

MODERNIZATION OF PASSENGER LIFTS IN POLAND

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Passenger and goods passenger lifts installed between 1970 and 1990 are the greatest problem faced by Poland. The lifts, as indicated by research, suffer from nearly all 74 hazardous situations specified by the SNEL standard.

Some 60% out of 40,000 passenger lifts installed in the period between 1970 and 1990 are operated by housing co-operatives. In many cases the lifts have been in operation for over 30 years. From the technical point of view, all passenger and goods passenger lifts should be subject to modernization after 20 years of service. The need of modernization stems primarily from the technical advances in the sector, and from the ever higher safety-related requirements, as periodic maintenance is only capable of keeping the level of functionality and safety originally envisaged during the design stage.

Introduction of a common modernization programme covering the lifts referred to above is hindered by the practical lack of external financing (from sources other than the lift owners).

1. SAFETY vs. MODERNIZATION

1.1 Modernization of passenger lifts

The proposal for introducing legal regulations concerning modernization of passenger lifts was based on the desire to ensure their operational safety and came as a result of 2.5 years of work by members of the Working Group of the National Lift Consultation Forum of the Technical Safety Centre, whose group represented all parties involved in the lift sector, including the owners (inter alia housing co-operatives).

The said proposal was submitted to the Minister of Economy two years ago.

The said proposal also took into consideration the results of accident and damage analysis carried out by the AGH University of Science and Technology and the Technical Supervision Office, as well as the Commission Recommendation 95/216/EC of 8 June 1995 concerning improvement of safety of existing lifts. The aforementioned document suggested that the problem of lift modernization be provided for by means of a regulation, constituting an administrative act to the Technical Supervision Law dated 21 December 2000 (Journal of Laws No. 122, item 1321, with further amendments).

1.2 The Polish standards for safety improvement

Poland, like other European Union Member States, should introduce an obligation to modernize the lifts, which should be based, technical-wise, on the SNEL standard and its Polish counterpart PN-EN 81-80:2005 "Safety rules for the construction and installation of lifts – Existing lifts – Part 80: Rules for the improvement of safety of existing passenger and goods passenger lifts". With the said standard considered a baseline, a safety analysis may be carried out for each of the lifts (hazardous situations analysis), and a decision may be made to overhaul, modernize or replace a given device, with its future energy-conservation class taken into consideration as well.

Despite the fact that as many as 11 European Union Member States have already introduced, to their local legislation, an obligation to modernize passenger lifts, the Minister of Economy has been refusing to offer a legal solution to the problem for two years now.

1.3 No compulsory modernization deadlines

In an answer to an MP request concerning the issue, the Minister of Economy stated, in February 2010, in a letter to the Chairman of the Sejm of the Republic of Poland, that "efficient operation of lifts is of unquestioned significance for the transportation of persons, especially the disabled, elderly or parents with children". Further on, the Minister stressed that "in Poland the above is ensured by covering the lifts with technical supervision and rendering them suitable for use based on decisions permitting their use for a definite period of time, issued by a relevant technical supervision authority". But "if the operator fails to comply with the use-related conditions, and in a case in which it is ascertained that the tested device poses a threat to human life or health, to property or to the environment, the technical supervision authority issues a decision on suspending the use of the device in question". Therefore, in light of the cost of modernization (estimated at € 2 billion) and with the technical supervision principles in effect in Poland taken into consideration, the Minister of Economy "does not plan to introduce a legal act that would arbitrarily impose specific lift modernization deadlines".

In addition, the Minister of Economy suggests that "the principles of rational management of the financial resources in the possession of users and owners of the lifts in question allow for conducting work aimed at gradual modernization and improvement of the technical condition and the safety level of the lifts currently in use".

Such a standpoint by the Minister of Economy clearly indicates to lift owners that no state budget support will be offered to them in the process of equipment modernization, as the safety of lifts is ensured by the system in place in Poland.

2. CONSERVATION OF ENERGY vs. MODERNIZATION

2.1 Energy saving in buildings

Public aid earmarked in Poland for saving thermal energy, modernizing buildings and carrying out thermal insulation projects has been focusing, for over 25 years, on additional thermal insulation for buildings (formerly known as the so-called "elimination of construction defects") and on modernizing central heating, hot water and heat exchanger stations. The issue of saving electricity and the need of passenger lifts' modernization are still left to one side.

The related legal regulations in the form of acts and ordinances are taken advantage of by insulation material (mineral wool and styrofoam) manufacturers, companies offering thermal insulation technologies and businesses performing projects of this type. The value of the market for thermal insulation of blocks of flats has been estimated at several billion zlotys per year (Editor's Note – Exchange rate: 1 zloty = ca. 0.254 euro; 1 euro = ca. 3.93 zloty). The data concerns old buildings only, as new ones, in line with the construction law, have to be characterized by high thermal insulation factors, which needs to be confirmed, effective on 1 January 2009, by an obligatory building thermal characteristics certificate.

The Act on supporting thermal insulation and modernization projects dated 21 November 2008, providing for the principles of public aid granted to entities carrying out projects aimed at reducing energy

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consumption of buildings does not allow, in its current shape, to take advantage of such support when overhauling/modernizing a lift.

2.2 No specific standards for lifts

Limitations set out in the Act in effect practically rule out the possibility of taking advantage of support for lift modernization in terms of conservation of energy, energy efficiency and overhauls (state support for lift overhauls is only offered in the case of buildings constructed prior to 1961, and the greatest risk is posed by lifts installed in the period between 1970 and 1990).

The lift sector has been continuously introducing solutions aimed at limiting consumption of electricity and improving energy efficiency of new and modernized passenger lifts. Newly installed lifts reduce electricity consumption by over 30 % compared to their older counterparts. Modernization of lift lighting systems allows to save up to 80 % of energy used.

2.3 The international standards

Work on covering lifts with the obligation to obtain energy certificates has been carried out in the European Union for a number of years now.

2.3.1 VDI 4707

VDI 4707 (German Engineers' Association) recommendations (Editor's Note – See Elevatori 5/2010, "VDI 4707: lift energy efficiency, U. Adani, page 60) related to the assessment of energy efficiency of lifts have become, in some European Union Member States, a base for issuing energy certificates for newly installed lifts. Due to the individual character of each such certificate that pertains to a specific lift installed in a specific building, the said recommendations allow to clearly define and verify the energy efficiency of a given lift.

2.3.2 ISO 25 745 Standard

The energy certificates issued based on the VDI 4707 recommendations or on the ISO 25 745-1 Standard "Energy efficiency of lifts, escalators and moving walks" (the standard is to be published by the end of 2010) would also serve as a clear justification of public money spent on improving energy efficiency of the housing sector.

A separate program could be also devised to cover public utility buildings.

2.4 The situation in Poland

The suggestions concerning this issue made to the Minister of Infrastructure have not been welcome with the expected understanding so far. A certain trend may be noticed in the legal acts currently

in effect in Poland – higher priority acts (Laws) refer to the saving of energy, while lower ranking acts (Regulations) relate to heat energy only, practically leaving out the issue of electricity savings. Such is the situation in Poland, despite the fact that the European Union has been actively backing the financing of home reconstruction projects aimed at improving energy efficiency in the housing sector. And the notion of energy efficiency in the housing sector does not differentiate between heat energy and electricity, and offers an equal and coherent approach to both types of energy.

The Act on development policy guidelines dated 6 December 2006 (Journal of Laws No. 227, item. 1658, with further amendments) constitutes a legal base for the Minister of Regional Development to issue guidelines concerning the preparation and implementation of operational programs.

Poland has received, from the European Regional Development Fund (ERDF) approximately EUR 35 billion for the period 2007-2013. Majority of the funds has been earmarked for the following operational programs:

- Regional Operational Programs – approx. €16 billion;
- Innovative Economy – approx. €8 billion;
- Infrastructure and Environment – approx. €6 billion;
- Development of Eastern Poland – approx. €2 billion.

In addition, there is an €1 billion reserve to be used after 31 December 2011.

2.5 Expenditure on renovation of common areas: lifts included

Recommendations concerning the programming of housing construction expenditures co-financed under the European Regional Development Fund are provided for in the Regulation (EC) 1080/2006 of the European Parliament and of the Council of 5 July 2006 on the European Regional Development Fund.

Pursuant to art. 7 par. 2 clause C) of the Regulation (EC) 1080/2006 expenditure on renovation of common areas of multi-family housing, i.e. renovation of the buildings' main structural elements, including lifts, is considered eligible expenditure. The European Union has been also actively supporting the financing of renovation of housing estates resulting in improved energy efficiency in the housing sector.

The aforementioned purpose is served by the Regulation of the European Parliament and of the Council (EC) 397/2009 of 6 May 2009 amending Regulation EC 1080/2006 in relation to the eligibility of

energy efficiency and renewable energy investment in the housing construction industry.

The said regulation, in its art. 1, has amended art. 7, with the change consisting in adding a new paragraph 1a, reading as follows: "In each Member State, expenditure on energy efficiency improvements and on the use of renewable energy in existing housing shall be eligible up to an amount of 4 % of the total ERDF allocation. Member States shall define categories of eligible housing in national rules, in conformity with Article 56(4) of Regulation (EC) No 1083/2006, in order to support social cohesion". The amendment entered into force on 11 June 2009.

2.6 Improvement of energy efficiency

By means of the aforementioned regulation, the European Union has allowed Poland to use funding under the European Regional Development Fund, during the period 2007 – 2013, to support such reconstruction and modernization of existing housing that will lead to improvement of energy efficiency.

Introduction of the Regulation EC 397/2009 has allowed the Ministry of Regional Development to seek additional funding by increasing, by 1%, the amount allocated for reconstruction and modernization of housing resulting in reduction of electricity consumption, but the Ministry has failed to do anything with this respect for nearly a year.

Pursuant to the European Union regulations, the Minister of Regional Development issued the "Guidelines for the programming of housing-related undertakings" (dated 13 August 2008, with further amendments). Pursuant thereto, housing-related investment may be performed only in specified (selected) support areas meeting, jointly, at least three of the aforementioned criteria:

- a) high level of poverty and exclusion;
- b) high long-term unemployment rate;
- c) high crime and offence rate;
- d) low business activity level;
- e) comparably low level of housing resources value.

The system of such criteria practically deprives housing co-operatives and a number of housing communities of the ability to use this source of financial support for the modernization of lifts that they own.

3. ENERGY EFFICIENCY vs. MODERNIZATION

New legal regulations related to energy efficiency and reduction of CO₂ emis-

sions, and the related system of the so-called "White certificate" trading, gives hope that the funding obtained will allow to finance the modernization of those lift system elements that rely on electricity.

3.1 Energy efficiency: a major priority

The document published by the Ministry of Economy and titled "Energy policy of Poland until the year 2030" (version dated 23 October 2009), defines improvement of energy efficiency as its major priority. The Ministry stresses that the progress in this area will be of key significance for the achievement of all remaining objectives of Poland's energy policy.

The 2009–2012 action plan provides, inter alia, for Activity 1.5. – Marking energy consumption of equipment and products consuming electricity and introduction of minimum standards for energy consuming products.

The Act on energy efficiency that has been in preparation since 2007 is another of the legal regulations in the area in question. The said Act aims at full introduction of the Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services (Official Journal EC L 114 of 27 April 2006).

According to the Ministry of Economy, the Act on energy efficiency may enter into force as late as in the second half of 2010, despite the fact that it was originally assumed it would become effective in 2008.

3.2 The White certificates

The said Act introduces the so-called "White certificates" – a mechanism for acquisition, redemption and trade of certificates that confirm the facility has been subjected to an energy conservation audit. The act obliges electricity, gas and heat providers to possess white certificates, with the number of such certificates depending on the volume of energy they sell. The lack of a proper number of such certificates will be subject to financial penalty.

The White certificates may be obtained in exchange for actions resulting in improving efficiency of energy production processes, reducing energy distribution losses or saving energy by end-users.

A detailed catalogue of saving measures along with the corresponding number of white certificates will be defined by means of a regulation by the minister relevant for economy.

The White certificates will be issued and revoked by the President of the Energy Regulatory Office.

Energy providers will be also capable of buying the White certificates on the Energy Commodity Exchange, so the trading mechanism will be similar to that currently in effect with regard to renewable energy (the so-called green certificates) and electricity produced in combination with heat energy (the so-called red certificates).

If a given company has not used its certificates, it may sell them, thus generating additional income.

3.2.1 The effects on the lifts industry

The lift industry is worried by the provisions of art. 27.1. reading as follows: "The energy audit determining the scope, as well as the technical and economic parameters of a thermal insulation project as referred to in art. 2 clause 2 of the Act... on supporting thermal insulation and reconstruction projects, shall be considered equal to the energy efficiency audit", because, as stressed above, the said act contains no reference to electricity consumption.

It is also worth pointing out the Act on the greenhouse gas and other substances emission management system dated 17 July 2009 (Journal of Laws of 2009 No. 130, item 1070), which entered into force on 18 September 2009.

The said Act provides for 10 thematic areas in which projects financed under GIS may be implemented.

The GIS (Green Investment Scheme) was created by states-signatories of the Kyoto Protocol signed by Poland in 1998, which entered into force in 2005.

The Kyoto Protocol provides for the possibility of trading emission units (1 AAU – Assigned Amount Unit = 1 ton CO₂ equivalent), provided that the proceeds are earmarked for climate protection-related projects.

3.3 The National Green Investment Program

Based on the aforementioned Act, a Regulation was issued by the Council of Ministers on 20 October 2009 on the types of projects to be implemented under the National Green Investment Program (Journal of Laws 2009 No. 187, item 1445). Art. 2 of the Regulation precisely lists the types of green programs and projects that may be financed under GIS.

The improvement of energy efficiency, which may be relied upon for lift modernization, covers the following:

- modernization of lighting systems;
- replacement of drive systems and use of energy-efficient drive solutions;

- procurement of power-related equipment of the building.

It goes without saying that lifts, constituting a dispersed source of emissions, are perfectly suited for the GIS system and are covered by the energy class assessment system that is easily recognizable in the EU, unlike the building energy certification system that has been adopted in Poland.

4. LIFT AUDIT vs. MODERNIZATION

As the legal acts quoted above indicate, Poland lacks the climate for financing lift modernization based on safety-related assumptions. There is a chance, however, to subsidize the modernization of those lifts that are directly related to elements consuming electricity.

In order to take advantage of this opportunity, one needs to work out the methodology of measurements and a system for assessing energy efficiency of lifts.

4.1 Lift energy certification methods

At present, three lift energy certification methods can be distinguished, namely:

- ISO 25 745-1 standard "Energy efficiency of lifts, escalators and moving walks" – to be published in 2010;
- Project EIE/07/111/Sl2.466703 – E4 "Energy efficiency of lifts and escalators" – the official presentation of the project's results took place on 24 March 2010;
- Recommendations VDI 4707 concerning assessment of energy efficiency of lifts, issued by the German Engineers' Association – lift audits are already being performed.

Without going into details, all the methodologies referred to above distinguish between a lift trip/travel mode defined in a very similar manner, a standby mode (of very similar values in the case of the ISO standard and VDI recommendations) or an own needs range/level (in the case of the E4 program).

4.2 The E4 Program methodology

I would like to focus, without analyzing the differences, on the advantages of the E4 Program methodology. Any lift is consuming some energy at all times, i.e. both in the "in travel" and "standby" modes. Hence, this methodology is easy to apply and is also universal.

In light of the above we suggest that the modernization of lifts in terms of their energy efficiency, with the use of the E4 Program results, be divided into three stages:

- preparatory work – performing the lift audit;

- modernizing the lift to meet the assumed energy efficiency conditions;
- performing post-modernization reference measurements.

4.3 Lift audit

A lift audit should therefore be made up of two elements:

- safety-related part – the scope of the modernization process must be based on the assessment of the safety level, performed by the relevant technical supervision authority, or by another legal or natural person holding the relevant authorizations;
- energy efficiency related part – according to the E4 Program methodology, supplemented with the determination of electrical power of drive, lighting and control systems installed.

4.3.1 Lift audit: safety evaluation

The safety evaluation result has the form of a check list and constitutes an attachment to the audit document – the safety check list for lifts operated in Poland should have the form of Table B.2 of Exhibit B to the PN-EN 81-80:2005 standard “Safety rules for the construction and installation of lifts – Existing lifts – Part 80: Rules for the improvement of safety of existing passenger and goods passenger lifts”, or the form of an existing lifts safety checklist, corresponding to the specific character of Polish lifts and drawn up based on the aforementioned standard by the Technical Supervision Office and the AGH University of Science and Technology and adopted in 2008 by the Working Group of the National Lift Consultation Forum of the Technical Safety Centre.

4.3.2 Lift audit: energy efficiency

In the part related to energy efficiency, we propose that lift owners meet the following energy-related requirements:

- transport efficiency coefficient, i.e. the amount of energy used to lift 1 kg of load at the height of 1 m – should not be higher than 0.46 MWh/(kg·m);
- lift’s own energy consumption excluding lighting, should be lower than 150 W;
- car lighting should be designed so that the unit power rating does not exceed 10 W per square metre of the car’s floor area.

Upon modernization, the lift must comply with the energy-related requirements (subject to verification by measurement) and with the technical requirements under the PN-EN 81-21: 2009 standard “Safety rules for the construction and installation of lifts – Lifts for the transport of persons and goods – Part 21: New passenger and goods passenger lifts in existing buildings”.

Energy consumption measurements carried out prior to and after modernization would serve as a base for including those results in the White Certificate, and thus would generate additional income on the sale of such a lift.

5. Conclusion

As one can see, true technical and financial reasons exist justifying the performance, in Poland, of a program for modernization of existing lifts within the period of 5–6 years. This, however, requires cooperation between the Ministry of Economy, Ministry of Infrastructure, Ministry of Regional Development and the Ministry of the Environment.

It is a positive sign that housing co-operatives in Poland have started the modernization process, without awaiting legal solutions introducing the obligation to do so, and relying on their

own financial resources. The process constitutes, in many cases, part of their long-term facility overhaul program.

The GIS Act and the new Act on energy efficiency that is to fully implement the directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 energy end-use efficiency and energy services (Official Journal EC L 114 of 27 April 2006) offer hope that funding will finally be found to finance at least part of the lift modernization cost.

A common acceptance of the lift modernization program based on lift audits would allow to systematize the modernization work currently in progress, would improve its technical level and would contribute to lowering the consumption of electricity.

Introduction of common lift electricity consumption measurements, either of continuous or periodic character, would generate more statistical data that could be used as a basis for determining stricter lift electricity consumption standards and would allow to work out a system of energy labels based on the E4 program.

Poland: Sound growth & unconventional prospects

Laura Oliva²⁾

Poland avoided recession. On average over 2006–2008 the country growth by 5.9 % and in 2009 by 1.7 %, the only positive growth rate in Europe. In the second quarter of 2010 growth accelerated faster than previously estimated. GDP rose 3.5 % from a year earlier, compared with 3 % in the previous quarter.

The resuscitating demand in the euro area is hiking polish exports, fostering companies to hiring and helping consumer demand. The unemployment rate dropped to 11.4 % in July from a high to 13 % in February. The zloty fell 7 % against euro from April when the central bank bought foreign currency to weaken the zloty. A weaker currency makes polish exports cheaper. About 80 % of Poland’s exports go to other EU countries.

Many components are driving economic growth, with private consumption and a lower than expected drop in fixed investments being the biggest drivers.

The country’s pillars are a flexible wage system, fiscal incentives for special economic zones and anti-inflation monetary policy.

The corporate income tax is flat at 19 % and lower in regions where the government offers tax exemptions and employment incentives. The lowering of personal income tax rate coupled with pension reform – rising retirement age by five years to 63 – have been the key moves of the economic policy.

The centre-right government, lead by Donald Tusk opted for fiscal plan consolidation, VAT rate hiking (from 22 % to 23 %), privatisations (mainly insurance and banking sector) and freezing public sector pay. The target is keeping the public debt below 55 % of GDP.

The newly elected president the liberal Bronislaw Komorowski is in favour of Poland adopting Euro as its currency as soon as possible but the government abandoned its 2012 euro adoption target last year. The changes of the convergence’s path bring the Maastricht 3 % criteria not met until 2013. The deficit target is now fixed at 6.9 % of 2010 GDP.

The organization of the 2012 European football championships will be held in Poland and Ukraine. The preparation for the competition is a project that is generating numerous opportunities, extensive construction and modernization of infrastructures. Poland was the largest recipient of EU funds in 2009, the budget is 67 billion euro for 2007–2013 period. Poland is benefiting from structural funds due to its GDP per capita below EU average.

The social liberalist government faces the rapid rise in the level of public debt. The fiscal consolidation drive across Europe and the stress in financial markets suggest that delaying deficit cuts might hurt Poland’s economic growth.

GDP growth		Source: European Commission, September 2010				
	Quarterly GDP (% quarter on quarter)				Annual GDP (% year on year)	
	2010/1	2010/2	2010/3	2010/4	2009	2010
Germany	0.5	2.2	0.6	0.4	−4.7	3.4
Spain	0.1	0.2	−0.1	0.1	−3.7	−0.3
France	0.2	0.6	0.4	0.3	−2.6	1.6
Italy	0.4	0.4	0.5	0.2	−5.0	1.1
Netherlands	0.5	0.9	0.4	0.3	−3.9	1.9
Euro Area	0.3	1.0	0.5	0.3	−4.1	1.7
Poland	0.7	1.1	0.6	0.6	1.7	3.4
United Kingdom	0.3	1.2	0.5	0.6	−4.9	1.7
EU 27	0.3	1.0	0.5	0.4	−4.2	1.8

A reduction of public sector's labour costs, now exceeding 10% of GDP and public services reforms are needed.

Poland is seen as one of the most promising sites for shale gas exploration in Europe.

According to estimates, Poland's reserves of shale gas may be as much as 3 trillion cubic meters. That could potentially turn the country into a net exporters of gas and reduce Europe's dependence on Russian supplies. However the geologist are still in assessment phase and only at the end of 2011 we should know if there's gas and how rich deposits are. In the meaning time Poland is attracting interests from major worldwide gas producers.

On the other hand, EU warned Poland that it might face a gas shortage at the end of this year because of delays in signing a gas supply deal with Russia.

Poland is the main sponsor, with the assistance of Sweden, of the European Union's Eastern Partnership program. One year ago the EU approved the pro-

gram aimed to help six former soviet republics (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine) to carry out democratic and economic reforms oriented toward closer cooperation with the EU. It's a 600 million euro project.

The country's vision is still the message launched by Solidarnosc thirty years ago: freedom and solidarity. Surely the Europe will benefit from the sense of strength and the optimism that now come from Poland resulting from a tenacious decennials democratic fight.

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