, stability, price...). The sludge recycling approach is obviously interesting even though not every foundry is concerned. “Thanks to the Valbom project, tests have been carried out on the sludge and recovery has been proven possible to avoid landfilling and reuse material” has concluded Jean-Bernard Virolle who is even considering an inclusion of the briquettes in the European scrap metal reference system.

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SKF

# Multiple benefits from compacting

SKF, which is committed to a very active environmental policy through its group, is particularly interested in looking for markets for its grinding sludge and is therefore involved in the Valbom project.

## VALBOM

Metal recovery of machining sludge

© SKF



### OUR PARTNER

**Company name**  
SKF France  
Saint-Cyr-sur-Loire site

**Activity**  
Bearing manufacturer.  
40 million bearings every year, of which 62% for exports.  
Centre of excellence.

**2013 turnover**  
385 million Euros

**Staff**  
1,230

After initial tests with equipment on loan, SKF has acquired a compacting machine for its machining sludge: analyses have been carried on the briquettes by Cetim whereas smelting tests were done by foundries and steel manufacturers. *"Thanks to the project, I have a better understanding of my outlets requirements"* has declared Claire Deschastres-Gurung, EHS coordinator for the Saint-Cyr-sur-Loire site, *"but also through site visits, I have been able to really understand the issues and constraints faced by foundries"*.

### New opportunities, new economic benefits

The Valbom project has opened new doors for SKF, such as working with steel manufacturers different from their traditional partners, or even foundries with which the company had no previous dealings. The technical datasheet developed for the briquettes characterisation has been a key discussion tool with these new contacts. However, SKF has even more to gain from this project and further economic benefits from compacting have been revealed, which go further than the sale of briquettes: *"Oil is becoming more and more expensive. When compacting, oil is recovered*

*and can be returned to the process; if it contains high levels of impurities, we are equipped to treat these"* continued Claire Deschastres-Gurung. These significant benefits confirm the value of this approach.

### High expectations for the project

The results are therefore very conclusive for SKF and the company is in need of a second machine. However, before considering a new investment, SKF is waiting for the contracts with the buyers to come to fruition. *"We are not in a position to store the briquettes. There are various potential partners with contract offers, but these are still in discussion"*. To be followed...

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