Romania’s Greenest Buildings

2014
9 June 2014

Dear readers and members of the green building community,

This is the second edition of Romania’s Greenest Buildings; a report of the Romania Green Building Council (RoGBC) initiated to augment its “Romania Green Building Council Awards” with a more expansive list of buildings achieving higher levels of green performance than industry standards.

The intention was to identify and celebrate buildings built to greener performance standards but also to gather data for a critical research need; to understand the characteristics and trends related to new and renovated buildings and the state and direction of the sustainable construction industry.

Our organization selected NAI Romania as our research partner due to their extensive knowledge of both the property market of Romania and the local and international green real estate and construction concepts and trends. On behalf of the membership of the Romania Green Building Council, I would like to thank NAI Romania’s Principals Andrei Botis and Florin Maravela as well as their colleague Diana Popescu for their efforts and support in producing this report. In addition, I would like to thank the RoGBC’s Mihaela Nicolau who serves as Content Manager for Construction21.eu – the research tool used for this report – and who contributed greatly to its preparation.

We hope you find this report and collection of case studies useful and look forward to your feedback and any questions you may have.

Steven Borncamp
Founding President & CEO
Romania Green Building Council
Market for Construction Solutions

The availability of green building solutions - to include materials, products, technology and services has improved dramatically in the last six years in Romania. Project developers wishing to build or renovate using green principles face little or no barriers to acquiring all that they need locally to achieve the highest green performance standards; certified or otherwise. The availability of local training and local language sources of high quality information on the subject has dramatically increased.

An additional trend assisting green building projects is the emergence of new conferences and tradeshows and events dedicated to sustainable construction in Romania and in neighboring countries. In addition, influential “traditional” construction and property trade shows (such as “BAU” and Expo Real in Munich) have seen a radical shift towards green building as emphasized in what the exhibitors are promoting and the choice and messaging of the speakers selected by the organizers.

Service companies providing project and cost management, architectural and engineering design, green building certifications, and other essential solutions have recognized the importance of building or enhancing their skills in providing green building guidance and expertise. Green building service provision has - in an otherwise challenging market - been a bright spot in the industry with regards to strong business growth.

The skills and ability of Romania’s authorized energy auditors to undertake the necessary steps to issue the now mandatory Energy Performance Certificates has increased rapidly. Fears of a shortage of qualified energy auditors inhibiting the new legislative requirements have not proven true. Work must be done to ensure consistency of the audit quality and that the methodology used supports optimal approaches to measuring and improving energy efficiency and integration of renewable energy but Romania has in place an effective tool to begin differentiating building performance. Furthermore, the understanding of the benefits of early engagement of an energy auditor into the project development process has increased helping to ensure projects achieve their energy performance goals as originally targeted.

Most of the Romanian financial services industry does not yet provide comprehensive financial tools to support green buildings. A major step forward occurred with Raiffeisen Bank, in partnership with the Romania Green Building Council, launching a “Green Mortgage” product which substantially rewards – via a significant discount on the mortgage interest rate – superior energy efficiency and achievement of selected other sustainable construction criteria. It is the RoGBC’s belief that presence of Raiffeisen’s Green Mortgage product will be a strong driver for both improving the quality, environmental stewardship, and energy performance standards of residential projects as well as dramatically improving the understanding of the mortgage banking industry of the short term and long term financial benefits of green design introduced early in the development process.
A significant boost to the green building consultancy and solutions market occurred in Cluj-Napoca following the introduction of legislation to reward green buildings with substantive property tax reductions. An expected elevation of the level of green building performance required for future deductions should expand the development of the market from (primarily) green building certification to the whole spectrum of solution providers required to be engaged to reach the highest green certification levels. The adoption of legislation by the municipality of Timisoara builds upon Cluj-Napoca’s action and the significant interest of other municipalities – including Bucharest – to consider rewarding green buildings with reduced property taxes signals a very positive trend for the commercial market for sustainable construction solutions.

At an institutional level, Europe’s leading real estate investors and funds continue to set hard requirements that all purchases must be green certified and seem genuinely cognizant of the direct relation to increased building valuations and green performance. This message has been heard by investors and developers in Romania seeking to develop projects with a planned exit strategy to an investment fund. All local and international real estate consultancies and law firms are now aware of the green building concept and the desirability of certifications for commercial projects and have seen a significant increase in client inquiries requesting certified green properties to buy or rent. While the concept is understood, much work needs to be done to translate superficial understanding of the topic by realtors and lawyers to strong competency and experience to guide investors and clients through the green building topic.

A select group of firms are able to advise clients on useful tools such as “green lease” agreements which explicitly detail the responsibilities of landlord and tenant in collaborating to ensure the maximum energy efficiency and environmentally-responsible performance of the building is maintained. With more green buildings on the market, understanding of the need to properly operate a building for continued green performance is increasing. The training of facilities managers and educating building owners on the subject of proper building operations is increasing with the Romanian Association of Facility Managers (ROFMA) taking the lead through its activities and working to define the profession to better target educational offerings.
Analysis of Commercial Market for Green Buildings

Interest in Sustainability in the commercial property industry continues to increase worldwide. While the commercial property sector in Romania continues to see sluggish growth as the result of the lingering European and global economic challenges, the supply of commercial buildings with higher energy efficiency and targeting or achieving green building certification continues on a clear positive trend.

The largest international developers acting in Romania have proven via specific actions their strong commitment to building greener buildings. Some of the new constructions in this category include: Floreasca Park, Hermes Business Campus, The Office Cluj, Novo Park, Willbrook Platinum and Arion Green. Reconverted projects include: Europe House, Radisson, Amera Tower (Cluj) and Liberty Technology Park (Cluj). Pipeline projects include: Green Court, Ana Tower, Green Gate, United Business Centers (Cluj & Iasi) and others. With absolute certainty, the green square meters - realized and planned have dramatically increased.

The significant benefits of green buildings and realistic estimates of the associated efforts and costs are increasingly understood by investors, developers, occupiers, designers, contractors, consultants active in Romania.
Legislation related to Green Buildings

The recent legislation addresses key issues related to green buildings and strategies for year 2020 and beyond are defining green building criteria, such as energy performance of buildings, energy efficiency, use of renewable energy and construction waste management as high priority objectives.

According to the Energy Performance of Buildings Directive No. 2010/31/UE, all buildings undergoing major renovations have to comply with a minimum energy performance standard, and, no later than 31st of December 2018, all new public buildings will have to comply with nearly zero energy building standard. The same obligation applies for private owned new buildings, but as from 1st of January 2021. Certificates attesting the level of energy performance will have to be put in visible places in all buildings having a total useful surface of 500 sqm (250 sqm starting with 9th of July 2015) owned by public authorities and which are frequently visited by public.

Energy efficiency plays an important role as well, as the new Energy Efficiency Directive No. 2012/27/EU provides an obligatory measure to renovate at least 3% of the total useful area of buildings owned by central public authorities in order to comply with the minimum energy performance requirements each year Public authorities are also obliged to procure, beyond a certain amount, only buildings respecting the minimum energy performance requirements. A minimum level of renewable energy will have to be integrated into buildings as of 31st of December 2014, according to the Law No. 220/2008 establishing the promotion system to produce energy from renewable energy sources.

Another legislative obligation regards construction waste, which have to be handled according to objective set in the Directive 2008/98/EC, transposed into the Romanian legislation by the Law No. 211/2011: to re-use, recycle and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste to a minimum of 70 % by weight.

With Cluj-Napoca and Timisoara signing legislation, The Romania Green Building Council further counts an additional twenty municipalities with direct interest in implementing its “tool kit” for offering property tax reductions for substantive green building performance achievement as measured by obtaining an “A” on the Energy Performance Certificate and one of the top two scores of the internationally recognized green building rating tools present on the market (e.g. a LEED Platinum or Gold score or BREEAM Excellent or Outstanding score). The RoGBC’s toolkit for property tax reductions is available as a free, open-source initiative for all municipalities or other relevant public agencies upon request.
Methodology & limitations of the research

The RoGBC highlighted the research intent of the Romania’s Greenest Buildings project to NAI Romania’s research team who created a plan and worked closely with RoGBC’s analysts to collect data. Buildings to be profiled were identified by basic research and by soliciting guidance from industry professionals in different markets. The project was promoted via multiple media channels nationally to further encourage green building owners to consider submitting data on their buildings.

The project utilizes Construction21.eu as a research tool tool to collect building cases studies in Romania for its Romania's Greenest Buildings campaign. The platform is ideally suited for recording different approaches to green buildings (e.g. rating tool neutrality, ability to include multiple countries Energy Performance Certificates for a single building, sufficient categories to document green performance, etc.). The “virtual” nature of the online platform and the ability to upload case studies and use the platform without a fee facilitates the national collection of data.

While the research team made its best efforts to identify and solicit information on Romania’s green building stock, the project is reliant on the willingness of building owners to share information about their projects. While commercial projects intended for rental or sale have an incentive to promote their green building achievements, there are many building projects that pursue and implement green building principles as private company initiatives for their own business objectives and/or sustainability policies. These projects are, therefore, likely to be under-represented in our report. This situation is mitigated by the fact the Construction21.eu platform is an on-going collection of case studies and thus omitted projects can be uploaded and confirmed so that the online recognition of the project is achieved until the next print edition of the report is prepared. The Romania Green Building Council will continue its campaign to encourage all building owners to share information on exemplary buildings to raise the environmental standards nationwide.

Due to inherent complexities in comparing green buildings certified by different rating tools and green buildings that chose not to seek a green building certification, the RoGBC chose not to present the data in a ranked format. The RoGBC will utilize its “Romania Green Building Council Awards” initiative as the best mechanism to identify and award - via the decision of an expert jury and with input from the building community - the “Green Building Project of the Year” as well as 5 other categories. Furthermore, the RoGBC believes the presentation format and descriptions with the “Romania’s Greenest Buildings Report” provides an adequate understanding of those buildings green performance for the reader to draw informative conclusions. Readers are invited to visit the Construction21.eu knowledge sharing platform to see more detailed information on the buildings profiled in this report.
The future for Green Buildings in Romania

There are a considerable number of factors that indicate continued rapid uptake of green buildings across all building sectors for Romania in 2014 and beyond. The “business case” for green buildings is better understood by local developers and building owners; particularly as the service and operating costs have become an increasingly important part of the total cost of ownership or leasing.

An enthusiastic response from green building solution providers provides ample access for project developers to access all of the necessary inputs to build or renovate green. A growing list of green building projects across the country ensure the sustainable construction solution providers have moved from theoretical to practical experience in delivering results.

The few niche services, products or technology not currently available in Romania are available in neighboring countries in the region and would likely be needed for only a small percentage of any given project. The citizenry has responded very enthusiastically to the green topic as well as prominent politi- cians who seek to deliver greener municipalities. Today the inherent logic of the green approach need only be communicated and will be supported by the appearance of numerous local demonstrations of greener buildings and greener cities.

We hope you find this report and collection of case studies useful and look forward to any questions you may have.

Steven Borncamp, Founding President & CEO Romania Green Building Council
Mihaela Nicolau, Content Manager Romania Green Building Council
Andrei Botiş, Managing Partner NAI Romania
Florin Maravela, Partner NAI Romania
Definition of a Green Building

A green building is any project that is built or renovated with due concern for minimizing the full environmental impact of its design, construction/renovation, operations and (possible) deconstruction. Primarily within the Romanian commercial building industry, important internationally recognized rating tools that include LEED, BREEAM and DGNB, are utilized to provide a structured methodology and certification process to ensure green building projects described as such indeed live up to the intended standard. All of these rating tools include both allowing for varying approaches to achieving a green performance standard and also placing mandatory performance actions important to green building principles. While it is beyond the scope of this report to attempt to explain all of the possible definitions of a “green building”, this non-exclusive list of important characteristics of a “green” building may be of use to provide an initial understand:

Some characteristics of a green building:

• significantly improved energy efficiency • good access to public transportation to reduce traffic, pollution, and fossil fuel use • building sites selected and managed to minimize damage to local ecology • materials choices that minimize or eliminate toxicity and minimize the energy required to manufacture and transport • reuses existing materials or selects materials with a large amount of recycled content • provides natural daylighting and healthful indoor air quality • flexibility in the use of space to reduce necessary resource-intensive interventions when reconfiguring the space

While green building rating tools can provide a useful mechanism for assessing the level of green performance of a building, it is, of course, possible to have a very green building without obtaining the certification. This report includes both projects that have obtained the certification and those that have not. We have attempted to describe in brief detail the features of the buildings that warranted their inclusion in this report.
## Summary

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFI Palace Ploiesti</td>
<td>10</td>
</tr>
<tr>
<td>AFI Park I</td>
<td>10</td>
</tr>
<tr>
<td>Amera Tower</td>
<td>11</td>
</tr>
<tr>
<td>Residential compound on Dogarilor Street</td>
<td>11</td>
</tr>
<tr>
<td>Arion Green</td>
<td>12</td>
</tr>
<tr>
<td>Anvic House</td>
<td>12</td>
</tr>
<tr>
<td>ARED Residential Complex</td>
<td>13</td>
</tr>
<tr>
<td>Art Business Center 5</td>
<td>13</td>
</tr>
<tr>
<td>Art Business Center 6</td>
<td>14</td>
</tr>
<tr>
<td>Astoria Business Center</td>
<td>14</td>
</tr>
<tr>
<td>Atra Doftana Pension</td>
<td>15</td>
</tr>
<tr>
<td>Avalon Residence</td>
<td>15</td>
</tr>
<tr>
<td>BauMax Shop</td>
<td>16</td>
</tr>
<tr>
<td>Blue Gate</td>
<td>16</td>
</tr>
<tr>
<td>BOB Office Building</td>
<td>17</td>
</tr>
<tr>
<td>BOC Office Building</td>
<td>17</td>
</tr>
<tr>
<td>Brasov Business Park</td>
<td>18</td>
</tr>
<tr>
<td>Bucharest Tower Center (TCI)</td>
<td>18</td>
</tr>
<tr>
<td>Brandusa House</td>
<td>19</td>
</tr>
<tr>
<td>Cartier German Residenz</td>
<td>19</td>
</tr>
<tr>
<td>Cartier Prima Oradea</td>
<td>20</td>
</tr>
<tr>
<td>Pilot UPB Project</td>
<td>20</td>
</tr>
<tr>
<td>City Business Center</td>
<td>21</td>
</tr>
<tr>
<td>City Plaza Hotel</td>
<td>21</td>
</tr>
<tr>
<td>Class Park Târgovişte</td>
<td>22</td>
</tr>
<tr>
<td>EGGER administrative building</td>
<td>22</td>
</tr>
<tr>
<td>Cora Hypermarket Bacau</td>
<td>23</td>
</tr>
<tr>
<td>Cora Hypermarket Alexandrea Road</td>
<td>23</td>
</tr>
<tr>
<td>Cora Hypermarket Constanta</td>
<td>24</td>
</tr>
<tr>
<td>Cosmopolis Residence</td>
<td>24</td>
</tr>
<tr>
<td>Copou Bellevue</td>
<td>25</td>
</tr>
<tr>
<td>Crystal Tower</td>
<td>25</td>
</tr>
<tr>
<td>Cubic Center</td>
<td>26</td>
</tr>
<tr>
<td>Cubic Residence</td>
<td>26</td>
</tr>
<tr>
<td>Domeni Park</td>
<td>27</td>
</tr>
<tr>
<td>Domneşti Business Park</td>
<td>27</td>
</tr>
<tr>
<td>Electrosigma Offices</td>
<td>28</td>
</tr>
<tr>
<td>Ertec Residence</td>
<td>28</td>
</tr>
<tr>
<td>Euro Tower</td>
<td>29</td>
</tr>
<tr>
<td>Europe House</td>
<td>29</td>
</tr>
<tr>
<td>Europe Residence</td>
<td>30</td>
</tr>
<tr>
<td>Evocasa Armonia</td>
<td>30</td>
</tr>
<tr>
<td>Edenia Titan</td>
<td>31</td>
</tr>
<tr>
<td>Evocasa Optima</td>
<td>31</td>
</tr>
<tr>
<td>Evocasa Selecta</td>
<td>32</td>
</tr>
<tr>
<td>Evocasa Viva</td>
<td>32</td>
</tr>
<tr>
<td>Floreasca Park</td>
<td>33</td>
</tr>
<tr>
<td>Floreasca 169</td>
<td>33</td>
</tr>
<tr>
<td>Golden Tulip Ana Dome Hotel</td>
<td>34</td>
</tr>
<tr>
<td>Greenome</td>
<td>34</td>
</tr>
<tr>
<td>HERMES Business Campus</td>
<td>35</td>
</tr>
<tr>
<td>Ilion Offices</td>
<td>35</td>
</tr>
<tr>
<td>Ilion Residences</td>
<td>36</td>
</tr>
<tr>
<td>Inoveco</td>
<td>36</td>
</tr>
<tr>
<td>Iulius Mall Cluj</td>
<td>37</td>
</tr>
<tr>
<td>Iulius Mall Suceava</td>
<td>37</td>
</tr>
<tr>
<td>Iulius Mall Timisoara</td>
<td>38</td>
</tr>
<tr>
<td>H10 Infinity</td>
<td>38</td>
</tr>
<tr>
<td>KFC Arad</td>
<td>39</td>
</tr>
<tr>
<td>KUIB Restaurant</td>
<td>39</td>
</tr>
<tr>
<td>Lakeview Office</td>
<td>40</td>
</tr>
<tr>
<td>Liberty Technology Park, Cluj</td>
<td>40</td>
</tr>
<tr>
<td>Luceafarul Residence</td>
<td>41</td>
</tr>
<tr>
<td>Magheru One</td>
<td>41</td>
</tr>
<tr>
<td>Moliere Residence</td>
<td>42</td>
</tr>
<tr>
<td>Militari Residence</td>
<td>42</td>
</tr>
<tr>
<td>Multinvest Business Center</td>
<td>43</td>
</tr>
<tr>
<td>Neofort Residence 3</td>
<td>43</td>
</tr>
<tr>
<td>Nora Residence</td>
<td>44</td>
</tr>
<tr>
<td>Nordia Residence</td>
<td>44</td>
</tr>
<tr>
<td>Novo Park</td>
<td>45</td>
</tr>
<tr>
<td>Office, The</td>
<td>45</td>
</tr>
<tr>
<td>RC Office Park Pitești</td>
<td>46</td>
</tr>
<tr>
<td>Olimpia Business Center</td>
<td>46</td>
</tr>
<tr>
<td>Olympia Tower</td>
<td>47</td>
</tr>
<tr>
<td>Petrom City</td>
<td>47</td>
</tr>
<tr>
<td>Ploiești West Park</td>
<td>48</td>
</tr>
<tr>
<td>PMV Business Center</td>
<td>48</td>
</tr>
<tr>
<td>Prispa</td>
<td>49</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>50</td>
</tr>
<tr>
<td>Radisson Blu Hotel Bucharest</td>
<td>50</td>
</tr>
<tr>
<td>Red House</td>
<td>51</td>
</tr>
<tr>
<td>River View Place</td>
<td>51</td>
</tr>
<tr>
<td>Sigma Shopping Center</td>
<td>52</td>
</tr>
<tr>
<td>Soleta zeroEnergy ONE</td>
<td>52</td>
</tr>
<tr>
<td>Sky Tower</td>
<td>53</td>
</tr>
<tr>
<td>Studium Green Campus</td>
<td>53</td>
</tr>
<tr>
<td>Sun Offices</td>
<td>54</td>
</tr>
<tr>
<td>Sun Plaza</td>
<td>54</td>
</tr>
<tr>
<td>SWAN Office &amp; Technology Park</td>
<td>55</td>
</tr>
<tr>
<td>Tâmăioarei Residence</td>
<td>55</td>
</tr>
<tr>
<td>Tampa Gardens</td>
<td>56</td>
</tr>
<tr>
<td>Transylvania College</td>
<td>56</td>
</tr>
<tr>
<td>Unicredit Tower</td>
<td>57</td>
</tr>
<tr>
<td>Victoria Center</td>
<td>57</td>
</tr>
<tr>
<td>West Gate</td>
<td>58</td>
</tr>
<tr>
<td>Willbrook Platinum</td>
<td>58</td>
</tr>
<tr>
<td><strong>Pipeline projects</strong></td>
<td>59</td>
</tr>
<tr>
<td>Ana Tower</td>
<td>59</td>
</tr>
<tr>
<td>Bucharest One</td>
<td>60</td>
</tr>
<tr>
<td>Bucharest Mall and Plaza Romania</td>
<td>60</td>
</tr>
<tr>
<td>City Offices</td>
<td>61</td>
</tr>
<tr>
<td>Coresi Brasov</td>
<td>61</td>
</tr>
<tr>
<td>Dimitrie Pompeiu Office Building</td>
<td>62</td>
</tr>
<tr>
<td>Green Court</td>
<td>62</td>
</tr>
<tr>
<td>Green Gate</td>
<td>63</td>
</tr>
<tr>
<td>Romania Green Building Council Office Unit</td>
<td>63</td>
</tr>
</tbody>
</table>
**AFI Palace Ploiești**

**AFI Palace Ploiești**, the project developed by AFI Europe offering a total gross leasable area (GLA) of 33,000m² spreading over two retail floors. AFI Europe executed a large-scale development of the infrastructure surrounding the mall including a complete rehabilitation of all streets and roads in the vicinity of the project, widening and rehabilitating the bridge over the Dambu stream and the rehabilitation of a neighboring city park. Natural Daylighting solutions were included in the project.

**AFI Park**

**AFI Park** is a brown-field development linked to the AFI Palace Cotroceni Shopping Mall. It is the largest mixed-use complex of retail and offices in Romania and one of the largest in Europe. AFI Park is accessible through a variety of public transportation methods. The project is served by one existing metro line M3 with a nearby Metro/Subway station of Politehnica which is located 250 meters from the project, in addition to twelve different bus and tram lines that are serving the development. In 2 years time, the project will be served by the new M5 line, Drumul Taberei - Pantelimon metro line that is currently under construction with another metro station “Orizont” to be located 250 from the project. Green technical parameters: Natural Daylight, shower & locker room for commuters, water efficiency, optimized energy performance, energy monitoring, indoor lighting, air quality monitoring, storage and collection of recyclables. During construction stage, construction waste management procedures were implemented.
Amera Tower Cluj is an “A” class building that earned in 2012 the LEED Gold Existing Building Operation & Maintenance certification. Some of the technical details that helped achieving this performance are: Schuco curtain wall, a Reynobond ventilated surface, Schuco energy efficient windows with secure glass, and an advanced VRF system of ventilation, cooling and heating, equipped with heat recovery and heat pumps.

The system is controlled by a Building Management System and provides 25 m³/hour of fresh air per person.

The building also includes 4 energy efficient elevators with variable speeds of 16 m/s that are interconnected and equipped with a traffic optimization computerized system.

Residential compound on Dogarilor Street

Two Class A 5-storey apartment buildings where the apartments are designed in such a way as to allow greater flexibility, making it possible to connect (horizontal or vertical) two or more small units into a larger one.
The recently completed **Arion Green** building provides a total leasable area of approximately 1,000 m² over G+5F.

The building benefits from under floor heating and cooling systems as well as an advanced façade incorporating a low E-glass curtain wall, and automatic dynamic sun blinds to the exterior all helping to increase energy efficiency of the building.

Car parking is provided by way of underground spaces as well as on site availability in the locality.

The building is located in close proximity to the main intersection of Piata Universitatii as well as Bul. Magheru, which provide a wide range of services including hotels, restaurants, cafes, shops and government institutions.

---

**Amvic House**

The **Amvic House** is the first Romanian “passive house”, a nearly airtight building that does not have heat losses.

The house in Burlusi, Arges, has an area of 210 m² and the heating retention due to the 75 cm thick walls made out of 30 cm of polystyrene, 38 cm-thick aerated concrete blocks, gypsum board, 5 cm of mineral wool, plaster and adhesives. The house has solar panels that produce hot water, under-floor heating.

The ventilation is provided by vents in the ceiling and ducts with a geothermal heat exchange pump with energy recovery.
ARED Residential Complex

Located near Orizont Park the residential complex **ARED** has 2 buildings with 6 floors plus a penthouse with large terrace.

The facilities that led to obtaining building energy efficiency performance include:

- A “smart apartment” system with flood sensors with location in the bathroom and kitchen that stop water supply, fire and smoke detectors, burglar system with IR detectors, which sends text messages if an event occurs;
- Walls 25cm x 30cm ceramic blocks between suites, corridors and exterior;
- Bulkhead interior drywall (double plated) on metallic 75 mm thermally and acoustically insulated with mineral wool.

Electronic version of this report and further details are available at: [Construction21.eu](http://Construction21.eu)

Art Business Center 5

Office Building with a total area of 15,000 m2 of commercial and offices, with floors consisting of 2B + GF + 4F +5F recessed. The area is easily accessible, by car and public transport being located in northern Bucharest a few minutes away from Victoria Square.

The superstructure is made of reinforced concrete columns and beams both transversely and longitudinally arranged. Dual solution of ductile reinforced concrete frames of medium strength and very rigid structural walls. Space heating of the building work is provided by “YORK” fan coils arranged in the ceiling of the office space. The building's boiler is located in the basement and provides hot water for fan coil heating.
Art Business Center 6

Building located on the same street as Art Business Center 5. The structural parameters and features are identical to ABC 5 (see description above), with the exception of underground parking which has 3 levels, allowing for over 300 cars to be parked. Good access to public transport with a bus stop in front of the building.

Astoria Business Center

Located in the central area of Bucharest. **Astoria Business Center** has a built area of 4,215m2, held on the ground floor, mezzanine and four floors. The area for each level is up to 850m2. Parking is located underground and includes 48 places.

The building was completed in 2007 and benefits from specifications like BMS, HVAC, operable windows, secure access, back-up generator etc.
Atra Doftana Pension

Atra Doftana is a luxury bed and breakfast, which perfectly blends into the natural environment. The building resembles a honeycomb, with three quarters of the building being underground, due to the natural sloped site. Most of the building materials used are natural and eco-friendly (wood, stone), with low energy consumption.

Avalon Residence

Avalon Residence is the first neighborhood built with SIPS technology. In the energy audit conducted by the Association of Energy Auditors for Buildings in Romania, it obtained energy class A and maximum score of 100 out of 100. Due to the superior insulation qualities, the energy consumption for heating (as per the energy audit), is only 23.7 kW /m²/ year. The hot water system has elements that allow future installation of solar vacuum tubes. One of the company’s ecological objectives for future development of the project is to install a rainwater harvester that will be used for domestic activities.

Ozone Homes, built with SIPS (Structural Insulated Panels), are based on a modern technology, environmental friendly, which provides a number of benefits for both end user and the environment itself. Scientifically demonstrated, the lifespan for a building with SIPS is 60 years compared to 50 years of a conventional construction.
The BauMax store in Ploiesti has an area of 15,000 square meters and includes a revolutionary heating system used to convert the soil temperature into heating and cooling energy. In addition, the store features an advanced lighting system adjustable according to specific areas of the store. Concepts from this pilot project will influence future BauMax stores to be built in Romania.

The BauMax® shop in Ploiesti has an area of 15,000 square meters and includes a revolutionary heating system used to convert the soil temperature into heating and cooling energy. In addition, the store features an advanced lighting system adjustable according to specific areas of the store. Concepts from this pilot project will influence future BauMax stores to be built in Romania.

Office building with 2B+ GF+ 5F+ 6F recessed, having a built area 3,459m² above ground and 1,828 m² of underground (2 levels). Outdoor enclosures are made of a ventilated façade covered with “Cembrit” and double insulated. HVAC is supplied by a VRV Daikin system. In addition to the HVAC system, an air treatment plant (CTA) is installed on the roof, also made by Daikin.

The roof terrace is reserved for the HVAC chiller and CTA units and 2 solar panels that provide hot water for all the restroom units and kitchens available on each floor. A central node equipped with two lifts and staircase achieves vertical circulation.

Electronic version of this report and further details are available at: Construction21.eu

BauMax Shop

Energy Performance

Blue Gate

Energy Performance

Organizer

Research Partner

Research tool
BOB Office Building

Is a modern Class A GF + 6 story office building erected during 2007 – 2008, located in the Northern part of Bucharest in the recently constructed business centre of the city, easily accessible from several means of public transportation: 2 min walking from Pipera Metro Station, tram station for 16 and 36 lines in front of the building, and the station for 445 bus line. The building is placed on the former industrial area “Pipera”.

A comfortable working environment is brought to the tenants through the green colour glass curtain wall façade with Aluminium profiles EN AW 6060 with opaque areas covered in Alucobond and operable windows, 4 pipes built – in HVAC system, 60x60cm suspended ceiling with modular suspended lights 450 - 500 lux/m2 (energy consumption – 8-12W/m2) at desk level, emergency generator for the vital systems and common areas, control access and video surveillance system.

BOC Office Building

Is a modern Class A 3 Basements+GF+7Floors+Technical Floor office building erected during 2008 – 2009, located in the Northern part of Bucharest in the recently constructed business centre of the city, easily accessible from several means of public transportation: 3 min walking from Pipera Metro Station, tram station for 16 and 36, and the station for the 445 bus line. The building is placed on the former industrial area “Pipera”.

A comfortable working environment is brought to the tenants through an entire green glass curtain wall façade with Schuko Aluminium profiles, operable windows and 8 balconies on each floor, 4 pipes built – in HVAC system, 60x60cm suspended ceiling with modular suspended lights 450 - 500 lux/m2 (energy consumption – 8-12W/m2) at desk level, emergency generator for the vital systems and common areas, control access and video surveillance system.
**Brasov Business Park**

*Brasov Business Park* will be developed in two phases. The first phase of Brasov Business Park with two office towers and a Business Center is ready and includes: Offices Towers I & II in the front with six floors each, Business Center, Business Lounge, office related services, restaurant & bar on ground floor. Parking, technical rooms and storage on underground level.

Electronic version of this report and further details are available at: Construction21.eu

**Bucharest Tower Center**

Is a recently constructed landmark office (“class A”) building centrally located in Bucharest’s CBD area at Victoriei Square; the 2nd tallest building in Bucharest.

The building is class A energy performance, 4B+GF+22F+3Tech Floors, with a total rentable area of 22,424 m2, provided with BMS for full control of the equipment and billing for utilities and 6 high speed elevators (Schindler) for the tower.

A comfortable working environment is brought to the tenants through curtain wall façade with Aluminium profiles, 4 pipes built – in HVAC system, modular suspended lights 450 - 500lux/m2 at desk level, free floor height of 2.80m, emergency generator for the vital systems and common areas, Interior hydrants and sprinklers in all office spaces, access control and video surveillance system.
Brandușa House

Brandușa House has an organic architecture and is built mainly from natural materials such as sun-dried earth bricks which have low environmental impact, adjust humidity and are a very good insulator as well.

Cartier German Residenz

The residential development Residenz is built according to the latest German technologies in the field of design and civil constructions.

The project consists of 48 buildings of 3, 4 or 5 floors from which 32 have a square building footprint and 16 a rectangular one.

Residenz buildings energy performance certificate is derived from high efficiency heating, domestic hot water and lighting.

All of the buildings were designed to withstand a seismic force of 8 degrees on the Richter scale.
Located in the most dynamic area of the city, “Cartier Prima” is a residential development that comprises over 700 apartments with 1, 2 or 3 bedrooms, with areas between 49 and 220 square meters, designed on the principle of functionality of living space.

Energy Efficient features contributing to it’s A class Energy Performance Certificate include:

- Buildings are built with “Porotherm” type bricks, partition walls included
- External walls and floor slabs thermal insulation of 10-12 cm,
- Insulated and waterproof roof terrace
- Central heating
- Motion sensor lighting for entry access and stairways

The project consists in the design and construction of two semi-detached family houses according to the Passive House concept that is adapted to the Romanian climate conditions.

It was developed under the National R&D project INOVARE 2008. The building has an energy consumption for heating and cooling of approximately 11 kWh/m² year, the Passive House Institute Darmstadt standard allowing a maximum of 15 kWh/m² year.

While the walls, ceiling and floor appear similar to other buildings, passive house design pays special attention to increasing the energy efficiency of these elements through the use of energy efficient building materials, plus very good thermal insulation.

Other factors that led to this performance were a southern orientation of windows, shading elements, an air tight envelope, passive preheating of fresh air, efficient recovery of evacuated heat air with an heat air-air exchanger, domestic hot water and heating water delivered with solar panels, a deep well geothermal heat pump and reversible heat pump, and electricity from photovoltaic solar panels and wind turbines. Construction materials were also chosen with regard to their ecologic impact.
City Business Center is a business park situated in the center of the city of Timisoara that includes five independent vertical structures, spread over 43000 m², connected horizontally through a common ground floor and mezzanine. Each building has a central structural core and a row of exterior columns, creating an open plan space increasing flexibility and functionality. An intelligent building management system (BMS) controls the lighting and interior temperature by modifying the natural light that enters the building through an advance external shading system and modifications of the energy efficient lighting levels.

Each level has 2 or 3 balconies that are shaded by a brick facade. The glass facade brings in a maximum intake of natural light, most workplaces being placed 6m away from the windows. The project has been developed on a brown-field. The used concrete on site was crushed and used as gravel for the foundations. The steel was sent to a recycling plant. Other green features of the building: use of LED lighting, sustainable landscaping, a rainwater harvester system, and use of rainwater to irrigate the terraces, use of the cold water from the AC system to cool the cooling agents of the alternative current system.

City Plaza Hotel

5 Star Hotel located in Cluj Napoca city center, BREEAM very good certification.
The Class Park Targoviste development integrates exterior insulation, low-E windows with minimal heat transfer, roof with multiple layers of fireproof mineral wool, and individual metering for water, electricity and gas for each apartment.

In order to demonstrate its expertise as full range supplier, the wood-based material manufacturer EGGER built the new administrative building at its plant in Radauti, Romania, entirely out of EGGER materials.

The new administrative building was completed using modern, multi-storey wood construction in a period of just five months. EGGER materials were used for wood frame construction and interior design.

Thanks to its modular structure, the innovative concept is highly flexible and can be adapted to the requirements of any location. The building was design and built according to passive house principles.
Cora Hypermarket Bacau

Opened in 2012, has received a BREEAM green building certificate.

The structure was adapted to specific seismic requirements of the Bacau area.

The light spatial structure of the roof and the paneled floor (bubble deck) of the ground floor are selected to minimize the total weight of the construction.

To protect the environment, oil separators have been installed due to which the water is drained from platforms and automobile traffic in a network that cleans before it is discharged into the public sewer.

Cora Hypermarket Alexandria Road

Opened in 2012, is the second largest modern shopping center that has received the BREEAM green building certificate in Cora’s network.

Green features include:

- 150 solar tubes capture natural daylight and redistribute it indoors.
- A heat recovery air conditioning system extracting approximately 90% of the heat released and reused for heating in winter or as an energy source to produce cool air in summer.
- Pollutants, oil separators and grease trap and treatment plants treat wastewater with water discharged into the environment at acceptable levels for river water purity.
Cora Hypermarket Constanta

Opened in 2013, is currently undergoing BREEAM certification.

Skylights allowing natural day lighting reduce energy consumption for lighting, other illumination is provided by LED lamps.

Wastewater is treated of pollutants, oil separators and grease separators. Hot water for public restrooms is heated by high efficiency solar panels mounted on the terrace.

Domestic hot water is heated and field energy is recovered from the cold technological facility. The center has a garden of approximately 12,000m2, of which 8,000m2 are on the terrace.

The shopping center benefits from a BMS allowing the monitoring and control of electrical, water and HVAC.

Cosmopolis Residence

In Cosmopolis the buildings have external walls made of aerated concrete stone of a thickness suitable to ensure a good insulation coefficient. The internal walls are 8 cm thick Gypsum blocks. The dividing walls between apartments are made of aerated concrete blocks for greater insulation.

The thermal insulation is 8 cm thick expanded polystyrene, protected with a fiberglass sheet. The roof materials include hydro insulation, diffusion layer, thermo insulation, and screed.

Each apartment has an individual heating unit with a capacity of min 18 KW and separate meters for electricity, gas and water.
“Copou Bellevue” is a residential quarter situated in Iasi comprising of four buildings with 169 apartments, private parking and storage spaces.

The condominium has a rating of Class A for energy efficiency. The energy performance was possible by implementing features including building material with low heat transfer coefficient, insulation, gas fired central heating systems for each apartment providing also hot water and individual metering for water, gas and electricity.

Crystal Tower is the winner of the 2012 Romania Green Building Council awards for “Green Building of the Year - 2012” and Romania’s first BREEAM Excellent building. It is a new landmark in Bucharest, featuring modern architectural design and introduces the first double skin glass façade in Romania.

The construction benefits from the latest generation of BMS which controls, monitors and optimizes the building’s facilities, the shading system, the mechanical and electrical equipments for comfort, safety and efficiency.
Cubic Center

**Cubic Center** is an office building in the district of Pipera, with a total area of 27,400 m² GLA, spanning over 12 floors above ground and 3 levels of underground parking linked to the reception by elevators and stairs.

Each floor offers an open area of approximately 2,000 mp, enabling flexibility and spatial division according to the specific needs of each tenant.

It features an advanced BMS system leading to optimized consumption and maintenance costs, seismic design, individual energy metering, additional ventilation system for server rooms, fresh air treatment system and back-up generator.

---

**Cubic Residence**

The residential development consists of four modules, each of having 4 individual homes of Ground Floor +1. Cladding is made of thermally efficient bricks and the facades include 10cm of expanded polystyrene.

The layout provides two rows of houses positioned back-to-back minimizing heat loss with each house having only one facade directly exposed to the exterior.
Domenii Park

Built on 2200 sqm, **Domenii Park** consists of two 7 leveled sections joined at the basement and ground floor. A total of 63 apartments are divided in two buildings with a P + 6 story structure.

Construction materials used are high quality and provide superior thermal insulation, due to 10cm of mineral insulation and the ventilated facade used. The finishing is organic or mineral: wood, stone, marble, travertine, granite, slate and ceramic.

The walls separating the apartments are double brick and insides of the apartments are made of double plasterboard with mineral wool insulation providing optimal noise reduction from the exterior and interior of the building.

Other energy efficient features include a Schüco aluminum exterior carpentry with low-e double glazing, an advanced heating system with three fully automated boilers. Energy efficient interior and exterior lighting and back-up generator.

Domnești Business Park

**Domnești Business Park** is an “A” Class energy efficient industrial park operational since 2005. The buildings can be flexibly partitioned, in spaces ranging from 300 to 2000 m2, each unit having its own office space.

The industrial halls are erected on steel structure, with fire-resistant walls and hydrants contributing to a fire-resistance certificate class III, C(BE2).

Other technical specifications include: drive in doors, loading docks, natural and fluorescent lighting, the walls are made with metal sandwich panels, quartz concrete floors, and natural gas fueled heat convectors for the storage units.

The office buildings’ ground floor and an upper floor have glazed front facades, heating systems using a condensation gas boiler.
Class A, BREEAM certified office building.

Ertec Residence is an “A” Class energy efficient residential development located in Dobroești village, Fundeni, Ilfov district.

The energy performance was possible by implementing features including building material with low heat transfer coefficient, insulation, heating system for each apartment care that also provides hot water, individual metering for water, gas and electricity for each apartment.
**Euro Tower**

*Euro Tower* is a BREEAM Very Good certified office building. The office space allows many permutations of cellular type organization or (open space) offices and can be easily customized according to occupants' requirements. Highly transparent offices facades allow maximum use of natural light.

The BMS used allows lighting and heating systems to be controlled by individual occupants, which along with other efficient equipment lead to energy save by 30% compared to other A Class buildings. Water saving is achieved through water saving fixtures, waterless urinals and an efficient irrigation system.

The building has a green roof which reduces the heat island effect.

---

**Europe House**

*Europe House* is a successful reconversion project, and it was one of the first completed office buildings in Bucharest, opening this market segment. The objectives were to create a Class A energy efficient building and to provide optimal staff working conditions. The reconversion had the objective of reducing utility costs and keeping the emissions at low levels, this being confirmed by the current energy certificate. Equipment sizing was carefully considered with specialized technical designers and implementing a modern automation and facilities tracking.

---

Electronic version of this report and further details are available at: [Construction21.eu](http://Construction21.eu)
Europe Residence

Europe Residence - Primul complex rezidențial situat în centrul istoric al orașului Brasov, cu o arhitectură modernă și cu vedere panoramică asupra orașului. Performanța energetică a fost obținută prin utilizarea materialelor de construcții având un coeficient redus al transferului de căldură, a izolației termice, precum și datorită faptului că fiecare apartament este dotat cu un sistem de încălzire ce prepară apa caldă menajeră și contorizează consumul de apă, gaz și energie electrică.

Evocasa Armonia

Evocasa Armonia is an “A” Class residential complex. The energy performance was possible by implementing features like building material with low heat transfer coefficient, insulation, energy efficient heating system, individual metering for water, and gas and electricity for each apartment.
Edenia Titan

Residential compound well connected to public transport. In the second stage of development of the project, a new building with 11 levels and a total of 126 apartments was delivered in the fall of 2013, thus completing the assembly stage, completed in 2009 and consists of two blocks of 226 units. New building is made entirely of reinforced concrete and “Porotherm” brick.

Evocasa Optima

Evocasa Optima is an “A” class residential complex in eastern Bucharest. The architects have created a bicycle parking space, at the ground floor.

The buildings are equipped with advanced thermal systems and presence sensors and timer lights are located on each corridor.
Evocasa Selecta

Is an **A Class** building designed to provide high durability built on reinforced concrete slab and with energy efficient bricks, expanded polystyrene insulation, a glass curtain façade all providing good thermal and sound insulation.

Evocasa Viva

“**Evocasa Viva**“ is an **“A” Class** residential complex.

The energy performance was possible by implementing features including building material with low heat transfer coefficient, insulation, energy efficient heating system, individual metering for water, and gas and electricity for each apartment.
The developer’s intention at Floreasca Park was to provide a low-rise, open environment but also in a well located commercial area with good public transit infrastructure. The project was assessed upon attention to: health and well-being of workers, energy efficiency, transport, use of water, waste treatment, use and sourcing of construction materials, ecological use of the land and pollution, use of natural energy resources and energy savings.

Floreasca Park’s low carbon technologies include:

- Ground coupled ventilation system, ground water IT cooling and night cooling.
- ‘A’ rated energy performance monitoring according to BREEAM and BMS monitoring of all energy consuming systems.
- Energy efficient “Miconic 10 ” lifts, supplied by Schindler.
- Energy efficient external LED lighting.
- Facade shading fins and high quality glazing to reduce internal heat gains.

The combination of all the above items will bring significant savings in the amount of electricity used and can reduce the total consumption and costs of electricity in the buildings by up to 40%.

A brown-field development, Floreasca Business Park is located in the most attractive office area of Bucharest, which has seen major development in recent years, including new A-grade buildings, a shopping centre and infrastructure access facilities.

With a total rentable area of 34,333 m², 8 levels and 2 separate buildings, Floreasca Business Park is situated in northern Bucharest, close to Barbu Vacarescu Street and across the street from the newest shopping mall Promenada and 100 meters distance to Aurel Vlaicu subway station.
Golden Tulip Ana Dome Hotel

Class A, BEEAM certified Hotel located in Cluj Napoca.

Electronic version of this report and further details are available at: Construction21.eu

Greenome

This project is the winner of the 2012 Romanian Green Building Council Awards “Green Building Project of the year” in the “small building” category. Designed to accommodate a family of four in comfort. Greenome is a three bedroom house that requires only 150 square meters, located on an area of 1500 square meters; an area shared with an external office for the non-profit foundation Green initiative (see www.greenitiative.ro) founded by project’s owners.

Although located in the metropolitan area of Bucharest, close to the Palatul Brâncovenesc, an 18th century cultural center, the project is in the middle of a rural neighborhood, with orchards, beehives and pastures. This location inspired the owners to begin an experiment in green building and green living. The project includes an ongoing initiative to generate all necessary power and heat independently and includes small farming initiatives to produce local, organic food.
HERMES Business Campus

This is a brown-field development of class A office building being implemented in three phases. The whole complex will deliver 78,000 of the total space, covering 4 levels of underground parking. Phase 1 is currently completed.

Located in the Northern Business District of the capital city, the new complex is accessible directly from Dimitrie Pompeiu Boulevard. It is located opposite Pipera Metro Station.

Electronic version of this report and further details are available at: Construction21.eu

Ilion Offices

The interior spaces are realized with quality materials, plaster board ceilings, HVAC system, and individual metering for water, gas and electricity, an M50 series curtain wall exterior join series system with a high efficiency coefficient, secure insulating, low E glass, aluminum mounting structure and aluminum profiles with thermal bridge prevention.
Ilion Residences

*Ilion Residence* is located a short distance from Bucharest’s center benefiting from nearby public transport. The exterior walls have double insulation that includes decorative plastering, thermo-insulation of 8 cm of polystyrene, 25 cm energy efficient brick, 5 cm mineral wool, and gypsum board on the inside.

The walls separating the apartments are 25 cm brick, the partition walls inside the apartments are made of gypsum board panels on metal supports with mineral wool infill.

The outer joinery is Alumil M11000, aluminum joinery with double glazed argon lowE windows. The interior walls are gypsum board on a metal structure with 5 cm mineral wool infill. Each apartment has individual heating, air conditioning, and safety systems as well as individual metering of water, gas and electricity.

Inoveco

*Inoveco* is a green building, with an energy intake of 85% from renewable sources, that is very well insulated and includes an automated system that controls the interior climate. The house has a wooden structure, 18 cm insulation made out of blown-in cellulose and 10 cm of polystyrene, a floor heating system, a heat pump, thermal energy gained from 270 vacuum tubes, 1.9 m long, photovoltaic panels with a 2.5 kW power rating connected to the electric grid, and a central ventilation system which uses heat recovery and LED lighting fixtures.
Iulius Mall Cluj

Iulius Mall Cluj is the third mall developed by Iulius Group. The project includes both the shopping center and an adjacent office building. Provides a capacity of 1,828 parking spaces overground and underground, and a variety of shops, hypermarket, cinema and restaurants. The certification decision was taken after five years of operation, following a strategy of efficiency and sustainability of the building. The project was built according to European standards and ASHRAE.

From a urban development perspective, Iulius Mall was a unique initiative of a private company in Romania, which restored a public area of about 3 hectares, located on the lake Gheorgheni, transformed in a park. The green area was planted with 10,000 square meters of turf vegetation with resistance to heavy foot traffic and also 18,000 acclimated trees and shrubs.

The certification process took about a year and a half, during which there were implemented efficiency measures for the energy consumption, the use of systems with refrigerant, the water consumption and the CO2 emissions. The project was subject to expansive audits for both energy and recycling/reducing the amount of waste, cleaning and technical inspections. The process was complex, involving considerable resources, both human and financial, and implementation of very stringent policies and standards.

Iulius Mall Suceava

Iulius Mall Suceava is the fourth mall developed by Iulius Group covering a total area of 145,702m2, building area has 70,000m2 and 50,000m2 GLA, built on two levels, providing approximately. The project is pursuing LEED Silver certification.
Iulius Mall Timisoara

Iulius Mall Timisoara opened in 2005 and is the largest shopping mall outside the capital, with a leasable area of over 66,500m². The project is pursuing LEED Gold certification.

H10 Infinity

Located in the heart of Deva, in the immediate proximity of several important points of interest, H10 Infinity is the first residential building in Deva that has a Class A energy performance certificate and the maximum energy class rating of 100.

The building has a structure of reinforced concrete beams and frames with 30 cm exterior structure and interior structure 25 cm and 11.5 cm of “Porotherm” bricks.

Gealan joinery and Guardian Clima Guard Solar windows, the building maximizes energy performance of building., and individual heating system with natural gas “Viessmann Vitopend” equipped with Korado radiators.
**KFC Arad**

The new restaurant, uses less electricity and water than a traditional KFC location. Some of the energy-saving techniques used in the restaurant include energy-efficient cooking equipment, LED lighting, locally sourced building materials, and fixtures designed for reduced water use. The developer has plans to offer preferred parking spaces for customers driving hybrid vehicles.

**Kuib Restaurant**

Kuib Restaurant is located in Sinaia in the middle of nature, near George Enescu’s memorial house. The project intended to blend into the natural surroundings with the use of natural materials and design. The Kuib restaurant is, therefore, an extension of the existing inn on the building site.

Natural, local materials, such as oak or river stone complement the Piatra Soimului Park with the entire complex earning the European EcoLabel.

On three sides of the building, the movable wood panels open and place the building in the middle of the natural landscape, providing views of the woods on one side and the mountain on another. The layout of the lighting fixtures made out of colored textile combined with handmade bentwood vintage furniture creates an atmosphere created with local emphasis.
Lakeview Office

A brown-field development, **Lakeview** is a high profile class A office building of 25,564 m² gross built above ground and 19,000 m² gross built underground.

It has a rentable area of up to 2,338 m² per level split in high-rise (building A - 785 m²) and low rise (building B - 1,515 m²).

The building is composed of 2 different height segments: GF+14+ technical floors and GF+7+ technical floors with 4 basement levels for parking and storage.

Liberty Technology Park, Cluj

**Liberty Technology Park** is a reconversion and renovation project.

The main include green areas, bicycle parking racks, leisure and relaxation area, double windows with opening systems, window blinds to reduce solar radiation, BMS, use of reclaimed materials and reuse of an existing building with historical value.
Luceafarul Residence

Luceafărul Residence is an “A” Class residential development, first of its kind in Oradea, where the intention was to create apartments which offer a range of flexible options. Thus, some apartments have smaller areas compensated by the judicious use of habitable space. While thermal comfort is one of the most important aspects of a habitat, this residence addresses optimization of energy consumption. Therefore, thermal comfort and financial savings are ensured by the building’s latest generation of automated gas heating systems and thermal insulation of the building, reducing heating waste and money.

Each apartment has an independent panel of individual metering for all utilities, consumption reading from outside the apartment, and an individual adjustment of utilities’ consumption. At each level there is a technical room, which offers direct access to control the temperature.

Magheru One

Magheru One is a downtown office building completely renovated, consolidated and rehabilitated that obtained an “A” class energy performance certificate.

The building is located midway Piata Romana and Piata Universitatii, with high public transportation access.
**Moliere Residence**

The Moliere Residence complex consists of a 6 floor building, ground floor and two underground levels.

Walls between property and common areas are made of two layers of 12.5 cm thick brick with thermal and sound insulation. The interior walls are made of double gypsum board made from a metal structure 75, 2x12, 5 panels on each side and mineral wool sound insulation.

Room doors and windows were fitted with aluminum frames with Low-E thermo-insulating glass and thermo braking systems. Utility costs are individually metered for each apartment with digital meters. All water pipes are insulated and drain pipes are soundproofed.

The HVAC system utilizes an advanced VRV system that provides heating and cooling.

**Militari Residence**

“Militari Residence” is a very large residential complex. The energy performance was possible by implementing features like building material with low heat transfer coefficient, insulation, heating system for each apartment, that also provides hot water, individual metering for water, and gas and electricity for each apartment.
Multinvest Business Center

Is the first A class office building in Târgu Mureș, in the process of obtaining BREEAM certification.

Neofort Residence 3

Neofort Residential 3 is an “A” Class energy performance residential complex located next to the Iancului metro station. Porotherm brick exterior walls are plated on the inside with 10 cm mineral wool, interior partitions are double gypsum board with wool inside creating a “sandwich wall” type. The apartments have double glazed windows, an advanced heating system with sensor, and metering for gas, water and electricity. There is a dedicated room for plastic, paper, glass and garbage collection.
Nora Residence

**Nora Residence** is an *A Class* residential development in Timisoara.

High energy performance is achieved by 30 cm Porotherm brick walls and partitions between apartments, gypsum board interior partitions and walls that provide acoustic insulation, additional insulation systems, waterproofing, 5 chamber window frames, and a heating system with thermostat.

Nordia Residence

Located on the shore of Grivita Lake, **Nordia Residence** achieves high energy efficiency by the use of construction materials with a low heat transfer coefficient, insulation, a central heating system for the entire building that also supplies hot water, individual metering for water, gas and electricity for each apartment, and energy efficient lighting. The six buildings are placed on a basement containing 93 parking spaces, which is covered by an accessible green terrace.
**Novo Park**

**Novo Business Park** is located in the new CBD of the city. The area is excellently served by public transportation facilities, including Pipera Metro station just within short walking distance from the property. The submarket developed at the northern edge of the north to south business artery, provides easy access to the airport.

**Office, The**

State-of-the-art technologies and the use of natural materials provide a pleasant work environment, which includes many ecologically friendly features. Green terraces, a natural extension of the workplace, allow active breaks that stimulate creativity. Thanks to its own system of selective waste collection and a highly efficient energy system. The Office plays an active role in reducing pollution.
The glass façade is entirely composed of fixed, sealed windows that allow a maximum intake of natural light and reduced thermal exchange with the exterior factors.

The outstanding energy performance derives from implementing key features and materials.

Low heat transfer coefficient building materials, insulation and a state of the art energy efficient heating and cooling system were used in order to increase efficiency.

An intelligent building management system (BMS) controls the lights, interior temperature, mechanical and electrical equipment and increases comfort, ease of use, safety and efficiency.

**Olimpia Business Center**

With an gross internal area of 6,809m² and 100% occupancy, after achieving the Very Good (In-Use certification), the building has proved to be one of successful developments in Cluj Napoca. The building uses BMS and creates awareness regarding the consumption of energy, water and heat, connections to good public transport and cyclist facilities and a strong policy of recycling and dedicated storage for recycled waste. A specialized recycling contractor is providing removal of waste services.
Olympia Tower

Olympia Tower is a 12 floor BREEAM Very Good certified office building that was completed in early 2010.

The site is very small and is considered almost unbuildable because of the complexity caused by the underground networks, the nearby gas station or the traffic access problem caused by the network of crowded streets. The ground floor was designed to be open and transparent, with large glass surfaces ensuring the proper natural light on the entire floor plate.

The BMS system is connected to the heating system, chillers and fire system.

Petrom City

The Petrom City complex comprises two office buildings, a data, a 5 MW power plant and a parking lot with 900 parking places, spread across a built surface of 100000sq m.

The data center offers a basic infrastructure with advanced solutions in heating, power supply, redundancy, sustainability and emergency response in case of disaster.

The project began as the biggest and most complex project of eco rehabilitation in Romania of a brownfield site. The site, a former fuel storage space, had been bombed in the World War II and the damaged reservoirs leaked, contaminating the soil with gasoline and diesel. Out of the 130 million Euros necessary to implement the project, 10 million were spent on the soil eco rehabilitation.
**Ploiesti West Park** includes solar panels on the rooftops of some buildings providing a total of more than 5 MW of green energy.

All warehouses built are to “Class A” with the SME building becoming the first **BREEAM Very Good** industrial warehouse in Romania. The cold storage warehouse has 25% less carbon emissions than other warehouses of its type due to substantially reduced power consumption. Installation of the first rooftop photovoltaic panel project in Romania, having a total capacity of 5.4 MW was constructed to partially supply the requirements of existing tenants.

The panels were installed on the existing roofs of the buildings of Ploiesti West Park on a total surface of around 10 hectares.

**PMV Business Center**

A business center near the historical centre of Cluj Napoca undergoing a LEED Operations and Maintenance: Existing Buildings certification (Now LEED EBOM).
PRISPA is not just a contest prototype, but an “A” Class home for Romanians. It is easy to build, making great use of prefabricated elements, structural simplicity and technology so as to be built with the minimum amount of effort. It is adaptable, using reconfigurable features in the living space and a modular structure that allows extensions or easy to make changes in design without losing the general idea of the project.

The materials used for PRISPA House have been chosen based on traditional principles on the one hand, and on their capacity of being environmentally friendly on the other hand. Wood is the material used in greater percentage, Clay is another material from vernacular architecture. Besides being a natural material, it also has hygroscopic properties, so it was used as finishing on interior walls.

For it to adhere to the OSB boards, a middle red drywall coating which also provides fire protection has been introduced. Metal had been used in different forms – zinc roof system, including eaves fascia board finishing, also zinc finishing for the mounting and industrialized connectors for structural purposes and other constructive details. The load bearing structure for the PRISPA house consists of a system of load bearing walls. Some of them are divided into structural panels and the rest are found in structure for the two trans- portable modules: the kitchen + bathroom module and the technical module. The base materials are engineered wood products such as I-Joists and Oriented Stranded Boards, also timber and, for the joining of the structural parts, a range of steel connectors and bolts. For thermal insulation, wool was used.

One of the very first selling strengths of PRISPA House is the natural light and natural ventilation for each space. Windows are configured in such a way that they ensure a balance between the incoming caloric energy and the heat that reflects from inside out. Depending on orientation, different treatments were applied to the glass. The artificial lighting is calculated to give enough light for the normal functioning of the house, closely depending on the function of each room. The house has an optimum compact volume. There are no unused or overdimensioned heated areas. Moreover, the heating system also works for maximum loss of energy. The interior heated air is fully reused, thus diminishing the quantity of energy used. Following the same principle, during winter, starting from 5 Celsius degrees below 0, heating can be done using infrared panels placed in the living room, bedroom and bathroom. Thermal comfort is also ensured by a strategic placement of shutters in the window system, the glass treatment and mineral wool used as insulation. Moreover, since the design of the southern facade allows thermal substations, thermal balance is achieved through a natural stone thermal mass placed in front of the windows. The layer of dark colored stone stores heat from sun radiation and releases it during the night.

The photovoltaic system is mounted on the roof metallic boards using a simple technology while also having its energy converters in this technical area. It has 32 photovoltaic panels, 8 kW/p installed power, and 2 solar panels. In Bucharest, Romania, the house produces 9501 kWh/year, while the estimated energy consumption is 7508.11 kWh/year. Simple calculations would lead to the conclusion that, with the right systems implemented, the energy production covers all the maintenance and electricity bills. Therefore, in Bucharest, the house will produce an extra 1992 kWh/year, that is 20% more energy than the owner can consume. On the long run, real efficiency comes from connecting the house to a smart grid. It also has a Grey water recycling system with a capacity of 250 l/day.
The Procter and Gamble plant in Urlati is the first greenfield investment P & G developed in Romania.

The 100M Euro facility incorporates cost effective green features including reducing power consumption by designing the building and the office building’s atrium orientation, as well as installing roof illuminators for the production area to maximize the use of natural light, use of geothermal energy used for HVAC, capturing energy from the production area and using it to heat and cool the buildings and reducing water consumption by capturing rainwater and use it for irrigation.

The factory is P&G’s greenest factory in the world to date and serves as a model for future facilities around the globe.

Radisson Blu Hotel Bucharest

Radisson Blu Hotel is a 5-star hotel located in central Bucharest.

The hotel’s green achievements include earning the Green Key eco-label, installing energy-efficient light bulbs, use of only eco-labeled stationery, brochures and other paper products, and recycling of aluminum cans, bottles, paper, wood and residual oil.
**Red House** is a residential complex which has “A” class energy performance certificate. The buildings’ structure are reinforced concrete with exterior insulation of 10 cm thermal polystyrene, brick interior partitioning and waterproofed terrace.

Each apartment is equipped with heating system that also provides domestic hot water, and individual metering for water, gas and electricity.

**River View** (formerly known as Sema Park) is a business park, with A class energy, developed on the site of the former industrial Semănătoarea factory. One of the goals was to provide optimal working conditions while keeping utility costs low and emissions to a minimum.

Thus equipment and facility sizing was carefully considered, involving professional designers and implementing a modern Building Management System.

Buildings’ facades are largely made of highly energy efficient treated glass curtain walls, supplying natural light throughout the entire building.
Soleta House utilizes glued laminated timber (glulam) technology that respects the principles of active houses (www.activehouse.com). This house is the smallest copy of the “Soleta” family homes (6 houses whose surfaces and range of features increases gradually). All “Soleta” houses are optimized for reducing energy losses, energy-transfer and also are conceptually ready to be equipped with various systems for energy production and storage of unconventional sources to cover all the necessary consumption. Within these Nonconformist architectural solutions, 93% of construction materials used are local natural materials, minimally processed, resulting in a very low energy usage for creating the house that drastically reduces carbon footprint at all stages: manufacturing, construction and use.
Sky Tower

Sky Tower is an “A” Class office buildings whose energy efficiency features include automatic light activation in corridors and lobbies, a Building Management System (BMS) that ensures efficient power consumption, automatic climate control for all rooms, solar control glass that simultaneously reduces solar impact while maximizing natural lighting, all work stations benefit from natural light, and reduced velocity of air circulation.

Studium Green Campus

Studium Green Campus is an A class residential building with 190 apartments of one and two bedrooms.

To reduce energy consumption and integrate green energy into the building, Studium Green is equipped with solar photovoltaic panels and solar thermal panels, and lighting in public hallways is based on LED. Planted areas are irrigated by an water efficient automated system. For customization, local artists painted the basement and common hallways with ecological paint.

Natural and recycled materials have been used in public areas and apartments' balconies. The main facades are treated so as wall support for climbing plants with an anchor and net system mounted to support the green facade’s climbing plants.
Sun Offices

Located on top of Sun Plaza shopping center, Sun Offices provides 9,800m² high-class office spaces on three levels with high technical specifications. A simple and efficient design exposes the office to abundant daylight, increasing productivity for indoor activities. A floor depth of 18 m and clear height of up to 2.85 m turn the office into a spacious and improved working environment.

Sun Plaza

In addition to direct access to the metro – a unique feature in Romania – the centre has an excellent connections to numerous other forms of public transportation. Built on four levels, 2 levels of shopping area and 2 levels of parking with 2,000 places, Sun Plaza is an "all-inclusive" shopping centre with around 80,000 m² GLA and a total area of 208,000 m².

The center offers generous space and a modern visual identity celebrating color, greenness, water and light. The modern architecture uses natural light and color diversity in order to create a very attractive and friendly environment. The design of the building is governed by three important natural elements: green represents the earth, blue stands for water and yellow for light. Sun Plaza received 2 awards in the categories of “Best Shopping Centre Development” and “Best Overall Development” and holds a BREEAM certificate.
SWAN Office & Technology Park obtained the BREEAM Very Good certificate and was the winner of the 2012 Romania Green Building Council Awards Green Building “Project of the Year” for the large building category. The regression of the upper-level of the building ensures a good intake of natural light in the boulevard and courtyard areas.

The BMS (Building Management System) allows an efficient control of the utilities and security systems and also the individual monitoring of heating and air conditioning.

Tămâioarei Residence

The project is focused on optimizing space on a land with unusual dimensions and a better integration into the landscape; a challenge considering this being more difficult as neighboring buildings are approximately 100 years old.

The project utilized building materials and techniques meeting basic ecological principles including:

- Excavation soil from foundations and for the water treatment plant was kept on site for leveling the project ground,

- Yards have been environmentally designed, not covered with artificial composite materials. The soil resulted from the excavation has been used together with a grid system that provides rigidity, allowing rain water to be absorbed without risk of subsiding,

Local Romanian wood dried naturally is abundantly found in both the hedges, backyard, as well as the exterior facades' decorative cladding. This façade includes mobile shutters that can rotate 180 degrees and serve a dual role: visually obstructing the relationship between buildings and the street providing privacy and, at the same time, providing shading on hot days. This shading system reduces the cooling needs of the building while allow passive heat during cold days.
**Tampa Gardens**

Brasov is a residential complex integrated into the surrounding nature through the colors and the materials used.

The energy performance was possible by implementing features including building material with low heat transfer coefficient and insulation including opaque exterior walls with 35 cm of reinforced concrete and brick with 10 cm thermal insulation; interior wall of reinforced concrete and brick with 5 cm thermal insulation, and provided each apartment with its own gas heating system for domestic hot water heating, as well as individual metering for water, gas and electricity.

**Transylvania College**

Transylvania College campus has the first school in Romania built on principles of sustainability and energy efficiency. The motivation for the work relied on external and internal research demonstrating that measured student achievement rose by over 30% in green buildings where natural day lighting is abundant, natural, non-toxic materials are used and indoor air quality is given due consideration. The school also calculated absences on medical grounds were reduced by over 25% due to the introduction of green building and operating principles.

Sustainable principles used for the design of the building include protecting the rooms against overheating due to solar radiation, avoiding glare and reducing the cost of air conditioning by installing shading on the west façade, using triple glazing to reduce heat loss through the glass surfaces, using sound absorbing materials to isolate exterior and interior noise, using natural finishing materials in a variety of textures and colors to stimulate the learning process, using solar panels for hot water used for washing and heating, and using photovoltaic panels to collect solar energy and transform it into electricity. In addition, Transylvania College installed water saving plumbing fixtures, lighting fixtures with compact fluorescent, high frequency, electronic ballast lamps or LEDs, and an HVAC system with heat exchangers.
Unicredit Tower

Each floor has an easily adaptable modular arrangement of the building services systems which facilitates ease of maintenance and operation and provides flexibility without need for expensive, waste producing and resource consuming interventions.

The design development included value engineering proposals which resulted in reduced energy consumption for the operational building, as well as lower overall construction costs. This was achieved by optimum selection of building fabric elements together with building services installations. Passive heat recovery is achieved by utilizing the six-storey atrium as the return air path to the central air handling plant. This also reduces duct riser space demands. ARUP’s heating, ventilation and air conditioning (HVAC) designers worked closely with the façade designers to improve occupant comfort, lower costs and save energy for Unicredit Tiriac.

The project demonstrates that both construction costs and energy running costs can be reduced by using holistic design principles.

Victoria Center

Victoria Center provides design specification drawn up in accordance with the highest standards on an international level, BCO (British Council for Offices) standard for class A offices, complying also with all applicable Romanian standards and requirements.

The building obtained a BREEAM In-Use Very Good certification.

Glazed facades with open able windows; entrance and building design complying with disabled access principles; visitor entrances adds to the prestige and quality of the development due to choice of high quality and durable materials; drop off and pick up points at Calea Victoriei level.
The **West Gate** Business Park comprises a total leasable area of 80,000 m² arranged in 4 buildings, each building with a total area of approximately 15,000 m² each with 2,600 m² per level, spread over ground and 5 upper levels. The floor areas are arranged in an ‘H’ shaped layout with a central core area comprising 3 elevators, stair case as well as 4 separate banks of male and female sanitary blocks. The buildings are fitted to a modern standard with raised floors, 4-pipe HVAC system, suspended ceilings and opening windows amongst other features.

**Willbrook Platinum**

Comprising two buildings, connected by a pedestrian bridge, Willbrook Platinum Business & Convention Center is a highly energy efficient office building providing approx. 63,000 m² area of Class A office and meeting spaces.

The convention facilities are spread over 13 conference rooms with capacities from 10 and up to 2,400 guests in total.
Ana Tower va fi construit pe baza unui nou concept de structură, fără limitări impuse de stâlpii interiori, acordând utilizatorilor posibilitatea de a realiza particionări flexibile.

Ana Tower va avea 25 etaje şi o înăltime de peste 100 m. În acelaşi timp clădirea îşi va dovedi respectul faţă de comunitate prin sustenabilitate, prin eficienţa consumului de apă şi energie electrică, prin folosirea optimă a resurselor, prin inovare în ceea ce priveşte designul şi calitatea interioarelor.

Echipamentele şi materialele vor fi alese pe baza specificaţiilor tehnice şi se va avea în vedere respectarea tuturor cerinţelor LEED necesare pentru nivelul GOLD.
Bucharest One

A new project under construction, located in the new CBD of Bucharest, easily accessible from several means of public transportation: Aurel Vlaicu Metro (2min walking), tramline no.5, and buses lines no. 112, 135 and N119. The Class A office building includes 3B+GF+Mez+1-22F+23rd F + Tech Floor and height of 120m.

Total rentable area 46,000 m² office and 3,600 m² commercial. Underground parking for approx. 482 cars, exterior parking for 46 cars at ground floor level and 87 places at mezzanine parking.

The building is designed to reflect high energy standards and full redundancy of plants and equipment using: modular curtain wall facade with Schuko Aluminum profiles with high parameters for thermal and acoustic insulation, shadow and light transmission, 4 pipes built – in HVAC system, high efficiency pumps, centrifugal water cooled chillers, AHUs with heat recovery for fresh air, modular suspended lights 450 - 500lux/m² (8-12W/m²) at desk level, movement and daylight detectors in common and tenants spaces, free floor height of 2.80÷2.85m office area, two emergency generators, tenants backup, UPS, access control and video surveillance system, BMS for full control of the equipment and billing for utilities and high speed elevators (Schindler) for the tower.

Bucharest Mall and Plaza Romania

The process of renovation and reconstruction, which is a new premier in Romania, those shopping centers will be transformed into real urban bridges, communication inside - outside, inside the community building.

In establishing the concept of design was given an important aspect of green space, urban parks and public gardens, which is a true cultural heritage of the city.

The main objective of this difficult process of renovation is to up-grade shopping centers to provide a new shopping experience to our customers and open to community centers, to sustainability, essentially to the future.
City Offices

A mixed-use re-development (re-conversion from retail/mall into office building with space extensions) project located in the southern part of Bucharest, expected to be finalized Q3 2014.

The ground floor will offer retail spaces with a rentable area of approx. 5,200m², while the upper floors will offer modern class A offices with a total rentable area of approx. 27,300m². The design respects the main criteria of an energy efficient building introducing high efficiency plants and equipment.

The redesigned façade is a curtain wall with Aluminium profiles from Etem - Saint Gobain and Planitherm glass – opaque areas of brick masonry walls with Etalbond cladding on exterior. Interior comfort of the offices will be achieved through 4 pipes built – in HVAC system, 60x60cm suspended ceiling with modular suspended lights 450 - 500lux/m² at desk level, 15cm height raised floor for underfloor cabling – strong currents and low currents with floor boxes or grommets for the final users, emergency generator for the vital systems and common areas, interior hydrants and sprinklers for commercial spaces, Control access and video surveillance system, BMS for monitoring of the equipment and billing for utilities.

Coresi Brasov

Sustainability is the key features of Coresi Brasov, while the project provides the latest generation in technical specifications. Coresi Brasov is one of the Green Shopping Centre in Romania with a BREAM certificate at Very Good level. The façade of the building was considered in accordance with the extreme temperatures in the region of Brasov, in order to reduce the transfer of caloric energy in both directions. This generates important energy savings in the consumption of ventilation and heating and implicitly reduces the consumption of electricity. The construction benefits of a top generation BMS (Building Management System) which controls, monitors and optimizes the building’s facilities, mechanical and electrical equipment for comfort, safety and efficiency. CORESI Brasov is the only shopping centre building in Romania provided with the VRV II system. It is an efficient, reliable, energy saving way to heat and cool all types of buildings with minimum installation time or disruption. The volume of air flow is accurately matched to the required heating or cooling loads thereby saving energy and providing more accurate temperature control and comfort.
Dimitrie Pompeiu Office Building

A new project under development located in the Northern part of Bucharest in the new CBD of the city, easily accessible from several means of public transportation: a metro station included in the ground floor commercial gallery, tram station for no. 16 and 36 in front of the building and a station for the no. 445 bus line. The office Building will be a modern Class A 2B+GF+13F+Tech Floor building with total rentable area of approx. 35,000 m². The building will have 6 high-speed elevators and underground parking for 1,100 cars.

The building is designed to reflect high energy standards using: façade – a curtain wall with Aluminium profiles from Schuko’s FW50 system or similar with operable windows integrated in the curtain wall system with high parameters for thermal and acoustic insulation, Shadow and light transmission, 4 pipes built – in HVAC system, modular suspended lights 450 - 500lux/m² (8-12W/m²) at desk level, free floor height of 2.80m, emergency generator for the vital systems and common areas, control access and video surveillance system, BMS for monitoring of the equipment and billing for utilities.

Green Court

Green energy is an essential part of our concept in this project development office.

We built green offices in order to provide tenants and investors the most efficient and modern office space efficiency which translate into money. The project will be LEED certified and is designed in accordance with latest market trends, focusing on quality.

The building will provide the highest level of comfort for tenants, energy efficient work space with access to a shaded courtyard with greenery.
The first smart design feature you will notice when you approach Green Gate is the façade, which is as yet unmatched on the Romanian market.

The solar control glazing combines high light transmittance with low energy loss using an insulating glass with metal mesh interlayer which not only provides great aesthetics but is highly functional too.

Next to mention is the structural design which uses the innovative technology of base isolation by using Friction Pendulum seismic isolation bearings, the most advanced seismic isolation technology protecting the most important seismically isolated buildings around the world.

Situated near Basarab Metro Station as well as tram and bus stop, the building is undergoing a major renovation that is aspiring to achieve the Living Building Challenge and LEED Platinum status.
Our Mission
We are a non-profit, non-political association of businesses and other organizations active throughout the country. We are the leading organization promoting environmental responsibility and energy efficiency in the Design, Construction, Operation, and Deconstruction of Romania's buildings.
Appraisal & Valuation, branded as NAI Romania is the exclusive representative of NAI Global in Romania. NAI Romania has the capability and experience to value all types of assets at a nationwide level. NAI Global is the premier network of independent commercial real estate firms and one of the largest commercial real estate service providers worldwide. NAI Global manages a network of 5,000 professionals and 350 offices in 55 countries throughout the world. NAI professionals work together with our global management team to help our clients strategically optimize their real estate assets. NAI offices around the world completed over $45 billion in transactions annually. NAI Global manages over 300 million square feet of commercial space.
This report was printed on 100% recycled paper.