

Trip Report:

**Train The Trainers workshop at Amherst, Mass
and
THERM and WINDOW Training Workshops in
Samara, Russia and Kaunas, Lithuania and
Baltic Windows Workshop in Vilnius, Lithuania**

By: Bipin Shah and Dragan Curcija

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Train the Trainers workshop at University of Massachusetts (UMass), Amherst.

Objective:

The purpose of the "Simulation Workshop" is to transfer computer modeling technology for predicting thermal performance of windows to transitional economy countries. The computer programs used in the workshop, WINDOW4.1, THERM2.0, OPTICS5, and RESFEN3.1 were developed by Lawrence Berkeley National Laboratory, and were funded by U.S. DOE. The participants will learn these programs and teaching techniques, so that they can become trainers and workshop facilitators in their own countries. Programs and training materials were developed at LBNL, UMass and NFRC and provided to all the participants (hard copies and CDs).

Action Items:

- 1) An educational program to provide training in WINDOW4.1, THERM2.0, OPTICS5, and RESFEN3.1 be developed and advertised through web site by DOE and NFRC. This will provide other interested transitional economy countries to participate in the program. This program shall be managed by NFRC with the assistance from DOE.
- 2) Participants receiving the training shall demonstrate clearly the competence by passing the exam developed by NFRC, UMass or LBLN. Also, responsible staff from NFRC and/or UMass will follow up the training with a visit to the participating country as observers to analyze, how the trainer conducts the workshop and provides training when organized by the participating country. DOE shall provide assistance for this activity.
- 3) Participants, participating in the workshop shall provide a letter of reference from countries certification, standards and code agency or its equivalent. This letter shall clearly state that the agency recognizes the individual/institution and that in the future agency will use or recognize the individual/Institution to provide training to interested parties in their country.
- 4) Participating country/participant institute shall clearly identify how they are going to organize workshops to provide training to interested parties (Industry, code personnel, certification agency personnel, and etc.)
- 5) DOE should provide funding or cost share to translate the computer program into languages most commonly recognized in developing countries and where English is not widely used or understood (Russian, Spanish, Chinese, and etc.). This work shall be done in the United States in a set time frame with the assistance provided by DOE.
- 6) DOE should work with other agencies in the United States (e.g. Department of Commerce, Import Export bank, US AID and etc.) to promote this training workshop.

Participants' list and contact information.

Russia:

1) Fomitchev, Alexander 2) Verkhovski, Alexei 3) Repekto, Vladimir

Contact person for all four:

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Lithuania:

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Latvia
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Estonia:

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Facts:

The Train the trainer workshop was held at The University of Massachusetts campus on April 3-5, 2000. Dr. Dragan Curcija from University of Massachusetts and Mr. Bipin Shah from NFRC were the organizers and individuals responsible for providing training to the participants. The workshop schedule was from 8:00 am till 5:00pm with lunch break and coffee breaks. Detail agenda and the training outline have been attached with this report. A visit to a Heat Mirror and PVC window fabricator plant was organized for the participants on April 7th, 2000. Laptops for each participants, LCD projector and overhead projector were organized for this workshop. All the training material and computer programs were put on a CD and made available to all the individuals (CD attached with the report).

Computer programs WINDOW4.1, and THERM2.0 were taught in detail while OPTIC5.0 and RESFEN3.1 were only overviewed.

Participants were trained how to use WINDOW4.1 and THERM 2.0 to meet the CEN and ISO standards.

All the participants were able to learn all the material to an expectable level. Alexei Verkhovski, and Juozas Ramanauskas were more outstanding then the rest. We were most impressed with the abilities of Alexei Verkhovski.

Vladimir Repekto from Russia was able to learn both the programs and had the encouragement of using these program in certification in Samara (Russia).

It was explained to all the participants that the objective of the training was to train them and make them responsible for conducting the training on their own. Especially, the Russians would be training the simulators during the workshop at Samara, and Lithuanian, Estonian and Latvian people would be in-charge of training the simulators during the workshop in Lithuania. Dr. Dragan Curcija and Bipin Shah would be the observers.

THERM and WINDOW Training Workshops in Samara, Russia:

Facts:

1. Workshops were held from 4/19 to 4/21/2000 in the House of Architecture at ul. Samarskaya 146 a, k 723; 443010 g. Samara,
2. Workshop had started at 10:00 a.m. on 4/19/00, with the opening remarks and welcome by the director of the Institute and followed by my welcome address,
3. Workshop was run by Alexei Verkhovski and Alexander Formitchev of APROK and was assisted and observed by me.
4. The front section of the large meeting room in the House of Architects was utilized with desks organized into four rows and desktop computers provided for each participant.
5. I have provided laptop computer and LCD projector for the interactive parts of the workshop, which made up most of the time.

6. Mr. Fomitchev was mostly involved with technical background, while Mr. Verkhovski mostly covered interactive sessions with examples and worked out problems,
7. Total number of participants was around 15-20, with the final list scheduled to be sent by Mr. Vladimir Repekto, Director of Samarastroysertifikaciya (Certification agency of Samara region)
8. The workshop was organized according to the model of “Train-the-trainers” workshop held earlier at University of Massachusetts in Amherst,
9. In the afternoon of the first day, Sam Taylor of US DOE had arrived and gave welcome remarks to the participants. The final US visitor, John Hogan arrived later that evening, after some difficulties with transportation due to miscommunication with Alexander Spiridonov,
10. In the morning of the second day we have visited testing laboratory located within the space center complex in Samara. Part of space center laboratories are now utilized for fenestration testing. They have two hot boxes, one of which is for smaller systems and was purchased in Germany long time ago, while the other is larger and is fairly new. No pictures were allowed to be taken at the time of visit. Translation was provided, but the quality was fairly low, so that we had to rely on the limited knowledge of Russian,
11. Testing is done according to GOST standard and involves measurement of local surface heat fluxes and temperatures, which are then converted to overall rate of heat transfer and corresponding U-factor. Advantages of such approach were explained by our Russian hosts.
12. In the afternoon of the second day I have assisted in training and had a brief meeting with the delegation from the local University in Samara. Their expertise is in predicting structural integrity of structures and I have suggested to collaborate on thermal-structural interaction in fenestration systems in the future,
13. In the morning of the third day, I continued assisting the training and had second meeting with the delegation from the University, when they demo-ed their computer models in structural integrity of structures. They are using two American software packages (ANSYS and COSMOS), based on finite element method. They explained results for the analysis of a part of bridge structure and multi story building. None of the models had included thermal-stress interaction.
14. In the afternoon of the third and final day, I was taken to the airport for my departure to Lithuania.

Observations:

1. THERM and WINDOW Workshop was very well run and successful. Preparedness of trainers was very good, and they have provided training materials in Russian. I have brought and distributed 30 CD-ROMs with programs, examples and comprehensive documentation.
2. Testing of fenestration systems is not on par with western standards, and despite some advantages of the current GOST standard method (i.e., better understanding of local behavior which may be useful in the design process, etc.), accepted ISO and CEN methodology would be more appropriate and accurate.
3. Further collaboration was proposed by both sides to determine what kind of accuracy is being achieved in current facilities. Round-robin testing was mentioned as a potential activity in the near future. Round-robin window would be also analyzed using THERM and WINDOW software.

Action items:

1. Finalizing translation of THERM into Russian (Umass)
2. Refinement of training documentation (all)
3. Final list of workshop participants (V. Repekto)
4. Propose Round-robin window (Vayngarten)
5. Prepare plan for testing and simulation of round-robin window (all)

THERM and WINDOW Training Workshop in Kaunas, Lithuania:

Facts:

1. Workshop was held from 4/25 to 4/26/2000 in the Technical High school in Kaunas.,
2. The computer training room at the technical school was utilized with desks organized around the perimeter. Each participant had their own computer, and was able to follow interactive training parts,
3. Bipin and I have provided laptop computers and LCD projector and this setup was used for the entire training,
4. Workshop had started at 9:00 a.m. on 4/25/00, with the introductory part given by Bipin Shah and me,
5. Juozas Ramanauskas started the teaching, but it soon became clear that he was not prepared for teaching the workshop and that he didn't expect to teach it. Despite our instructions in Amherst that they will be responsible for teaching locally, they didn't seem to register it. This may be due to language barrier, but it also may be due to lack of the will to prepare for the training in a short period of time. Mart Jogijs from Estonia was there to help with the workshop, but he didn't seem to be prepared either. He mostly sat and followed instructions during the training.
6. Good portion of the two day training was provided by Bipin and me, with certain sections being covered by Juozas. We wanted to have him teach as much as possible, so that next time he can anticipate level of preparation necessary for the training,
7. Jurate Karbauskate assisted with the training for most of the time, and especially with the translation of the training to Russian from Lithuanian. English parts of the training were translated by Arunas Burlingas,
8. Total number of participants was around 15-20 and they were all Lithuanian except for one Belorussian participant. Final list of participants, with names and other information, is attached,
9. The workshop was organized according to the model of "Train-the-trainers" workshop held earlier at University of Massachusetts in Amherst,

Observations:

- THERM and WINDOW Workshop was successful overall, and our opinion is that participants learned enough to be able to independently perform simulations on fenestration systems. Preparedness of trainers was not very good, and they did not provide any training materials in Lithuanian. We brought and distributed 25 CD-ROMs with programs, examples and comprehensive documentation.
- Training facility was adequate for the purpose of this workshop, and could be used in the future workshops,
- Lithuanian trainer need to spend more time working with programs and preparing for future workshops,

Participant's List:

- 1) Name: Merunas Jakubauskas
Institution: UAB Hronas
Position: Manager
Tel#: 3702231913
- 2) Name: Edita Katinaite
Institution: Institute of Architecture and Construction
Position: Technician
Tel#: 350799 FAX: 451355
- 3) Name: Geruta Kazakeviciute
Institution: Vilnius Technical University
Position: student (doctorect)
Tel#: 765797 FAX:
- 4) Name: Justinas Rakauskas
Institution: JC Staliu Gaminiai
Position: Marketing Manager
Tel#: 3577548 FAX: 3520920
- 5) Name: Arunas Sergalis
Institution: UAB Savoja
Position: Director
Tel#: 451986 FAX: 452498
- 6) Name: Vytautas Rutkus
Institution: UAB Virata
Position: Constructor
Tel#: 701147 FAX:
- 7) Name: Andrius Gudaitis
Institution: UAB, Megrame
Position: Consultant for software
Tel#: 737014 FAX:
- 8) Name: Alfredas Simonavicus
Institution: UAB Megrame
Position: Operator
Tel#: 737014 FAX:
- 9) Name: Zydrunas Mockevicius
Institution: UAB Sabonio Klubas IR Partneriai
Position: Marketing Manager
Tel#: 312726 FAX: 312950
- 10) Name: Rimantas Jakstas
Institution: UAB Plasmeta
Position: Department Manager for production

- Tel#: 311623 FAX:
- 11) Name: Mikhail Prokofjev
Institution: BelTEI (Belarus)
Position: Engineer
Tel#: 3750172265470 FAX:
- 12) Name: Kestutis Valancius
Institution: Vilnius Gedimino Technical University
Position: Student
Tel#: 769600 FAX:
- 13) Name: Midaugas Jackevicius
Institution: UAB Sitas Namas
Position: engineer
Tel#: 822709320 FAX:
- 14) Name: Aurelijus Motiejunas
Institution: Vilnius Gedimino Technical University
Position: Doctorate student
Tel#: 233144 FAX:
- 15) Name: Mart Jogioja
Institution: OU Jogioja Building Physic Consultant
Position: Technical Manager
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Action items:

- 1) To inform the Institute head the objective of provide the training the trainer and make them realize their responsibilities.
- 2) To ask how is the institute would organize the workshops independently in the future without the assistance from the US.
- 3) Update DOE program manager or the NFRC contact staff about the trainings carried out by the Institute if any.
- 4) US should Continue to provide assistance in training the trainer whenever the computer programs are updated and any new technical developments that take place.
- 5) US should continue to work with the Baltic countries to recognize NFRC certification and Label.
- 6) Collaborate in research.
- 7) Make sure that no participant in the Train the Trainers workshop for the future has private interest in mind. For this we should ask individuals to declare their interest.

International Workshop on Window Modernization in the Baltic Nations: Problems and Opportunities:

Facts:

- 1) The workshop was organized in conjunction with the RESTA window and building material show that was held at the LITEXPO conference hall in Vilnius on April 27, 2000 and on April 28, 2000 the workshop was held at the Ministry of Environment, college conference hall in Vilnius and in Hotel Neringa. Concurrent session was held at LitExpo on April 28, and was especially arranged for Manufacturers to meet and interact.
- 2) Participating countries were: United States, Lithuania, Latvia, Estonia, Belarus, Georgia, Ukraine, Denmark and Russia. Representatives from Poland pulled out of the workshop at the last moment, without providing explanation. Considering difficulties that Andersen Windows has in certifying its windows in Poland, it was very disappointing to miss the opportunity to directly communicate with Polish representatives. However, Andersen Windows Dealer in Poland, Mr. Walter Halucha of VOMA, had attended the workshop and had a presentation on Andersen Windows and potential of North American window technology in Europe.
- 3) US manufacturers were represented by Anderson, Southwall, Efl Auto chem., and Velux. The workshop was attended by more than 150 participants from various industries in and around the Baltic countries.
- 4) Number of interesting papers were presented, from both Baltic countries and several former Soviet Union Countries and US and Western Europe. This workshop will help better understand new emerging markets in transitional economy countries of that region. The members of US delegation, Sam Taylor, John Hogan, Dr. Dragan Curcija and Bipin Shah presented several papers during both days.(The presentations are attached with the report).
- 5) US manufacturers had the opportunity to make presentations about the products and explain the advantages of North American fenestration technologies to the participants of the workshop. Discussions in Hotel Neringa provided an opportunity to have more informal, but direct discussions between interested parties on potential opportunities for manufacturers in Baltic countries.
- 6) Detail agenda and the abstract hand book is attached here with the report.
- 7) Banquet was hosted on the evening of April 27 in Hotel Neringa, and was attended by approximately 70 people.

Observations:

- Workshop offered good opportunity to educate Baltic and other nations on the benefits of accurate and fair certification procedures and tools that are used for that purpose in North America (e.g., up to date standards, computer simulation tools . It also provided opportunity to introduce North American window technology,
- Attendance for the workshop was bellow expectations, and it may be due to concurrent happening of LitExpo,

Action Items:

- 1) Follow up the workshop with interaction between certification personnel between countries and provide education about the NFRC program in the US (Bipin, Sam, Jurate, Encius).
- 2) Work with the Baltic countries on the recognition of the NFRC Label in the Baltic countries (Bipin, Encius).
- 3) Establish a means to compare the Thermal Transmittance properties such as U-factor and Solar heat gain calculated by using North American Standards and the European Standards. Educate the certification agencies about the differences between two methods of calculating U-factors.
- 4) Ask the certification agencies in Baltic countries to use WINDOW and THERM program in their certification program. These programs can be used to meet the CEN and the ISO requirements (Bipin).
- 5) DOE should ask LBLN and UMASS to have THERM and WINDOW5 ISO and CEN compatible (Dragan, Dariush).
- 6) Ask the participating Baltic countries to provide NFRC with a list of requirements for their certification program and standards. This will assist and help the NFRC members to be better informed about the requirement in the region (Jurate, Jogioja, Kaktins).
- 7) Send pictures and final presentations to Jurate (Dragan, Bipin, John, Sam)
- 8) Create CD with final workshop materials and presentations (Jurate)
- 9) Finalize market study (Jurate)