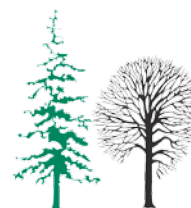


# GOOD PRACTICE EXAMPLE

**Biofit d.o.o.**



**GOZDARSKI INŠTITUT SLOVENIJE**  
SLOVENIAN FORESTRY INSTITUTE

## 1. General

BIOFIT d.o.o. is a family business engaged in production of woodchips of varying quality, suitable for heating of individual houses, for use in large energy systems and for the needs of nurseries. Woodchips are made of poor quality wood that is, as a rule, unsuitable for industrial processing (branches, lesser quality roundwood, residues from wood processing industry ...). The firm's emergence dates back to 2005, while under the name of BIOFIT d.o.o. it has been functioning since 2007. The key point of development at which a decision was made by the family to engage in woodchip production professionally was the decline of other agricultural activities and eventual search for new sources of income on the farm.

The decision was additionally spurred by the installation of woodchip boiler on the farm and first experience with woodchip buyers. The family members gained knowledge on woodchip production by visiting fairs and demonstrations of good practice cases in Slovenia and abroad, by consulting experts, through its own experience and cooperation with machinery manufacturers. For the needs of implementing these activities, they equipped themselves in the last few years with the necessary machinery also with the aid of RDP funds. Today, their machinery fleet enables them to carry out operations »from forest to end-user«. They function primarily in the Gorenjska region, but carry out major jobs in other parts of Slovenia as well.

## 2. Description of the activities

The firm derives from the family farm. Through the increased woodchip production, the firm BIOFIT d.o.o. was founded in 2007. The increased demand for their services and woodchips led them to expand the firm in the field of technology as well as in the field of employment.

**Today, the firm carries out the following activities:**

- Integrated maintenance of the environment and forest felling areas
- Woodchip production
- Sale and purchase of wood biomass
- Woodchip transport and marketing



Within the framework of wood biomass purchasing, the firm maintains forest edges as well as felling areas by removing wood residues and pastures by removing shrub layer from them. Apart from it, the firm carries out the service of landscaping around various facilities and in parks. For woodchip production, two chipping machines are used. Woodchip grinding can be carried out only as a service, though woodchips can be purchased as well. For woodchip haulage to end-users or warehouses, several funds of transport adapted according to transport possibilities and biomass quantity are used. Concerning the input raw material on the market, the firm offers woodchips of different quality classes – from »green woodchips« made from felling residues to higher quality woodchips made of roundwood and rest wood from wood processing industry.

The majority of woodchips are transported from production sites directly to end-users. This holds good particularly for green woodchips, which are marketed in Austria. These woodchips are made from felling residues and usually with higher water content. Apart from green woodchips, the firm is also marketing woodchips, which are in terms of water content and other criteria suitable for use in smaller household boilers and somewhat larger boilers of bigger individual users, such as schools or old people's homes, as well as for remote wood biomass heating systems. Woodchip quality is also conditioned by their suitable storage. For this purpose, the firm allocated part of its land along the farm, where wood for the production of woodchips and woodchips themselves are stored and protected against precipitation with tilts. Top quality woodchips that meet the requirements of smaller boilers are stored on the renovated premises of the former stable.

Some 40,000 stacked m<sup>3</sup> of woodchips are thus offered annually on the market, but this quantity is expected to be doubled with the purchase of a new SILVATOR chipping machine.

## 3. Technology – machinery fleet

Optimization of production and selection of suitable machinery is a must for the production's competitiveness. The firm is therefore equipped for the implementation of separate jobs along the entire chain from the forest to the boiler house. Given that they are specialized for woodchip production, the felling and skidding of roundwood does not present a significant share of their activities and do not intend to develop in this particular direction. They enter the production chain after the completion of felling in the forest and hauling of roundwood. The machinery fleet began to get its contour some years ago with the purchase of Starchl MK 50 chipping

machine, by which they entered the woodchip market. In further text, the firm's extent of current machinery fleet, by which it covers the woodchip chain from the forest to end-users, is presented.

### Maintenance of the surroundings of felling areas and pastures is carried out with:

- Two YC mini excavators, which are equipped with rubber caterpillars and special revolvable tongs for the gathering of felling residues. The excavators are intended for the concentration of felling residues in heaps. They were purchased in 2010/12.
- Novotny LVS 5000 semi-trailer forwarder. It is intended for the extraction of branches to the locality where woodchip production is carried out. The loading space capacity is 12 m<sup>3</sup>. This machine ranks among the smaller semi-trailer forwarders and is the only of this type in Slovenia. It was purchased in 2012.
- AHWI forestry mulcher on Fendt tractor, 220 KW. It is used for the maintenance of pastures and forest edges as well as of localities where woodchip production has taken place. This is a renewed mulcher, bought in 2011, while the tractor was purchased in 2006.

### Woodchip production is carried out with two chipping machines:

- Starchl MK 86, mounted on a tandem chassis and powered via tractor drive with Palfinger forestry crane. Dimension of its inlet aperture is 86 x 60 cm, while its chipping capacity ranges from 15 to 80 stacked m<sup>3</sup>/h. The chipper is driven by Fendt tractor. Today, after the purchase of Silvator, it is used on hard to access terrains, for minor concentrations of wood biomass, and when the Silvator is in use elsewhere. It was purchased in 2007 with the aid given within the framework of RDP funds to the amount of 50% of the investment.

- Silvator 2000, manufactured by Albach, is a self-driven four-axle chipping machine with the chipping capacity between 150 and 330 stacked m<sup>3</sup>/h. It is driven by a Mercedes 450 KW eight-cylinder engine. Registered as a working machine, it reaches up to 40 km/h. It is equipped with Epsilon Tip S110F crane with the maximum height range of 10.10 metres. This crane is usually intended for semi-trailer forwarders. The chipping machine is distinguished by its air conditioned lift cabin, which is ergonomically designed and equipped with a rotating seat with command levers. The chipping machine was purchased in 2012 with the aid of RDP funds to the amount of 20%.

### Woodchips are transported by:

- Schwarz Müller moving floor trailer with a capacity of up to 90 m<sup>3</sup> on MB Actros truck. With it, longer-distance transportation is carried out, most often for delivery of »green woodchips«. The second-hand trailer and truck were purchased in 2007.
- Hüffermann containers and container trailers on Volvo truck and Krampe tractor container trailer. The firm owns nine containers with capacities ranging from 27 to 38 m<sup>3</sup>. Container transport is carried out when no access with truck trailer is possible and in the event of minor deliveries. The second hand truck and truck container trailer were purchased in 2011. For the truck trailer and containers, the firm was approved grants from RDP funds (also in 2011) to the amount of 50%.
- Fliegl ASW 160 tractor trailer with thrust wall (30 m<sup>3</sup> volume) and Deutz Fahr 122 KW tractor. They are used for short-distance deliveries or when no truck access is possible. The trailer was purchased in 2010, the tractor in 2011.

Chain links	Working operations	Machine in use	Total investment amount (EUR)
Maintenance of felling areas, environment and pastures	Gathering harvesting residues	2* X YUCHAI YC35-8 excavator	147,000
	Maintenance of pastures and woodchip production sites	AHWI forestry mulcher	
	export of felling residues	Novotny LVS 5000 semi-trailer forwarder	
Woodchip production	Minor working sites, hard of access sites	Starchl 86 MK chipping machine	726,000
	chipper drive	Fendt *1	
	primary chipper	Silvator 2000 chipping machine	
Woodchip transport	Transport with moving floor trailer	MB Actros truck Schwarz Müller truck semi-trailer	307,000
	Container transport	Volvo truck and Hüffermann trailer	307,000
	Export of woodchips to woodchips yard or end buyer	KRAMPE tractor container trailer	
	Concentration of woodchips	nine containers	
	Short-distance delivery of woodchip	FLIEGL ASW 160 tractor trailer	
	Delivery of woodchip, loading of trailers	Deutz Fahr	

\*1 Fendt tractor is also used to drive the mulcher, but the investment was taken into consideration in the »woodchip production« operation, where it drives the Starchl 86 MK chipping machine.

In optimal conditions, such a quantity of felling residues can be transported daily from the forest or pasture to the grinding site that 70 - 100 stacked m<sup>3</sup> of woodchips can be made from them. Currently, the greater part of woodchip production is performed with the Silvator chipping machine. Optimal daily production of woodchips is currently about 500 stacked m<sup>3</sup>. The quantity of daily production is subject to the raw material input at a single site and continual export of woodchips. In favourable conditions, even more than 1,000 stacked m<sup>3</sup> of woodchips can be produced per day.

#### 4. Investments

The firm BIOFIT d.o.o. has been able to invest in its machinery fleet with the aid of bank loans and RDP funds. In the table from previous page the firm's machinery fleet and some data on investments made in the last few years are presented.

In the 2006-2012 period, the total investment in the machinery fleet amounted to 1,180,000 EUR. The greatest financial burden was the purchase of SILVATOR chipping machine, which exceeded 500,000 EUR.

#### 5. Service market and marketing

The firm's target activity is woodchip marketing and implementation of services in the chain from the wood biomass site of origin to the final user. The machinery fleet enables them to maintain the surroundings of various facilities, parks and felling areas, to produce woodchips at different sites and to transport woodchips over longer distances as well as locally. Although the firm's target is the region in which it operates, it carries out its service all over Slovenia.

As far as the source of wood biomass is concerned, the firm's customers are forestry companies, pasture commons and big forest owners. The most important wood biomass consumers are systems for the coproduction of electric power and heat from wood biomass in the neighbouring Austria, where mostly »green woodchips« are marketed, major individual and remote wood biomass heating systems in Slovenia, and larger local nurseries and household.

In order to optimize the entire production process as well as to reduce costs and environmental pressures, the firm strives at the regional wood biomass production and supply.

#### 6. Goals and vision of the firm

The firm's increased scope of business, from the implementation of services and production of woodchips some years ago to partaking in the chain from forest to end-user, contributed to an increased workload and creation of new jobs in the region.

Today, the firm is distinguished by a young and reliable ten-member team. BIOFIT's associates are also independent entrepreneurs and individuals, who carry out their work within the framework of complementary activities on the farm.