



Fig. 1 - Plant panoramic from South Area

SSBR Rubber- Manufacturing Industry is on its Way Up

APS rises to the challenge of designing and constructing in just two years a new plant for production of solution polymerized butadiene rubber located in Poland

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APS



capacity of the plant is 90.000 thousand tons per annum. It will have capability to produce non-oil & oil extended products. APS was in full charge not only of the construction management of the plant, but also of the detail design work, the purchase of all equipment, the supervision and the coordination of civil and electromechanical erection, pre-commissioning, commissioning and start-up activities. In collaboration with the local partner KTI Poland, who has played a substantial role in bringing this initiative to fruition, APS has come close to finishing his mission.

The plant, situated in industrial area in Oswiecim (Poland), needed to be finished in just 24 months because the start of production line is planned in the second half of 2015. The cost of the project was PLN 568 M, of which PLN 147 M co-financed by the EU funds [Source: Press Release of Synthos S.A. on web]. Project investments was part of a sectorial scheme that aimed at implementing the volume and value of exported goods of Synthos Capital Group in the worldwide markets and developing the special economic zone of Oswiecim.

These are of huge importance for the Polish national economy thereby creating numerous jobs and giving a new fillip to growth. A local content rule has been sufficiently implemented and a regional network of suppliers has benefited directly. The services of local providers has been used in order to reduce the product/equipment cost and minimize the delivery time to site. In this context, the involvement and support of KTIP, with its headquarter in Poland, has been essential. The knowledge of the country and the language together with a win-win approach has brought to overall projects benefits by facilitating the exchange of information between the all parties involved. Just as it was expected, the strategic economy has been extremely successful providing the acquisition of KTIP Company that is part of APS Group since 2013.

APS primary objectives of the project were to provide the customer with a plant, which:

- minimizes capital investment;
- ensures a design which is “fit-for-purpose”;
- is “environmentally friendly”
- incorporates the latest technologies in the basic design;
- ensures the resulting facility providing high standards of safety, reliability, operability and maintainability.

The plant is made by a classical process area and by a finishing area and includes four drying lines where polymers are compressed and the exceeding content

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On March 2013 APS has been awarded for an important EPCM (Engineering, Procurement and Construction Management) project, following a public tender organized by one of the largest manufacturers

of emulsion rubber, Synthos Group SA.

APS has managed to gain due to its competitive price, a proposed short time schedule and professional know-how. Based in Rome and operating since 1997, APS enjoys a high reputation in the engineering business world for its capabilities in the oil & gas processing and treatment facilities (including power generation and petrochemical & chemical plants). Today the challenge to execute the new production line for SBR rubber in Poland affirms APS opening to rubber complexes field. Experiences with Versalis in Far East Regions and in North Africa had fully grown the company portfolio and have contributed to this last successful result.

The analyzed project aimed to increase the competitiveness of the plant owner by developing a new innovative SBR (Solution Styrene-Butadiene Rubber) rubber product, based on a license agreement with the Goodyear Tire & Rubber Company. Production

of water is removed. Once the rubber has been separated from remaining, it is conveyed to a press that gives to the product the final shape, which is a rubber bale.

At this point in time, the SSBR project has entered into a final phase, supervising the construction, pre-commissioning and commissioning as the planned start is on next June (figure 1).

Rubber manufacturing process

Synthetic rubber has its origin in two main raw materials: butadiene and styrene, produced in specific petrochemical production units. When the two are mixed in the presence of soapsuds in a reactor under desired conditions of temperature and pressure, liquid latex results. The downstream elastomer rubber manufacturing generally comprises the following operations (figure 2): raw materials handling, weighing and mixing, milling, extruding and calendaring, component assembly and building, curing or vulcanizing, inspection and finishing, storage and dispatch.

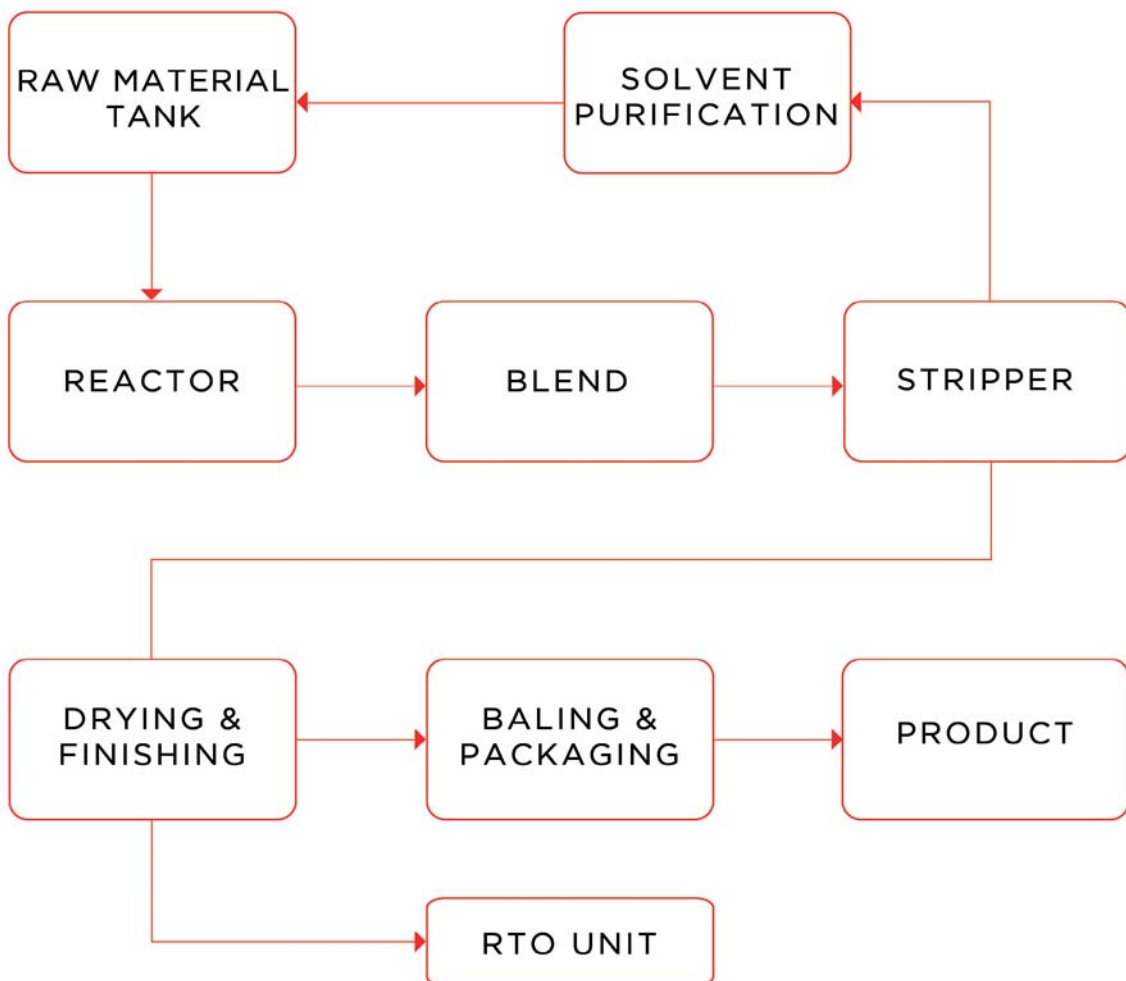
Although the stages described below are applicable to the majority of rubber goods manufactured from solid polymer, a substantial proportion of rubber production

involves the use of latex. The by far most important type of rubber is SBR (Styrene Butadiene Rubber), that have a good abrasion resistance and good aging stability when protected by additives. In 2012, more than 5.4 million tons were processed.

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This analysis fits perfectly into manufacturing process of SSBR rubber project and above all it fits with the installation made by APS for Synthos Group S.A. that, in addition to be one of the largest manufacturers of chemical raw materials in Poland, is one of the leading manufacturer of emulsion rubbers and polystyrene in Europe. Indeed the project is intended for the manufacture of solution butadiene-styrene rubbers and poly-butadiene in a continuous process based on lithium catalyst (figure 3).

Fig. 2 - Typical process diagram for elastomer plant



Why tyres market?

Products made from rubber are an important part of everyday living: pneumatic tires, shoe heels and soles, gaskets and even chewing gum, among other things. Within this sub-sector, the automotive area accounts the majority of international production, with its parts and components. The importance rubbers have can be judged from the fact that global revenues will rise to approximately US\$ 56 billion in 2020.

Demanding market analysis in 2012: Asia-Pacific accounted for about half of global rubber consumption and roughly 47% of global output. North America ranked second, closely followed by Western and Eastern Europe [Source: Ceresana Market Study Synthetic Rubber Analysis on web]. The current relatively strong growth of demand for SSBR rubber on the Community market allowed substantial progress for developing projects and research program in this field. Indeed, the tyre industry accounts for 75% of total SBR demand, followed by mechanical rubber goods/ automotive parts, which account for around 20%. Footwear consumes another 5%.

Due to the legislation for labelling of tyres (Regulation No 1222/2009 of the European Parliament and of the council) all tyres produced after June 2012 and on sale in the EU from November 2012 will show grade of rolling resistance, wet grip and noise. This regulation aims at increasing the safety and the economic and environmental efficiency of road transport by promoting safe and fuel-efficient tyres and saving up to 4 million tons of CO₂ per year.

It should be reminder that the efficiency of the tyres is strictly connected to the fuel consumptions of the vehicle. Relative to other commodities SSBR is increasingly favored because it offers improved wet grip and rolling resistance, which translate to greater safety and better fuel economy respectively. That is another reason why the market of advanced SSBR rubber will develop much faster than the other ones.

Shaping the future: APS next goals

In such period, the future belongs to companies that are able to choose the best strategies and to accept new challenges. The Community industry could benefit fully from the growth of the synthetic rubber demand. With long-standing international and local experiences in processes and technologies development, process licensing and intermediates, polymers and elastomers production, APS should be considered as a reputable engineering firm in the field of SBR.

As a driving force dealing with challenges ahead the CEO and founder Mr. Antonio Quadrato has enabled



Fig. 3 - View from the bottom of the tallest column



Fig. 4 - APS Group team on site

far-reaching innovative projects to be developed. Much of the success in this core business would not be possible without the management's sales ability to offer best proposals in terms of costs, quality and services.

APS has been working diligently towards these targets. Top-level management, talent engineers, successful business people and achievers in all field all set goal shall be aligned with the APS's vision. Supported by an effective shared commitment and enriched by a multidisciplinary approach this company, known as Italian Engineering and Design Global Contractor, is prepared to support these new effective market economies (**figure 4**).

According to Mr. L. Dorrucci, International Sales Manager of APS:

Thanks to the skills acquired in a long lasting experience of collaboration with Eni Group, Versalis and now with Synthos SA for the ESBR, SSBR, HCBR & EPDM synthetic rubber production plants, APS has earned the respect of his customers in the Community and beyond. I may define us one of the biggest designer for rubber production plants in Europe, and hopefully we will become one of the leading players in the international market. This, in itself, would be a very bold objective.

Even Mr. Paliotta, manager of SSBR Project, reports that:

We have worked effectively to meet the needs of the all parts involved. Despite all countless conditions imposed, above all the short timetable of realization, I must say that was a satisfactory performance. An integrated project team with functional experts and experienced engineers have been an essential prerequisite for success. The greatest thing is for APS to experience and learn from this.

This project has given the challenge to APS to prove its efficiency in global business engineering undertaking competitive price, high quality and short schedule; all in full compliance with environmental and quality international standards. At a time when APS is celebrating 18 years of the activities, this important goal has been achieved. Key factors for this success "graduation" were as follows: speed, innovativeness, ability to change and positive motivation of company.



Martina Marmotta

Martina is graduated degree in Political Science with expertise concerned International relations and communication strategies. She is registered in the Register of Italian National Journalist with its nearly 10

years' experience of reporting and editing. In APS she has the task of editing promotional literatures and publishing general information about the Company activities.



Fabio Paliotta

Fabio is graduated degree in Chemical Engineering. Prior to joining APS, he worked in C. Engineering (CENG) srl and earlier in Sanofi Aventis for inspection, verification and validation of the equipment and systems of pharmaceutical plants. In his large experience in the oil & gas field gained with different engineering

companies, he has covered various positions like Process Engineer, Project Engineer, Proposal Manager and Project Manager. Currently is managing the EPCM project for the construction of the SSBR production plant.



Ludovico Dorrucci

Ludovico is responsible of International Sales in APS. His professional knowledge is laying mainly on an open-minded management to improve the Company's profitability and efficiency. At moment, his focus is on the Business Development. In his previous capacity, he

was a Licensors Technology Leader of process discipline. Graduated degree in Chemical Engineering, he enjoys the exceptional decade-plus experience in process coordinating activities in refineries, rubber complexes in several major international projects.