



НОРИЛЬСКИЙ НИКЕЛЬ

Institute “Norilskproekt”

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Traveling over a polar circle.....

My story is about a passing over a polar circle. There is a place there with a permafrost named a tundra where you can meet amazingly friendly people, reindeers and a delicious fish named “muksun”. Also, more than 20 % of nickel world production, 10 % of cobalt, 3,1 % of copper and a considerable part of platinum and a palladium are found there.

One day....

I’ve been dreaming to visit Norilsk for a long time because of business and because of personal willing. However, it was just an aspiration that is longed for. Finally it happened unexpectedly: I received a preposition to work for a project named “Norilskproekt”. The experts of institute of project mentioned above have had a successful start using three-dimensional technologies on the basis of decisions Autodesk and specialized systems of other companies.

" Norilskproekt " is one of the biggest user of technologies of Autodesk in Russia: hundreds of employees. The one of program products used by institute was PLANT-4D. It is important to notice that “Norilskproekt” had to become the first one, where high tech of producing lime milk was found using three-dimensional geometrical model of whole object. Of course, there were some projects in "three-measure" before, but it had been done for separate parts and not for whole object.

By the way there...

The great adventure had started with non-flying weather conditions in Moscow. There was the strongest fog and all airports had been closed. So we had to be waiting for hours in one of Moscow’s airport named “Domodedovo”. Finally we had gone to Norilsk at late night...

Norilsk

We were met very friendly by Norilsk: the weather had been warming up to a minus of twenty. And even there is a strong frost here you will feel quite comfortably - coldly, but there is not humid.

Norilsk is an unusual city. There are odd houses on piles which seem to be groundless. The center, which was projected and built by exiled Leningrad architects, is looked remarkable; new houses are painted nice greenish-yellow colors there. In general I can

say that the uniqueness of architecture of Norilsk is the rare vegetation, a dry icy wind and palpable absence of alive...

The branch over a polar

The branch over a polar Open Society " Norilsk nickel " is located on Taimyr peninsula, at the 69-th parallel. Connection between regions of the country is made by the river Yenisei, by the Northern sea and by air.

Providing you with information about scales and the power of this branch, I shall list components of this diversified industrial-economic complex:

- the geological engineering factory;
- six underground mines, mine of the open works and open pit;
- two concentrating and agglomerating plants;
- three metallurgical factories and plant where concentrates of platinum metals are manufactured;
- Modern manufactured line: the plants of transport and supplying, a heat power complex, repairing plants, metal cutting and metal repairing factories, the plants of construction and the industry of building materials, the nonmetallic mountain plants, institute " Norilskproekt ", the "Dudinskiy" seaport;
- Facilities providing housing, children's preschool establishments, sanatoria, dispensaries, improving camp, objects of culture and sports.

Goods: copper cathodic, nickel cathodic, cobalt, concentrates platinum, silver technical, selenium technical and especially pure, tellurium especially pure, block sulfur. Last one is made by Nickel, Copper, Nadezhdinskii metal factory and in metallurgical plant.

About 85 % of the Russian nickel and cobalt, about 70 % of copper and more than 95 % of metals of platinum group are made from Norilsk raw material. The branch over a polar provides the fifth part of world production of nickel, about 40 % of world production of color and precious metals.

Initial data

All existing building designs and the process equipment have been made in a three-dimensional projection and placed on one of servers.

The restored from drawings model of existing designs and constructions includes all: building axes, ferro-concrete designs of walls and overlapping, a metal skeleton of a building, a ladder, a window and a door, the bases of a building and the bases under the equipment.

Reliability of model meets the highest requirements and wishes.

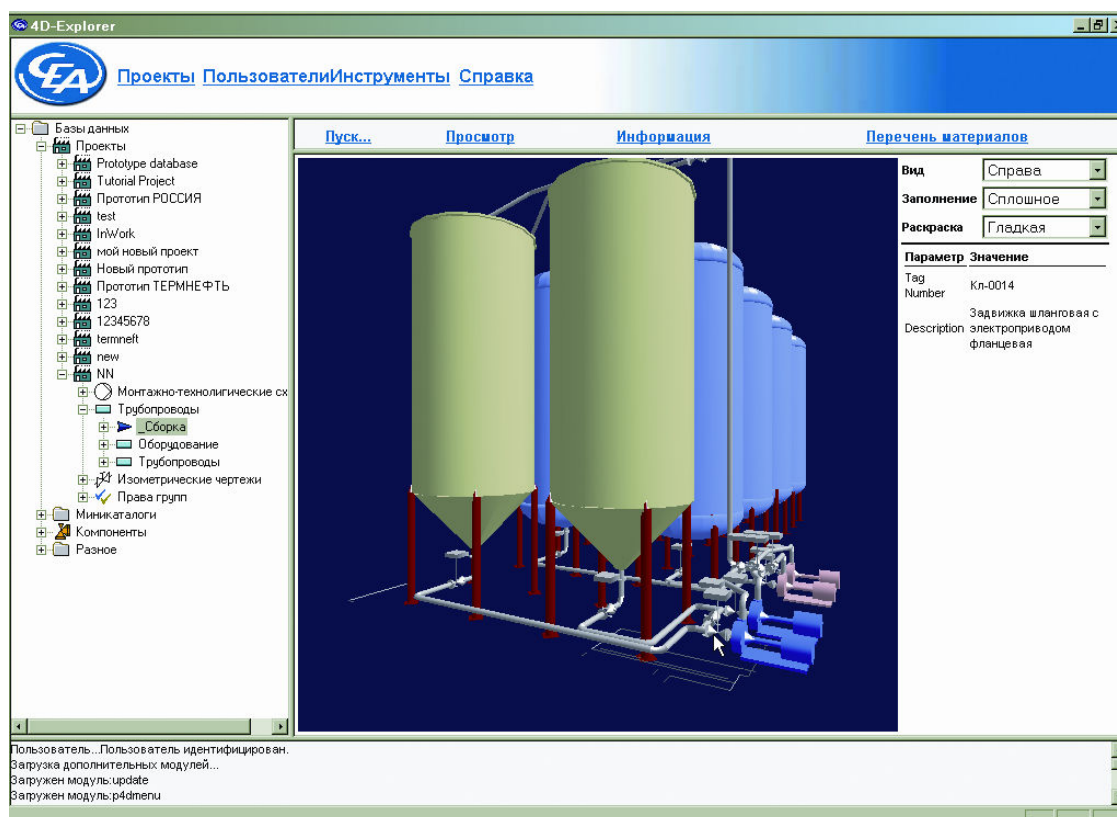
Plant of producing the lime milk

In our project the basic work had been standing with a stage of reconstruction of model of existing designs and constructions.

The technological part has appeared rather simple: it was necessary to place some capacities and pumps, and also a mill, having tied it with pipelines. For the expert of PLANT-4D it takes 2-4 hours (with updating and selection of items).

But I should also train colleagues to do this work in a group with the same time for success with a project!

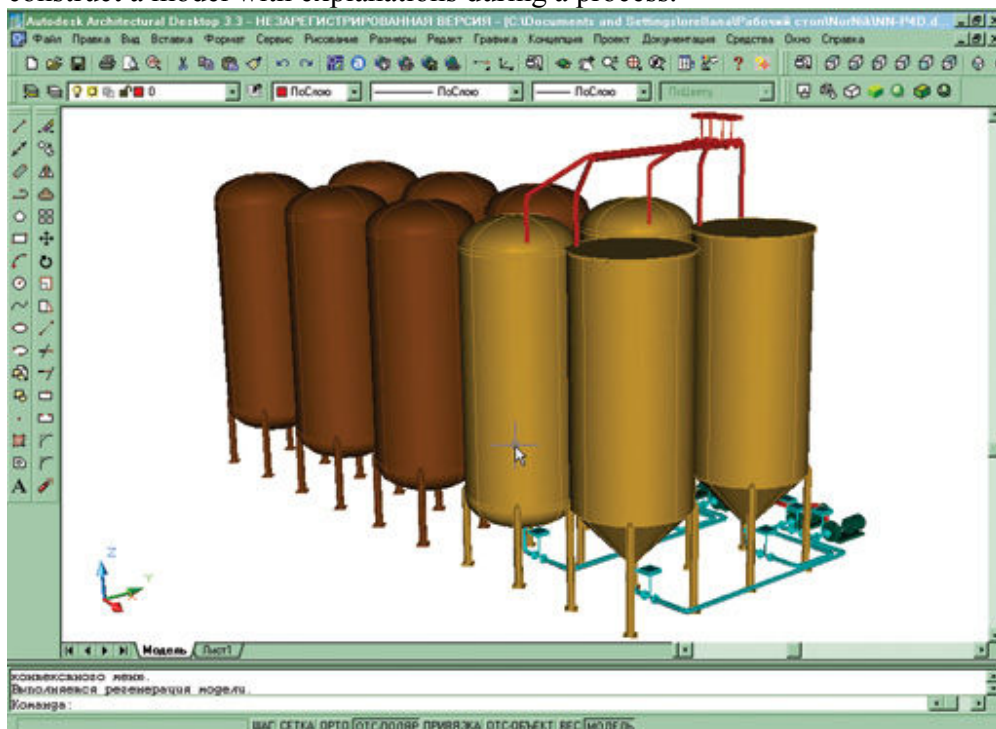
We have established PLANT-4D only on six workplaces but it was too much people who wanted to take this program. So we had had to show the process of working with this program for 2-3 persons per every computer. Explaining principles of joint interaction and bases of construction of model in PLANT-4D, we "had lost" (for the project, but not for participants!) one day from three planned for this work. However, some explanations and "educational" work were necessary: many participants of the project had seen PLANT-4D for the first time and some people had not yet started to study three-dimensional rate AutoCAD and they were sure with work only in a base part (release and registration of drawings).



Module of management of project 4D Explorer composed with inside built functions of dynamic visualization of model and requests from a database of the project

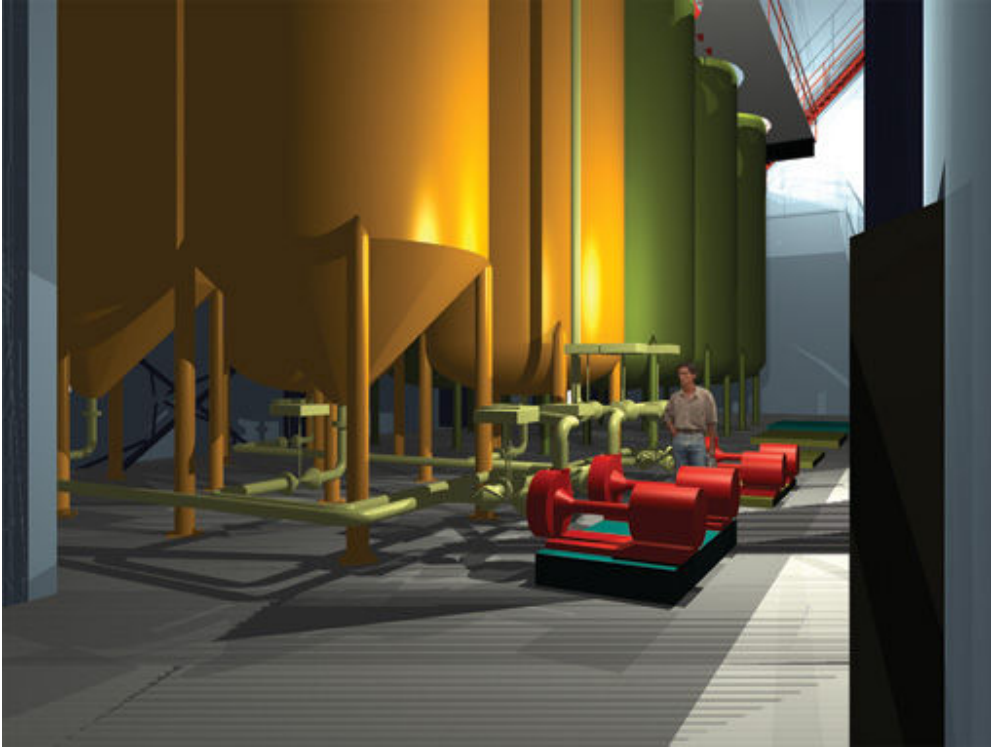
So, the first day has been focused on the unprepared user and based with the theory.

For the second day I had decided that the traditional way of training did not work here. The time of training was limited. The best method of training people was starting to construct a model with explanations during a process.



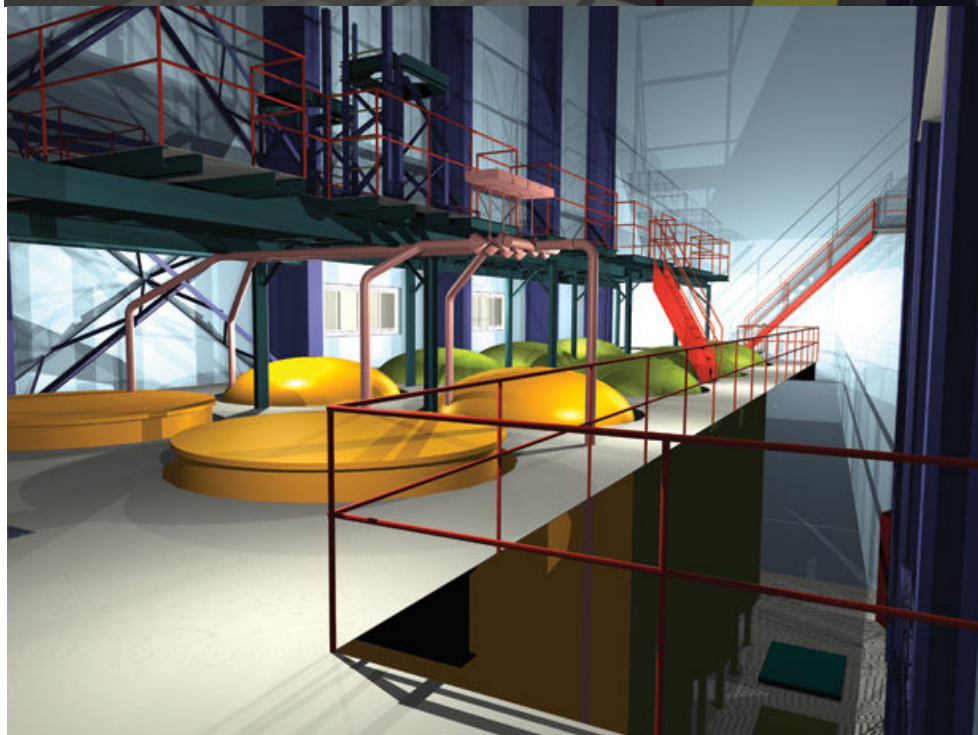
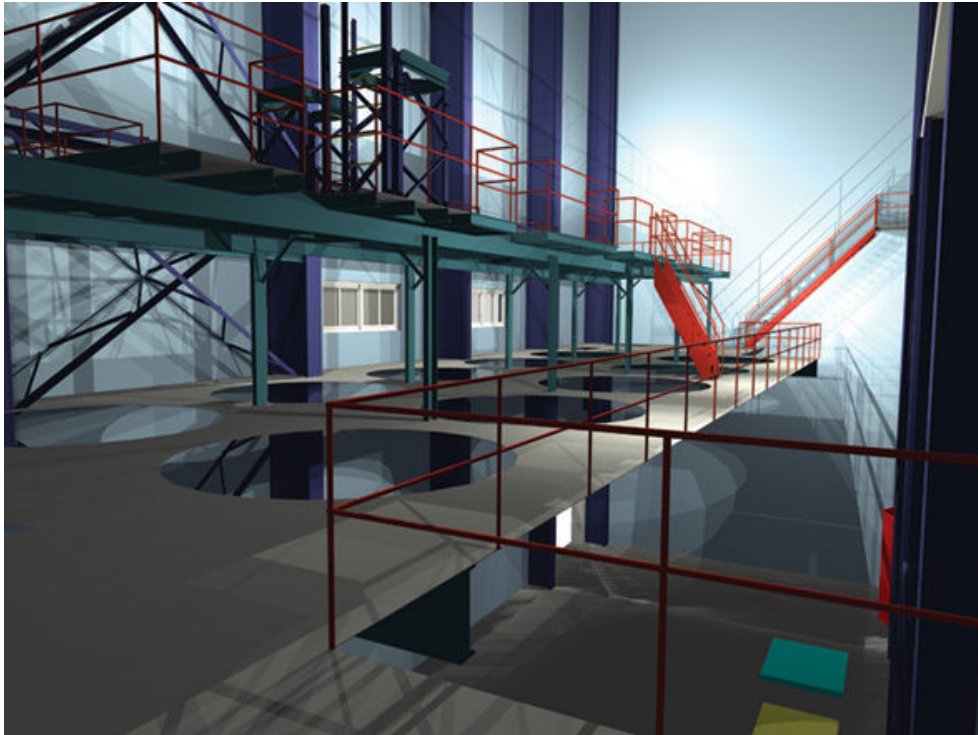
The three-dimensional model is a basis for further specifications, drawings and tasks for specialists of this area.

In the past more than once I had tried a way of training, showing how to put capacity (principles of construction of the capacitor equipment), then the colleagues had repeated once and had constructed all capacities without my help. Then I had presented the basic principles of orientation in space and ways of constructions with limited sizes (an axial line, connection of sample, automatic trace), and "pupils" had been doing a model. By the end of the second day we had the placed equipment and almost all piping the bottom level.



The technologic equipment and the pipelines designed in PLANT-4D

At the third day my colleagues-designers had worked independently! I had get up to them on the tenth floor after afternoon to check results and to show other opportunities of new PLANT-4D.



The building construction created in Autodesk Architectural Desktop (see the picture above), the technological equipment and the pipelines designed in PLANT-4D are in a process of joint connection with Autodesk Architectural Desktop (see the picture below)

The result of three-day "blitzkrieg" was a quickly generated in PLANT-4D three-dimensional model and mastered by colleagues opportunities of PLANT-4D. The most important thing was that the basic purpose had been reached and the project had been done.

Back home...

We had departed to Moscow in a day later, than it was fixed in the ticket. We were lucky! Sometimes you have to wait week or longer because of non-flying weather.

When we were leaving Norilsk It was minus 32 C degrees. When we were flying to Moscow the temperature in Norilsk had failed up to minus 38 C. We were in the plane by the way to Moscow. ...

We felt both tired and happy because of successfully made model, the pleasant people, new connection and the road to home...