

PROCESSES FOR THE RECOVERY OF ENERGY AND VALUABLE MATERIALS FROM WASTES

Innovations and Benefits - This technology allows to develop and produce:

- innovative industrial production chains for the recovery of energy and high added-value materials;
- new techniques targeted at reducing the environmental impact of wastes;
- energy from wastes and residual biomasses;
- high added-value material from wastes and novel techniques for the best exploiting the recovered material (e.g., for higher added-value semifinished products);
- identification of new recovered material supply sources.

Uses - Development of thermovalorization processes (pyrolysis, gasification); it allows to effectively support the sector industry through, firstly, the production of energy and materials from wastes and residual biomasses.

Past and Present Activities - The industrial production of some innovative pilot-scale processes is in progress. Some examples:

- facility for the production of energy and activated carbons from waste tyres and residual or waste biomasses;
- facility for the exploitation of car fluff to produce electrical and thermal energy.

ENEA is owner of specific patents protecting the developed process and technology. Some of them, available by license, are listed as follows:

Patent no. WO 2013050942 A1N - "Metodo per la produzione di filati da fibre di carbonio riciclate";

Patent no. RM2001A000362 - "Procedimento per la trasformazione del granulato di pneumatico in un prodotto carbonioso a basso contenuto di zolfo e ceneri, mediante pirolisi catalizzata";

Patent no. RM2003A000121 - "Procedimento per la trasformazione del granulato di pneumatico in carburo di Silicio (SiC)".



Laboratory-scale facilities



Rotating drum gasifier



Recycled carbon fibers for spinning

