

# Evolution of the management model for a chemical company on the example in Azoty Tarnów

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Please cite as: CHEMIK 2012, 66, 10, 1125-1135

## An overawing story

The national plant of nitrogen compounds Państwowa Fabryka Związków Azotowych was opened officially (in the presence of state authorities – Polish President Ignacy Mościcki and Prime Minister Kazimierz Bartel) in Tarnów (located on the area of the so-called Polish 'security triangle'<sup>1)</sup>, in 1930 as one of the few Polish industrial projects of the 1920s. The project was implemented in 1927 ÷ 1933 and its technological start-up was in 1929. From the very beginning the plant was under the auspices of the President of the Second Polish Republic (in 1926 ÷ 1939) Ignacy Mościcki. Eugeniusz Kwiatkowski, the later Prime Minister and Minister of Industry and Trade, originator of the central industrial district (COP), was one of the plant's first chief executives (in 1931 ÷ 1935).

Professor Ignacy Mościcki, world famous chemist, invited many talented engineers to Mościce near Tarnów, mainly his students from the Lvov Technical University. There the foundations of Polish chemistry were built by such engineers as: Tadeusz Hobler, Kazimierz Heller, Stefan Pawlikowski, Karol Hülle, Stanisław Hüpsch, and later Władysław Plaskura, among others.

Relying on the descriptions of economic problems of the time (years of the economic crisis 1929 ÷ 1934), the project in Tarnów (planned and partially implemented during economic prosperity) had a very difficult start: on the one hand there was the crisis, and on the other hand there was the necessity to develop industrial culture among labourers recruited in the agricultural sector (more than 70% of inhabitants of this region were employed in agriculture).

Consolidation was one of the remedies for the problems connected with the crisis from the early 1930s. In 1933 the first consolidation in the history of Azoty Tarnów took place – the plants in Mościce and Chorzów merged, and the group adopted a name of United Plants of Nitrogen Compounds (Zjednoczone Fabryki Związków Azotowych). The company functioned as such, as a state-owned company, until World War II.

After the war Azoty Tarnów evolved from fertiliser producer to a large chemical conglomerate plant with production of varied structure. Post-war projects, particularly those implemented in the 1960s, formed the foundations of the present day production profile of Azoty Tarnów – producer of mineral fertilisers and modern construction materials.

## History repeats itself

Another global financial crisis from 2007 ÷ 2010 coincided with another consolidation led by Azoty Tarnów, but this time its scale was much bigger, even European. With all the due respect for history and the people who made it in the 1930s, I would say that the merits of the present executives and employees of the Capital Group Azoty Tarnów for the growth of the company may be much bigger when judged from

<sup>1)</sup> 'Security triangle' covered the area of the Second Polish Republic stretching from the Vistula to the San, located the furthest from the borders of the Soviet Union and Germany, beyond the reach of potential attacks of Poland's neighbouring countries (with the technical achievements of aviation available in the 1920s). (This situation was to change soon, though.) The area was chosen by the military authorities as the location for the Polish armaments industry and became the prototype of the later area for the project of Central Industrial District (COP: 1936 ÷ 1939). Under COP, Tarnów lay in the C region called Sandomierski.

a historical perspective than those from the 1930s, as they started from a different level and were adjusted to contemporary times and present day aspirations.

## In the search of enterprise culture

The transformation of the country's economic system that started in the early 1990s and its effects surprised most industrial companies and left them unprepared for serious economic, organisational, technical, technological, and legal challenges.

Their main goal was to achieve a positive financial result and to remain competitive on the market which was getting more and more difficult.

The companies that found themselves in the new conditions that were different than before were forced to predict their situation and judge it accurately, i.e. learn to act effectively and to expand in the constantly changing environment, in order to survive and remain on the market.

Zakłady Azotowe in Tarnów-Mościce S.A., just like most Polish companies, was surprised by this new situation. Lack of uniform 'rules of the game' was an additional obstacle for developing a comprehensive strategy for the company. A shift from centrally controlled command economy to economy with a full market mechanism was neither easy nor painless for the company.

To adapt a state-owned company like the nitrogen plant in Tarnów to the requirements of market economy, a difficult and multi-dimensional process of company restructuring was initiated.

On 21<sup>st</sup> February 1991 the commercialisation of the company took place – a state-owned company was transformed into a public corporation named Zakłady Azotowe in Tarnów-Mościce S.A., and on 29<sup>th</sup> July 1991 its owner, the then Ministry of Ownership Transformations, issued a permission for the implementation of the Company Restructuring Programme, whose main goals were:

- to sell the unnecessary real property, company apartments
- to hand over property free of charge (lots and the infrastructure near local boiler rooms, lots with company allotments)
- to set up new companies based on in-kind contributions (holiday homes Jaskółka in Zakopane, Czarny Potok in Krynica, Chemik in Piwniczna, Tabaszowa, gardening farm, Jaskółka bar and catering unit)
- to lease or to lend facilities (farms, sports facilities, cultural centre, nurseries, kindergartens, and schools located near the plants).

On the basis of the mentioned formal and legal documents the simultaneous implementation of two multidimensional and multifaceted programmes began: privatisation and restructuring of the company. The earlier, run by the then Ministry of Ownership Transformations, was not completed, and the latter is implemented and carried out consistently. The restructuring programme of Zakłady Azotowe in Tarnów-Mościce S.A., as it has been mentioned before, included tasks aiming to sell parts of the company's property, to transform particular organisational units into separate business entities, and to hand over to other institutions those parts of the company's property which were 'unnecessary' to it.

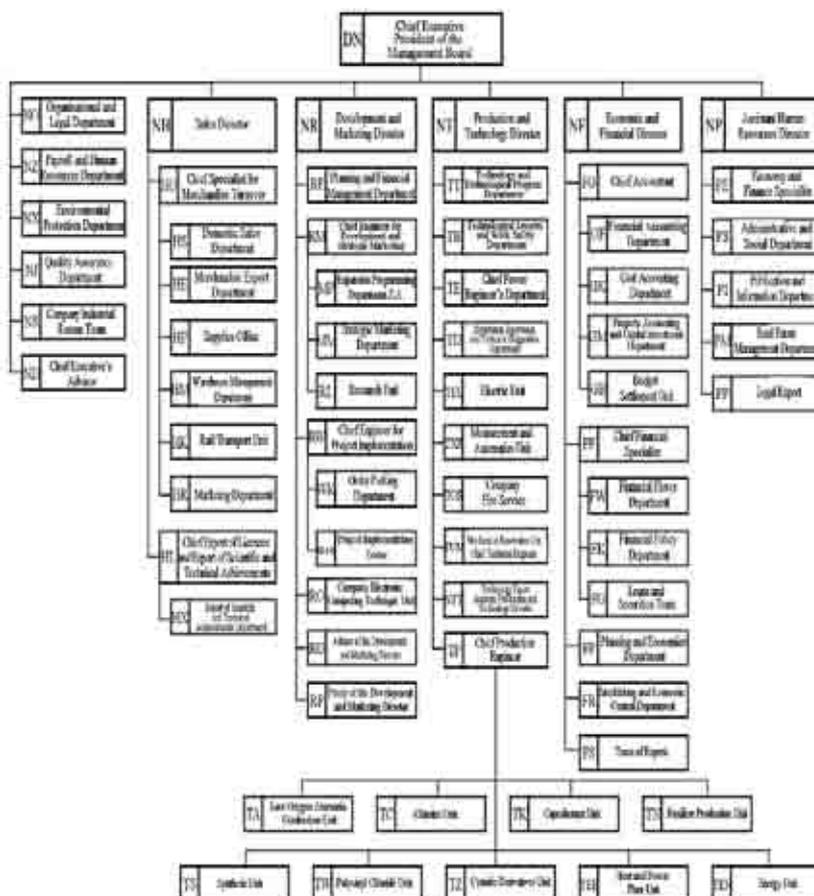


Fig. 1 Organisational structure of Zakłady Azotowe in Tarnów-Mościce S.A. in 1996

The main goal of the restructuring programme was to release the production and energy activity of the company from the 'social benefits' area and the support tasks (renovation and maintenance) and to create organisational climate encouraging initiative and enterprise.

The restructuring programme was implemented on three basic levels:

- the first level – sale of unnecessary non-production property
- the second level – capital restructuring of particular organisational units of the social facilities and auxiliary production spheres
- the third level – adjustment of the management system and organisational structures to the requirements of market economy.

Implementation of the first and second level of restructuring – as a result of which a dozen subsidiaries were set up<sup>2)</sup> – allowed the

<sup>2)</sup> These were the companies providing services to the company and constituting its social base. 18 new companies were set up altogether (out of which 13 were founded through making a privatisation offer to trade and financial investors and the employees of a given company). By 2012 the following subsidiaries were created:

- 1) Companies founded on the basis of holiday centres:
  - Przedsiębiorstwo Turystyczne "Czarny Potok" S.A. in Krynica (1991)
  - Ośrodek Wypoczynkowy "Jaskółka" Sp. z o.o. in Zakopane (1992) and Ośrodek Wypoczynkowy "Chemik" Sp. z o.o. in Piwniczna (1992),
  - Ośrodek Hotelowo-Wypoczynkowy Sp. z o.o. in Tarnów (1993).
- 2) The Cultural Foundation was set up in Mościce, which took over the cultural, educational, and artistic activity of the Company Cultural Centre (1991),
- 3) Przedsiębiorstwo Handlowo-Gastronomiczne "Mościce" Sp. z o.o. was founded in 1993,
- 4) Zakład Budowy Aparatury Chemicznej "ZBACH" Sp. z o.o. was founded in 1993,
- 5) Jednostka Ratownictwa Chemicznego Sp. z o.o. was founded in 1993,
- 6) Zakład Wykonawstwa Remontów i Inwestycji "ZWR1" Sp. z o.o. was founded in 1993,
- 7) Zakład Remontów Urządzeń Dźwignicowych "Remdźwig" Sp. z o.o. was founded in 1994,
- 8) Biuro Projektów Zakładów Azotowych "Biprozat"- Tarnów Sp. z o.o. was founded in 1994,
- 9) Zakład Remontów Elektrycznych oraz Instalatorstwo Elektryczne "ELZAT" Sp. z o.o. was founded in 1994,
- 10) Zakład Remontów Specjalistycznych "REMZAT" Sp. z o.o. was founded in 1994,
- 11) Przedsiębiorstwo Produkcyjno-Handlowo-Uslugowe "OGROZAT" Sp. z o.o. was founded in 1994,
- 12) Zakład Transportu Samochodowego "AUTOZAT" Sp. z o.o. was founded in 1995,
- 13) Zakład Pomiarów i Automatyki Zakładów Azotowych w Tarnowie "AUTOMATYKA" Sp. z o.o. was founded in 1997,
- 14) Tarnowska Grupowa Oczyszczalnia Ścieków Sp. z o.o. was founded in 1998,

company to get rid of the unnecessary burden of the abovementioned operations, such as: hotels, catering, farms etc., and transfer of the support function to subsidiaries allowed for: more precise cost planning in the support area, better focus of the management on the core business, and faster development of a new corporate culture and skills of managing a capital group.

### Growth aspirations of Azoty Tarnów increased 'with eating'; they evolved

The main restructuring programme that was launched in the early 1990s was implemented dynamically on the two first levels mentioned before, but it encountered obstacles on the third level (adjustment of the structures of particular departments of organisational units to the requirements of market economy in order to ensure efficient performance of their tasks). The changes were introduced gradually, deeper changes would come in the long-term, and the problem was growing.

The organisational structure of Zakłady Azotowe in Tarnów-Mościce S.A. in the 1990s was a typical linear department organisational structure (as in many Polish industrial companies). Specialised units either had or usurped the decision-making competences concerning linear units (this situation was caused by the inherent trait of this type of structure). The linear department structure is suitable for companies with relatively low number of facilities (products) and low variability (turbulence) of the environment. It was not a good choice for Azoty Tarnów, whose number of products was high at the time (over 100). The need to make numerous operational decisions at top management levels was often the cause of lack of time for proper planning of strategic decisions.

- 15) Przedsiębiorstwo Robót Remontowo-Montażowych Zakładów Azotowych w Tarnowie-Mościcach "PROReM" Sp. z o.o. was founded in 1998,
- 16) Przedsiębiorstwo Transportu Kolejowego "KOLTAR" Sp. z o.o. was founded in 1999,
- 17) "OKNOTAR" Sp. z o.o. was founded in 2001,
- 18) Moreover, Zakłady Azotowe in Tarnów-Mościce S.A. were the only shareholder of Tarnowskie Przedsiębiorstwo Produkcyjno-Uslugowe WIEZAT Sp. z o.o.

## A crisis that liberates

The unfavourable conditions on the chemical market at the turn of the 21<sup>st</sup> century was an incentive for intensification of the restructuring process. Difficult time for the chemical industry found Zakłady Azotowe in Tarnów-Mościce S.A. with a 'heavy' and too dismembered organisational structure (too many managerial positions) and a still centralised management system. The company's financial result deteriorated suddenly. It was threatened by a strategic drift. A necessity to take radical actions aiming to improve the company's economic and financial situation appeared.

In the light of the actions mentioned before, the implementation of the broadly understood **internal restructuring** began (systemic changes in the company connected with technical, technological, and product range transformations) and **business restructuring** (systemic changes connected with transformations in the field of organisation and management of the company, economics, market, and privatisation process).

In the period which may be called the second stage of organisational restructuring, the company's organisational system was decentralised, and divisional structure was introduced. In the early 1970s the chemical conglomerate BASF applied such a structure in the global chemical industry. 40 years later a similar organisational solution was adopted by Azoty Tarnów, where four 'business centres' were created in 2002. The characteristic trait of the transformations made was the separation of the function of the company Management Board from executive power over functional departments; most powers connected with sales and purchases were delegated to 'business centres', which indeed increased their autonomy and responsibility for the financial result.

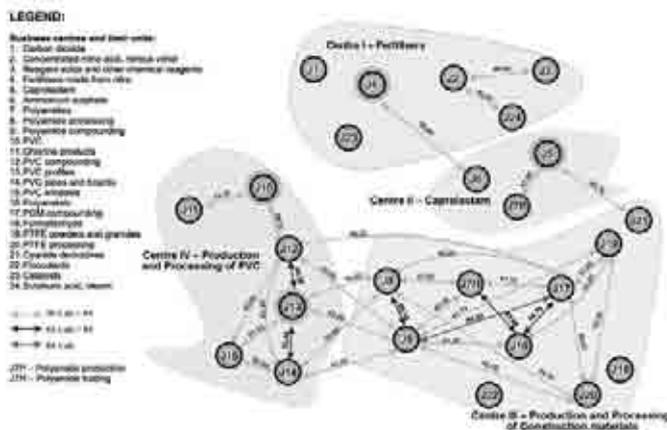


Fig. 2 Organisational and business model of Zakłady Azotowe in Tarnów-Mościce S.A. in 2002

Before a new stage of transformation could start it was necessary to identify, define, and order the problems that were left. In this way the transformation philosophy and management models were created. Budgeting was the main cost reducing tool, while complete decentralisation of the management system was supposed to stop the falling sales. Both directions of strengthening the competitive position of the company were connected with tidying and developing the company internally. The operation was successful, the company regained financial stability and grounds for further growth with the new philosophy and management system.

The programme of organisational changes, created in December 2001, was implemented already in January 2002. Complete decentralisation of the management system was a major change. The company's business centres with divisional structure took full responsibility for operational trading. Simultaneously with the allocation of business decisions to business centres the organisational structure of the company's 'strategic centre' was transformed.

The structure of the Strategic Centre of Azoty Tarnów was simplified considerably. The number of organisational units was reduced by more than a half and some of the previous departments merged into one.

The department of the HR Director was also modified and transformed into the department of the Management and Personnel Policy Director. The Management Board's Office and Organisational and Legal Office which previously came directly under the President of the Management Board were also integrated into this department. The characteristic trait of the transformations made was the separation of the company's Management Board from the executive management of functional departments. Most powers connected with sales and purchasing were delegated to business centres, thanks to which they actually became more independent and responsible for the financial result. Greater autonomy of business centres triggered also the changes in the sales department, which was reorganised.

The new plan of the organisational structure of Azoty Tarnów was based on a major assumption that the main direction of changes of the management system was to decentralise it. In subsequent years the structure was further simplified as a result of the concentration of the company's core business (the Polyvinyl Chloride Centre was liquidated).

Transformation of the management system conducted in 1996÷2008 and the change of organisational culture of Zakłady Azotowe in Tarnów-Mościce S.A. connected with it were gradual processes aiming to decentralise the management system and build a market culture of enterprise. As a result, the organisational culture reached its critical point in which it could have been assumed that it became mature enough to face new tasks and challenges.

## Grand opening

A company may achieve success only in a competitive environment, where in order to build a permanent advantage it is necessary to take up the challenges posed by the competitors. This requires programming and taking proper strategic actions (organic growth and acquisitions) and marketing actions connected with the new markets and competition methods. Such tasks require considerable capital. To raise it Azoty Tarnów had its IPO at the Warsaw Stock Exchange in June 2008. The company's grand opening aimed at raising funds for development was also connected with cultural openness and transparency of business actions, which imposed new requirements on the management system (to comply with the declaration of corporate conduct and to open the organisation to new capital connections). The stock market debut of the company brought also strategic reflections and prepared the organisation for a new strategy.

## Strategic reflection

The characteristic trait of the restructuring of Azoty Tarnów at the end of 2008 and beginning of 2009 was the improvement of the organisational structure and rationalisation of employment as the grounds for further expansion. In 2008 Zakłady Azotowe in Tarnowie-Mościcach S.A. employed 2,460 people. 215 of them worked on managerial positions. There were 140 masters and 440 white-collar workers.

Employment optimisation was conducted (in 2011 there were 2,060 jobs). The analysis of the management system and span of control at all managerial and master positions as well as comparison with the model for chemical companies from the chemical synthesis sector made it possible to simplify the organisational structure and, consequently, reduce the number of managerial positions considerably.

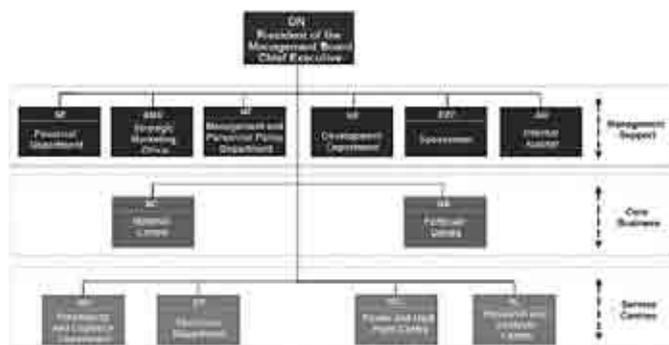


Fig. 3. Organisational structure of Azoty Tarnów in 2010

**Strategic reflection** concerned further development of the company. Apart from organic growth the company decided also to make acquisitions. In 2010 another stage of organisational restructuring was completed and the company was prepared to take on the role of a consolidation centre of Polish companies from the chemical synthesis sector (WSCh<sup>3</sup>). In Autumn 2010, 30 million shares of ZAK Spółka Akcyjna were taken up as part of a private placement (which accounted for 52.62% of all shares). The acquisition of ZAK Spółka Akcyjna, the first such operation in the Polish chemical synthesis sector, became a fact and Azoty Tarnów faced another challenge – the company had to create a management system for a capital group and set the direction of further expansion. In 2010 it acquired 100% of shares of polyamide producer Unylon Polymers GmbH from Guben, Germany, whose name was changed into ATT Polymers after the completion of the deal.

#### Leaders of consolidation

#### Strategic reflection became reality: Azoty Tarnów became an unquestioned leader of consolidation of the Polish chemical synthesis sector (WSCh)

In August 2011 there came more acquisitions: 66% of shares of Zakłady Chemiczne "Police" S.A. were taken up and in September - another 40.86% of shares of ZAK Spółka Akcyjna (the total stake of Azoty Tarnów in ZAK reached 93.48%).



Fig. 4. The structure of Azoty Tarnów Capital Group broken down by entity

Obligations to shareholders, more acquisitions, and leader position in the consolidation process put new challenges ahead of the group's executives, also in the field of creating a new business and organisational model. The main goal of the creative-cognitive paradigm of the management system of the capital group Azoty Tarnów was to benefit from the effects of consolidation (scale, synergy, and specialisation). The group's aim was to gain a permanent position of one of the bigger players on the European market (mainly in the fertiliser segment).

#### The organisational and business model of the Azoty Tarnów group adopted at the beginning of 2012 has the following assumptions:

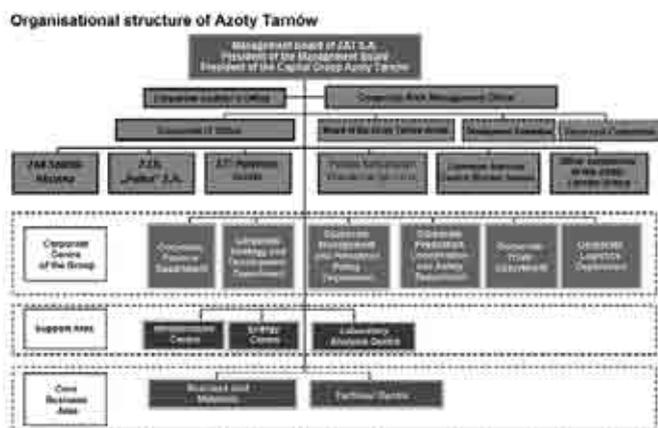
1. The functions of managing the corporation and the parent company Azoty Tarnów will merge – the Management Board of the parent company will also perform the function of the Management Board of the Capital Group.
2. Strategic functions will be separated from operational functions – the earlier will be performed by the Management Board of the Capital Group, and the latter will fall into the competence of the Management Boards of the subsidiaries.
3. The members of the Management Board of the parent company will include Presidents of the Management Boards of Z.Ch. "Police" S.A. and ZAK S.A. in the rank of Vice Presidents.
4. The previous business entities, their location and legal autonomy of the subsidiaries will be maintained.
5. The group's management model will supplement the management system with the management guidelines for the key economic processes of the Azoty Tarnów group. The management of the planned organisational structure (focused on the business entities and cost centres) will be supplemented by the management system focused on the economic processes in the scale of the entire corporation.
6. No holding company will be set up to manage the Capital Group, but the Corporate Departments of the parent company will perform a dual role, i.e. they will manage their areas in the parent company and also perform corporate functions, e.g. through process management.
7. Strategic functions will be implemented and particular economic processes will be coordinated with the support of Trade Committees for Strategy and Development, Finance, Trade and Prices, IT, and HR, which will also influence the subsidiaries. The committees will be chaired by the Members of the Management Board of the Capital Group, and they will be made up of Members of the Management Boards of the subsidiaries responsible for particular areas as well as process administrators.
8. In order to achieve the synergy effects resulting from consolidation of business entities it will be necessary to centralise management of common areas. In particular, this will concern fertiliser trading, caprolactam and derivatives trading, purchasing strategic raw materials, purchasing energy raw materials (including natural gas), organisation of the investment process, provision of logistic services for the entire Group.
9. In order to lower the costs of functioning of the Capital Group it will be necessary to concentrate the services supporting the management of such areas as: research & development, accounting, personnel management, IT system management, among others, in the Common Service Centres.
10. The services that are not part of the core business of particular companies will be allocated to subsidiaries which will provide their services to the entire Capital Group – repairs, maintenance, renovations, organisation of investment process, logistics.
11. The rules of cooperation between the subsidiaries and the parent company will be defined pursuant to a framework cooperation agreement, which is currently being implemented between Azoty

<sup>3</sup> The concept of consolidation of the chemical synthesis sector itself wasn't new; Azoty Tarnów participated in such a project still in the late 1990s, but then the initiative was blocked efficiently both by subsequent governments and company managements. A breakthrough occurred after the strategic reflection of the Management Board of Azoty Tarnów and after the support of the Treasury Ministry for this project was won.

Tarnów, ZAK and ZCh Police, and also to the procedures and standards that will be prepared in accordance with this agreement concerning the following areas: ownership policy, accounting policy, controlling, information policy, announcement of tenders, organisation of purchasing strategic raw materials, safety management, production capacity management, coordination of renovation shutdowns, growth and investment process management, risk management, internal audit, IT, personnel management (motivational system, recruitment, succession), sponsoring, company image, and advertising.

12. As a result of centralisation of selected areas the functioning of some of the previous Business Centres will change – these centres will be transformed into cost centres.

Such a model guarantees safe building of competences connected with corporate management. Most of its assumptions have already been implemented in the Azoty Tarnów Capital Group.



**Fig. 5. Macro organisational structure of Azoty Tarnów in 2012**

The adopted business and organisational model is flexible and open to further stages of gradual improvement of the management system in case of: expansion on the Group, increase of corporate management's competences, changes in the business environment, attempts at optimisation of the model. The modular structure of the organisational model of the parent company (Corporate Centre, Support Area, Core Business Area) makes it possible to separate the abovementioned organisational areas and allocate them entirely or partially to other business entities with relatively low effort if necessary.

The model is successively implemented into the Group's business practice. One of the most important organisational and business projects run at present is the consolidation of technical support companies under the aegis of PKCh, one of the Group's subsidiaries.

Managing a company with a vertical structure, seen in the form of 'vertical function silos', does not reflect the real business processes (as fulfilment of goals and plans is a process). With a view to this, a system of management for the main processes of the Azoty Tarnów Capital Group has been designed, which was a skew-symmetric management system.

**Strategic reflexion of 2009 proved now to be right<sup>4)</sup>**, both in terms of correctness of the directions set previously and further development.

<sup>4)</sup> The Capital Group has a considerable potential for further growth on the market of fertilisers and chemical products and a chance to maintain its leader position in the consolidation process of the Polish market of fertilisers and chemicals. Jerzy Marciniak, President of the Management Board of Zakłady Azotowe in Tarnów-Mościce S.A., remarked that: 'Enrichment, improvement, and adjustment of the product offer to the requirements of recipients with intensive use of innovative technology is our basic goal. The challenges that the company is facing were outlined by the Management Board in a clear growth vision for the forthcoming years. We are ready to achieve the new goals we have set and implement key strategic projects.'

**Towards the future: jump off the organisational ladder hierarchy into business process management**

With the introduction of business process management: management based on designed organisational structure (focused on business entities and cost centres) was supplemented with the management system focused on business processes concerning the entire corporation, and the role of leaders of the main business processes was assigned in the project to the Members of the Management Board supported operationally by process administrators.

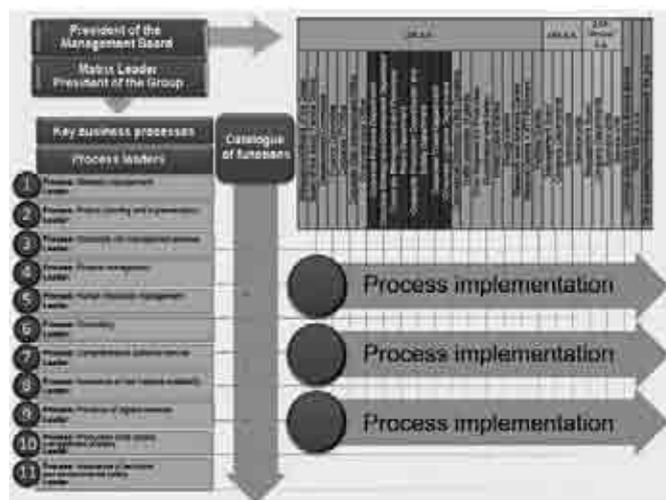
The tasks of a process leader include: strategic supervision of process implementation, group coordination of process changes, and taking corrective action decisions.

The tasks of a process administrator (corporate department director or manager of particular department) include: monitoring the achieved process goals (achievement measures), identification of process deviations, suggesting corrective actions, keeping records of the process.



**Fig. 6. Main business processes of the Azoty Tarnów Capital Group**

The degree of advancement (process maturity) of the organisational system and determination of the Management Board of the Azoty Tarnów Capital Group made it possible for the Group to change its organisational culture from vertical into process-oriented for the first time in Poland, keeping in mind that the goal was not the system itself, but improved management that would help gain a permanent competitive advantage.



**Fig. 7. Skew management matrix of the Capital Group Azoty Tarnów**

**Vision of further growth**

The previous achievements in the field of growth, which constituted good grounds and gave good prospects for the future, and mainly present time challenges have made it necessary to set a new growth vision for the years 2012÷2020. The Management Board of the Azoty Tarnów Capital Group presented an updated growth strategy for the years 2012÷2020 on June 13<sup>th</sup>, 2012.

**The corporate vision included key strategic goals that pictured the Group's vision in 2020:**

'Within the next decade the actions of the Azoty Tarnów Capital Group are to ensure that the following vision of the Group is implemented:

- Azoty Tarnów will be part of the main index of the Warsaw Stock Exchange
- the shareholders will have one of the highest ROC ratios in the industry
- the group will maintain its position of one of the top three biggest fertiliser producers in Europe in the long term.

**Catching up with the best**

**The beginning of transformation of the management system of Azoty Tarnów in the 1990s was an incentive for joining the competition on the European chemical synthesis sector with a 40-year delay.** Over slightly more than 20 years the distance to market leaders decreased considerably. We will soon be able to see how much it shrank.

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Jerzy KOZIARA - M.Sc., Head of the Management and Personnel Policy Department of GKAT, is a graduate of the Wrocław University of Economics. He completed a post-graduate programme at the Cracow University of Economics. He is the author of numerous solutions and implementations on restructuring and management, human resources, and motivational systems.

Rafał SMOŁA - M.Sc., Manager of the Corporate Management Office of GKAT, graduate of the Cracow University of Economics. He completed a post-graduate programme at the Cracow School of Business. He is co-author of numerous solutions and implementations on restructuring, co-author of ownership supervision system of the Capital Group Azoty Tarnów, manager of the team preparing the group's prospectus and issue documents related to it.

## 8<sup>th</sup> Workshop of Computational Chemistry and Molecular Spectroscopy

23-26 October 2012,

Punta de Tralca, Chile

The Workshop of Computational Chemistry and Molecular Spectroscopy is an international academic activity organized every two years by the Ph.D. Program in Molecular Physical Chemistry of the Universidad Andrés Bello.

In its 20<sup>th</sup> Anniversary we are committed to enhance the academic interactions between recognized researchers and graduate students enrolled in several doctoral programs of Chilean and Latin-American Universities.

During this 8<sup>th</sup> version we will discuss recent advances in experimental chemistry and quantum molecular sciences. This event, which is largely sponsored by the Millennium Nucleus P007-06-F, will be devoted to Nanoscience and its impact in new materials, biomedicine, catalysis, electrocatalysis, remediation and solar cells.

We are grateful to all participants for their significant contributions that made this 8<sup>th</sup> Workshop of Computational Chemistry and Molecular Spectroscopy possible.

Our gratitude also goes to our sponsors and to the Universidad Andrés Bello for their support.

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