nanoCAD Plus & nanoCAD Pro
Smart Drafting, Smarter Designs

nanoCAD Plus Benefits

**DWG**

Native DWG Format

The nanoCAD platform supports all active versions of DWG, the world's most popular CAD format, all the way back to DWG R11 and right up to today's DWG 2018. This means that nanoCAD directly opens and saves files in this format without loss of data and can be integrated with external software that also supports the format. In addition, nanoCAD supports technologies developed around this format, including sheets, object styles, services like purge, audit, and recover, and dynamic blocks.

Powerful Documentation Tools

The prime function of nanoCAD is to assist teams in developing and issuing design documentation. This means that you will find in nanoCAD the full set of tools for drawing, modeling, editing, and publishing many kinds documents - drawings, tables, models, text, and so on. Differences in similar looking drawings are compared easily through color coding. As nanoCAD is not specific to any sector, it is equally effective in mechanical engineering, oil & gas, construction, land management, telecom, education, and home use.

Standard User Interface

nanoCAD features the CAD interface well-known to users that allows them to start working with the platform in a day or less. There are icon ribbons, regular and shortcut menus, and commands with options with which users are already familiar. This means that users quickly get into the swing of things, without the additional time and cost usually needed for training or a long-term introduction. At the same time, managers can easily find professionals already familiar with DWG editing programs. Users will appreciate the time-saving interfaces of real-time undo/redo, dynamic input, object tracking, and on-screen viewing controls.
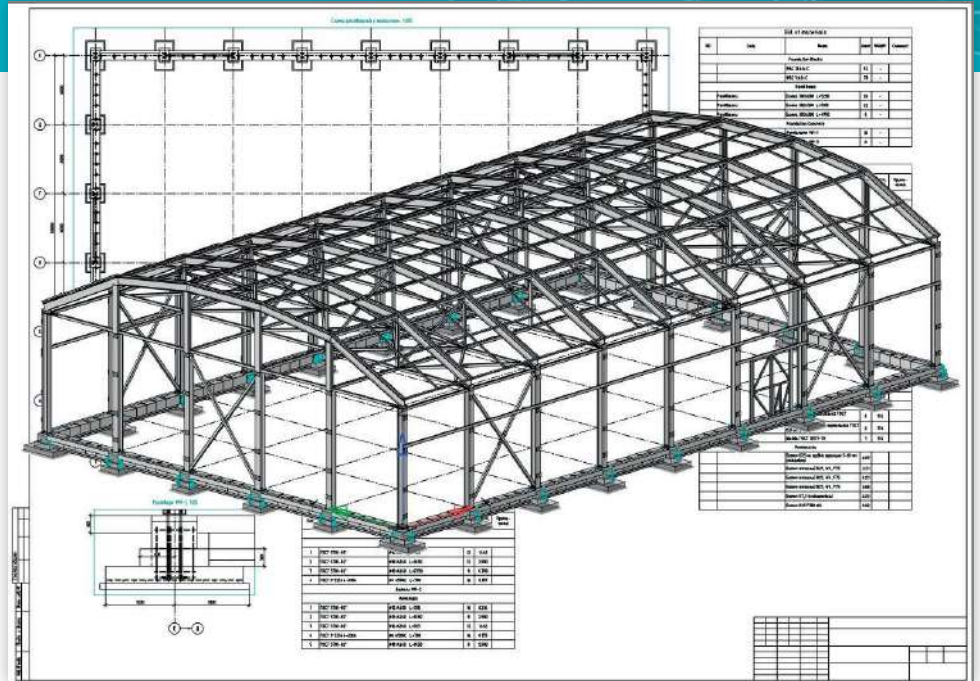
Compatibility with Industry APIs

nanoCAD is not only a drawing tool, but an entire platform on which to create your own applications by extending its standard features. This means that you can integrate calculations, automate design activities, integrate drawings with external databases, and other third-party solutions. nanoCAD's API interface is very close to traditional CAD systems and so supports languages such as C, C++, C#, COM, Active X, LISP, Visual Basic, and JavaScript, and command scripting.

Features Unique in nanoCAD

Raster and PDF Editing – The nanoCAD platform treats imported raster images and PDF files as full-fledged entities. While drawing, users can snap to the end points, intersections, and centers of raster primitives (lines, arcs, circles), and converts vector PDF files into vector objects. This means that users can instantly add old drawings, images, and documents to the workflow. Tools like erase remove portions of raster images, and use 4-point correction to de-skew images that weren't scanned properly.

Table Processing – nanoCAD imports and formats spreadsheet data and tables from other DWG editors, but it also features a sophisticated Excel-style table editor not found anywhere else. This means that user cannot long just generate tables manually but also build automatically updated tables that report on data in drawing, making it the ideal tool for creating bills of material (BOMs). Such tables can contain formulas, data from external sources, and data exported to common formats, like XLS, TXT, and CSV.
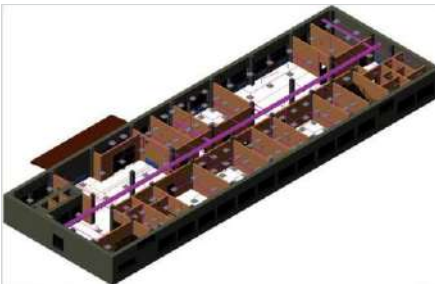
NANOCAD
SMART DESIGN AND DRAFTING
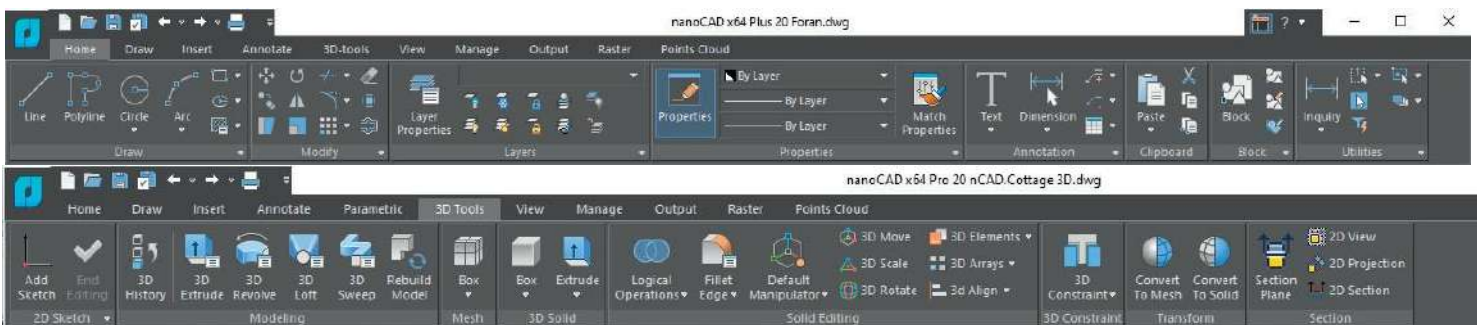
Combining many kinds of 3D data, nanoCAD is your home base for 3D DWG, BIM, point clouds, and 3D solids. You navigate through them instinctively.
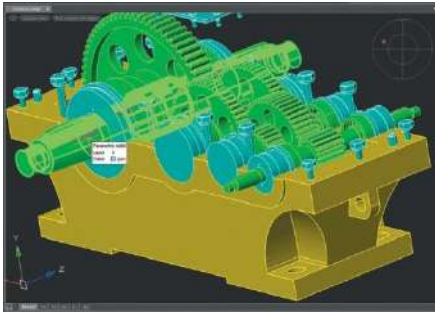

Dynamic Development Process – The collection of nanoCAD programs is a fast-evolving CAD system. This means that users regularly receive useful functions as we are working in close cooperation with our customers.

Permanent Licenses – When it comes to operating CAD software, we understand that users have different needs. This means that we are pleased to offer a flexible approach to licensing. Managers and users find subscription, permanent, and network licenses. By purchasing three-year subscriptions, users obtain the permanent licenses free.

Huge 3D Models – One of the key areas in recent nanoCAD platform development was enhancing its ability to work with huge 3D models. This means that you open and regenerate drawings much faster. Recent versions implement multi-threaded computing to increase nanoCAD's performance by 20–30%.
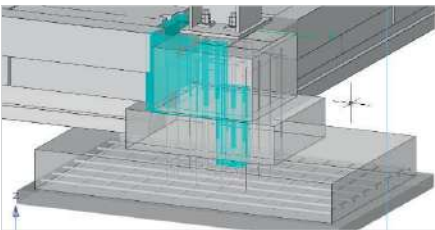
IFC and OpenBIM – IFC is the open format for exchanging information about architectural models among BIM systems. The nanoCAD platform imports IFC data into DWG environments and so combines the two. This means that user can view and select IFC objects to get information about them in Properties panel.

Point Cloud Processing – nanoCAD opens and views 3D point cloud files captured by laser scanners in LAS, BIN, PTS, PTX, PCD, and XYZ formats. This means that users can work with extremely large point clouds of one billion points and more. Users have access to point cloud metadata and can work with points cloud as if they were vector objects, such as changing insertion points, scaling, 3D mirroring, embedding 3D models, and taking sections plane of them.
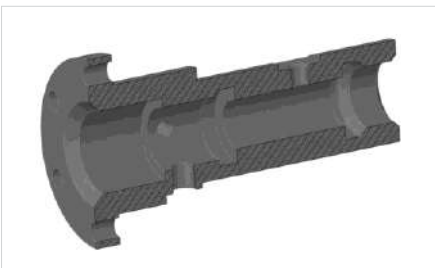
3D Navigation – nanoCAD combines 3D data like 3D drawings, BIM models, and Point Clouds into a single document, and it provides users with ways to navigate through models conveniently. This means that users have access to on-screen controls select shading modes and viewpoints instantly. Bounding prisms use 3D clipping to look inside models and isolate parts.

Why nanoCAD Pro?

nanoCAD Pro is the advanced version of nanoCAD Plus, focusing on 3D solid modeling and 2D/3D constraints.

3D Solid Modeling

nanoCAD Pro enhances design with 3D solid modeling. This means that users can create precise models that reflect the real world, accurately. Tools like stamping, push-pull, and Boolean operations let users create complex models, both with the assistance of the history tree and through direct modeling. Dynamic UCS makes it trivial to sketch on 3D faces.

Flat drawings of 3D models can be generated using sections. As drawings are linked to models, changes users make to models are reflected in the drawings.

2D/3D Constraints

Designs become interactive with 2D and 3D constraints. This means that users can apply dimensions that drive the geometry, and have geometry drive geometry, such as perpendicularity, concentricity, and fixed distances. A single model can generate dozens of variations through formulas controlled by the Parametrics panel, and several parts can be combined into an assembly.

Solid modeling and constraints kernel provided by C3D Labs.

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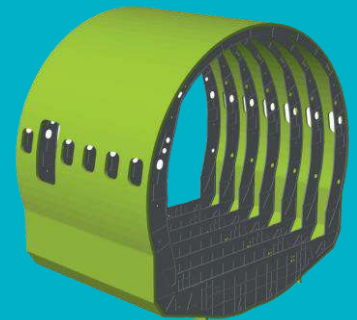
nanoCAD Mechanica

A new version of CAD application for mechanical engineers
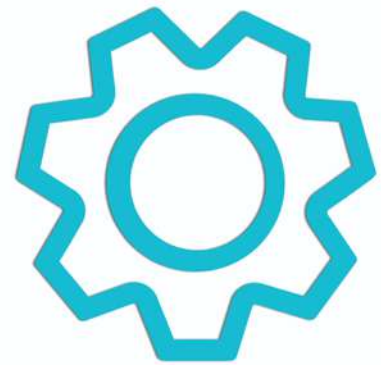
nanoCAD Mechanica - a Mechanical Drawing Software based on the updated nanoCAD Plus 10 platform. It is an advanced application developed for mechanical engineers, designers and drafters, giving them with prospects in the field of automation of design and construction work in numerous areas of the manufacturing industry.

NANOCAD

Main features

- nanoCAD Mechanica is based on updated version of nanoCAD
- User-friendly and familiar interface
- Classic set of commands necessary for high quality preparation of project documentation
- Library of standard and user-defined parts
- Built-in 3D modeling kernel

Wide range of design tools

- support of multi-sheet drawings;
- Diverse methods and modes to construct graphic primitives and symbols (including orthogonal drawing, object snap, etc.);
- Managing the order of drawing and overlaying graphic objects;
- Standard and custom line types, types of hatches and font styles etc;
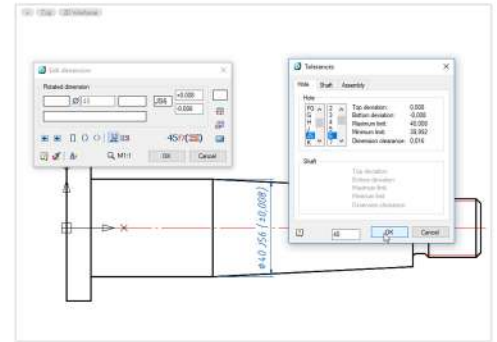
Library of standard and unified elements

- Fasteners;
- Standard profiles;
- Graphic symbols for circuit elements;
- Technological sketches;
- Elements of machine accessories etc;
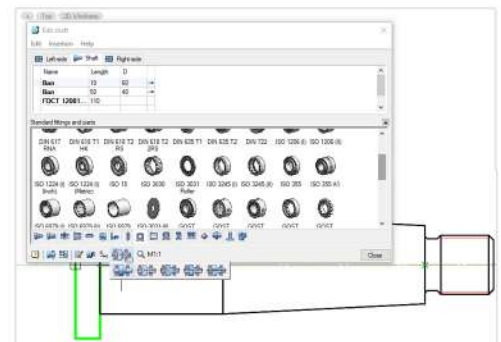
Parameterized design and technological elements database

Design and technological database contains a large collection of parametric and object-dependent elements, including three-dimensional ones.
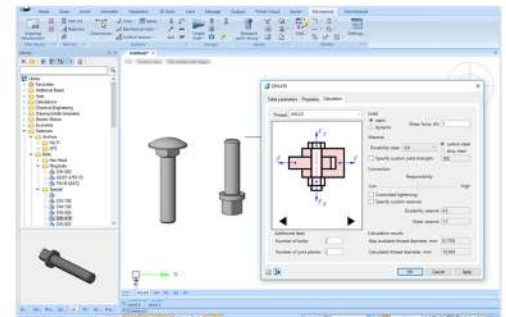
Drawing elements according to engineering standards

- Installed ISO fonts and linetypes;
- Pre-installed ISO dimension style;
- Tolerance zones and tolerance deviations of dimensions, as well as fits;
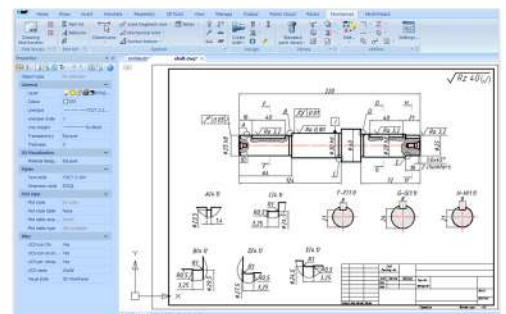
Designing bolted and riveted joints

- Connecting packages of arbitrary thickness parts with bolts, screws and studs;
- Simplified types of fasteners in a joint;
- Patterns of bolted and riveted joints.
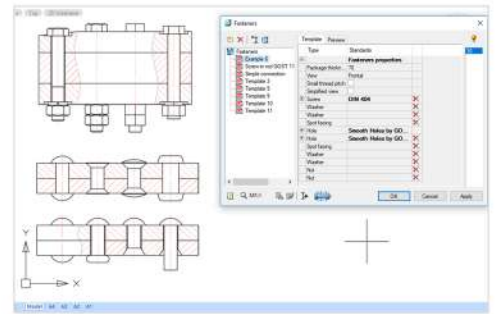
Calculations

- Calculation of geometric characteristics of section with respect to arbitrary axes;
- Design and calculation of sections (beams).
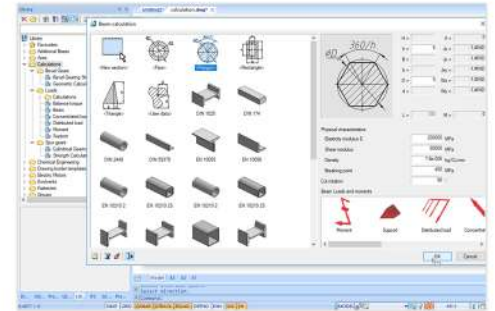
MechWizard built-in parameterizer

MechWizard makes available the following functions:
- Overlay of assembly and parametric dependencies on objects;
- "Behavior training" of a standard part;
- Modifying existing database elements;
- Creating custom database elements.

3D solid modelling

- Standard tools for three-dimensional design: extrusion, rotation, pulling along path and along sections, chamfer and round;
- Tools to orient 3D geometry in space: 3D-Move, 3D-Rotate, 3D-Align;
- Operating geometry: planes, axes and points;
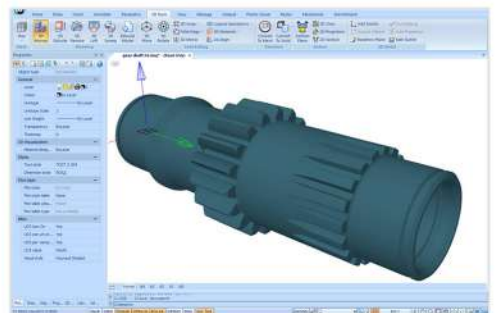
nanoCAD Construction

nanoCAD Construction

nanoCAD Construction is a standalone 2D drafting and design application with a huge library of standard parts and tools designed to help automate design tasks of building and construction engineers and for AEC drawings creation. nanoCAD Construction is developed specially for construction engineers and drafters, giving them with opportunities in the field of automation of design as well as construction work in numerous areas of the AEC industry.

nanoCAD Construction can be used by Facilities Management engineers. nanoCAD Construction is exceptional for planning of construction drawings in accordance with norms and regulations. nanoCAD is intuitively simple and doesn't need extra time for training. Users can start working once they have installed the software.

Features

- Support of *.dwg format

- General CAD Platform (i.e, nanoCAD Plus)

- Architectural tools (Wall, Door, Windows etc.)

- Smart area selection with materials calculation

- Multifunction-Grips in drawing design elements

- Drawind borders and title blocks

- Table and advance table edit

- Library of parametric objects

- Customization in nanoCAD Construction

To be acquainted with the improved features,
get in touch with http://www.csoft.com/products/nanocad-construction

nanoCAD Construction Site

nanoCAD Construction Site

nanoCAD ConstructionSite is a specialized application that allows engineer easily develop a construction site plan and simplifies the planning and organization of the construction process. nanoCAD ConstructionSite is good at coping with both graphical and calculations tasks. Built using nanoCAD graphical kernel, nanoCAD ConstructionSite is a feature rich application that natively supports *.dwg.

Features

- Dynamic Standard and Custom Library Objects
- Site Layout Design and Drafting
- Road Construction, Detailing and Calculation
- HDD (Horizontal Directional Drilling) with reports
- Floor Plan Construction with Annotation
- General CAD Platform (i.e nanoCAD Plus)
- Powerful Parametric and Versatile Annotating Tools
- Safety on site
- Site Project Management (i.e Job analysis, Cost analysis, Materials and so on)

Difference between nanoCAD Construction and nanoCAD Construction Site

Features	nanoCAD Construction	nanoCAD Constructuion Site
	General nanoCAD	
Familiar Interface	Yes	Yes
Native .Dwg & .Dxf Support	Yes	Yes
Universal 2D Drafting & Modify	Yes	Yes
Auto Dimension	Yes	Yes
Excel Type Table editor	Yes	Yes
Raster enhancement	Yes	Yes
Point Clouds support	Yes	Yes
	Construction	
Inbuilt Object Library	Yes	
Library Development	Yes	
Title Border(International Standard)	Yes	
Advanced Architectural Tools	Yes	
Modification Tools	Yes	
Room Explication	Yes	
Different types Grid Point	Yes	
Elevation mark	Yes	
	Construction Site	
Project management	No	Yes
Construction Site Plan	No	Yes
Building Area, Living Area	No	Yes
Road Pavement Construction	No	Yes
Building Machine	No	Yes
Construction Site Plan	No	Yes
Working Area, Danger Area	No	Yes
Safety Sign	No	Yes
Horizontal Direction Drilling (Soil)	No	Yes

New CAD platform

nanoCAD 3DScan 2.0 based on 20.1 version of nanoCAD platform. Thus, nanoCAD 3DScan 2.0 gets all features of nanoCAD Plus, since 8.5, version. To get detailed description of nanoCAD Plus 20 features read What's new in nanoCAD Plus 20 section.

New point clouds commands & features

- Automatic recognition of ground surface has been significantly improved;
- Possibility to classify vegetation and objects at a given distance from the ground (or any other surface) has appeared;
- Support of WGS84 coordinate system;
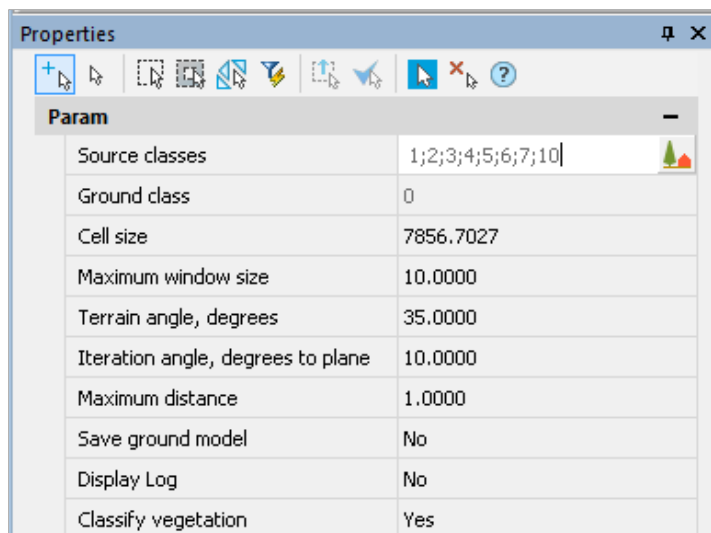- Significant corrections and improvements.

Classification of Ground and Vegetation

The command **Classification of Ground** (NPC_CLS_GROUND) has been revised.

COMMAND OPTIONS ON THE "PROPERTIES" BAR

Now the command options are displayed and configured not in the command line, but on the **Properties** bar.

New command options:

FILTRATION BASED ON SOURCE CLASSES

The command allows you to specify certain classes of points for the ground classification process. It can be useful if a cloud was earlier classified by these or those criteria. For example, to exclude from the recognition process the points of noise, man-made objects, etc.

The **Source classes** parameter defines the classes of those points, that will be used for ground classification. Points of other classes will not be reclassified. The list opened by button displays all classes of the current point cloud.
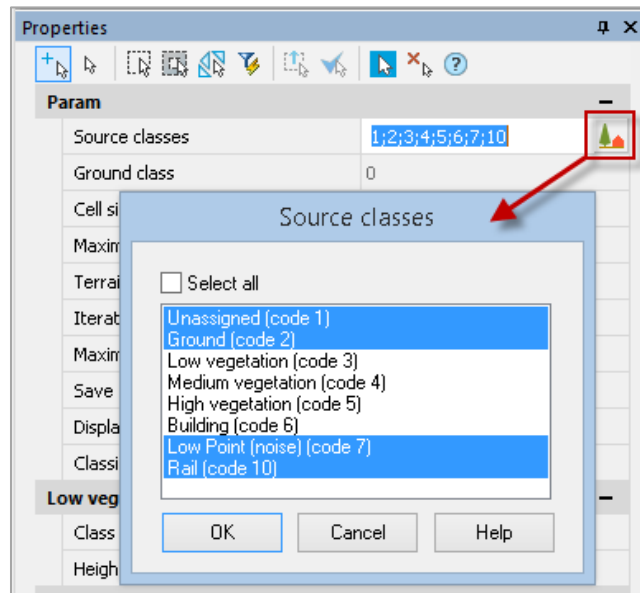
The **Ground class** parameter is the target class, which should be assigned to recognized points of the ground.
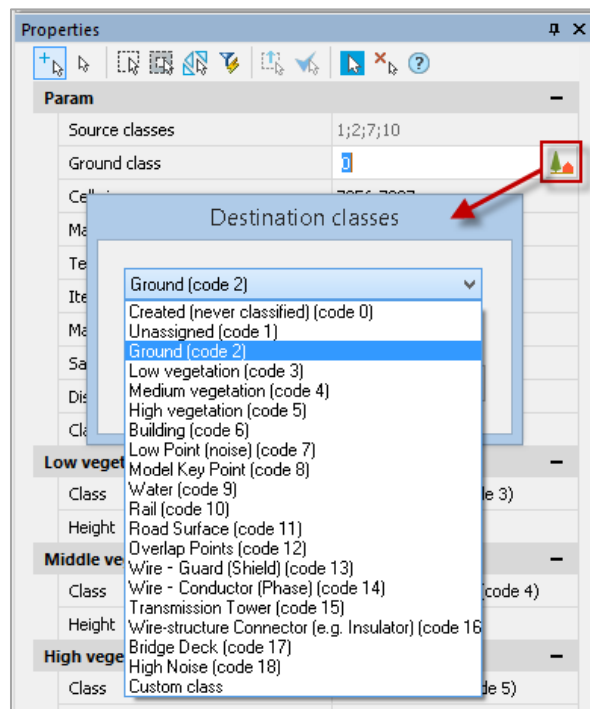
The target class should coincide with none of the source classes, otherwise the command will stop ahead of time with an error message in the command line.

AUTOMATIC CALCULATING OF SURFACE DETALIZATION DURING GROUND CLASSIFICATION

Now the **Cell size** parameter is calculated automatically, based on the size of a point cloud in the drawing. As a rule, it should not be changed. In previous version of a program, the value of this parameter was taken from the **Point clouds** section of the **Options** dialogue. The Cell size defines the length of sides of square cells that divided surface of point cloud. The smaller the value, the more accurately relief elements are reflected. Parameter value is set in the units of drawing.

SURFACE IRREGULARITIES

We preserved the parameter **Terrain angle**, degrees – maximum angle of slope in degrees relative to XY plane in WCS. It can be measured at some characteristic area. Points on surfaces that exceed this angle will not be classified as ground surface points.
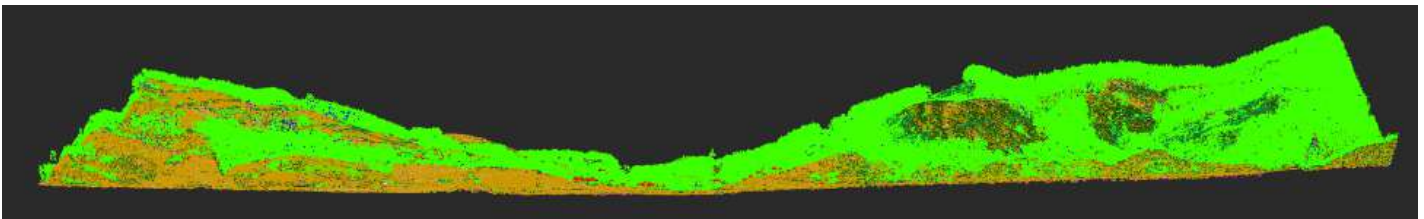

Parameter **Iteration angle, degrees to plane** – maximum angle of deviation of local irregularities from the main direction of the ground surface.
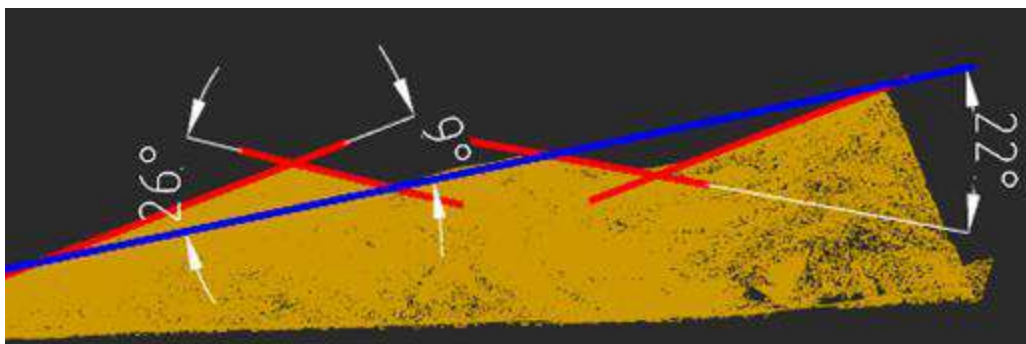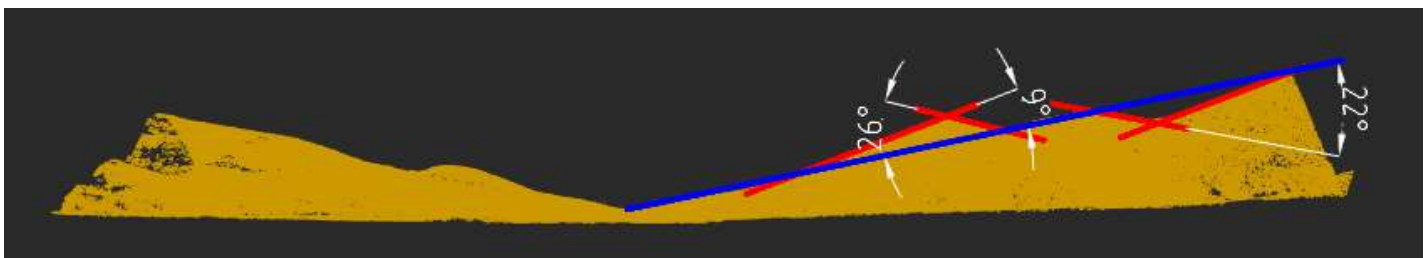
FILTRATION BY DISTANCE FROM GROUND SURFACE

The Maximum distance parameter determines the maximum distance above the ground surface, above which points will not participate in the classification process and, therefore, will not be classified as ground points. The distance is specified in the units of drawing.
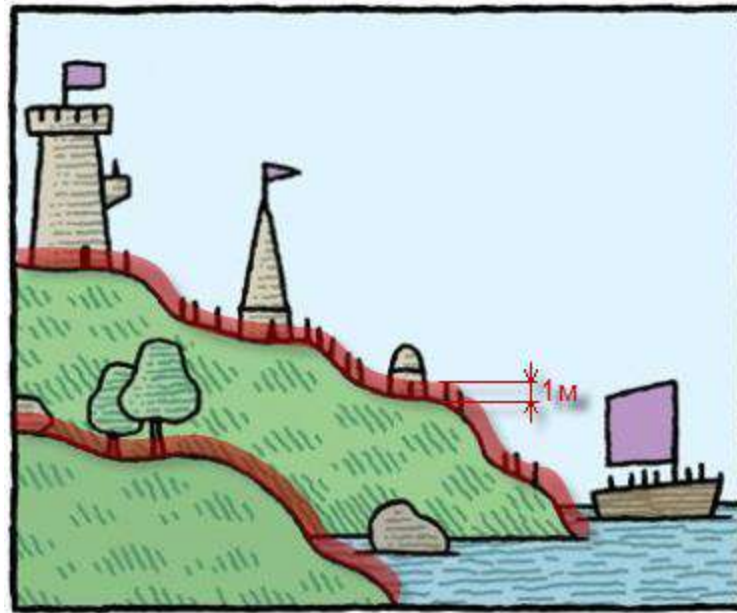
EXCLUSION OF FALSE SURFACES

A new parameter **Maximum window size** allows you to exclude low buildings and constructions with flat wide roofs from ground recognition

It is necessary to find the widest low object and measure a half of its shorter side, increasing the resulting value by 20 percent. For each cloud the parameter should be set manually in the units of drawing.

Note: correctly measured parameter **Maximum window size** is always larger than **Cell size** parameter.

**CLASSIFICATION OF VEGETATION**

The command is enhanced with the functional for classification of points (vegetation) by height above ground level. Set **Yes** for the **Classify vegetation** option, additional options will appear.
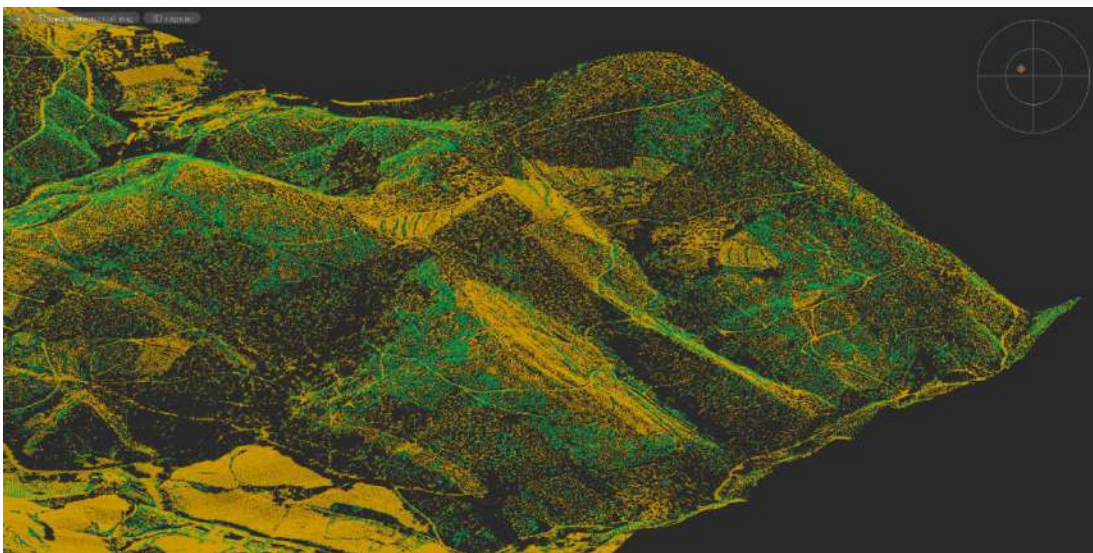

The command classifies points located in the given altitude range relative to the ground surface. Values are set in the units of drawing.
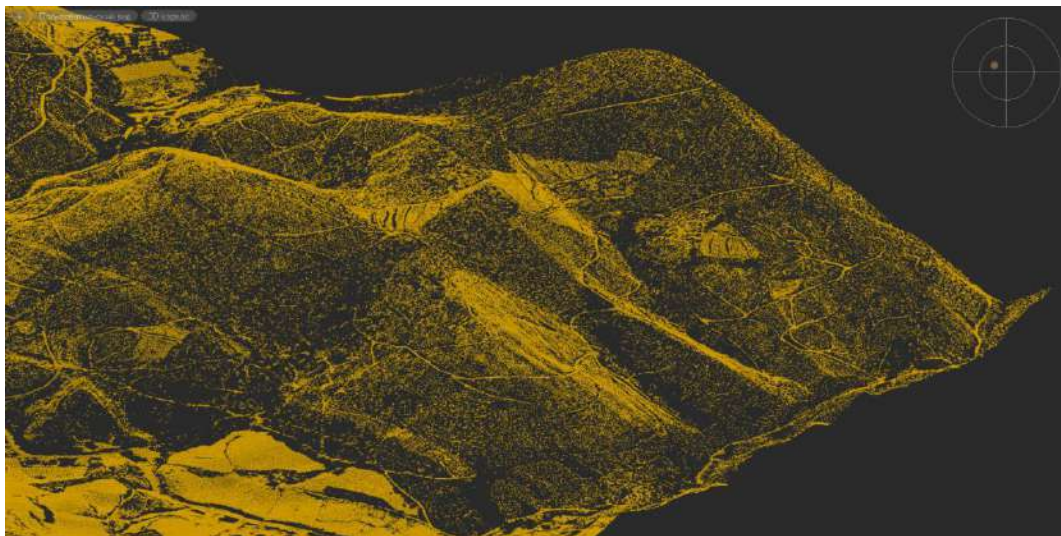
Only ground surface points
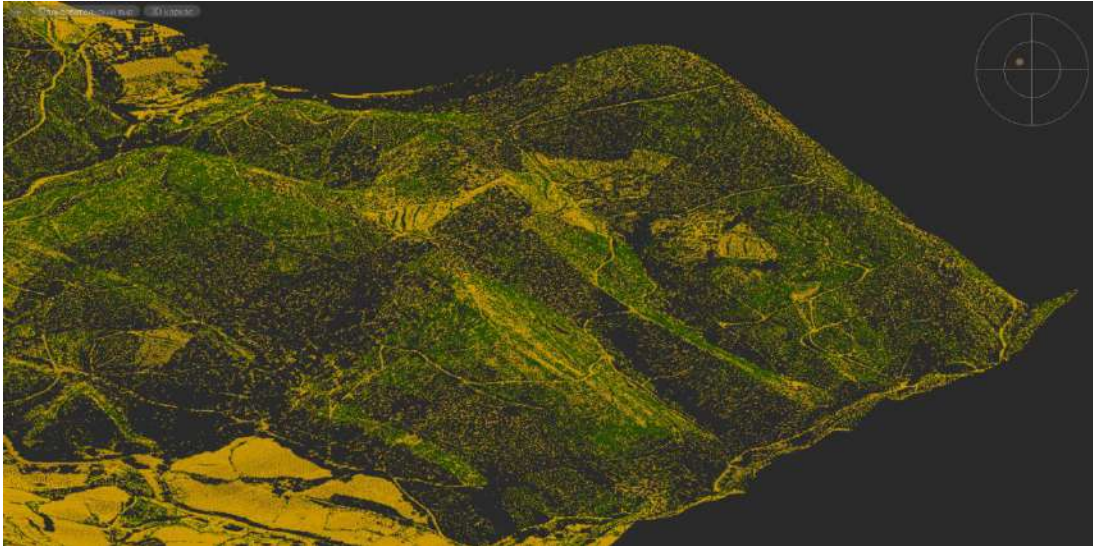
Ground surface points with low vegetation points

Ground surface points, points of low, average and high vegetation

This procedure can be used not only to classify vegetation, but also to classify any objects by height from the ground surface: low constructions, high-rise buildings, power lines, pipes, etc.

CREATING TRIANGULATION MESH OF A SURFACE

In addition to ground surface classification, the command allows you to automatically construct its triangulation model as a mesh object. For this the value of **Save ground model** option should be **Yes**.

In contrast to the triangulation mesh of ground surface created by **Create TIN command**, this network is created with optimized edges. In the future the created triangulation mesh can be optimized by **Model Simplification** command.

Mobile: +9831054008, Email: sales@nanocad.in, Website: www.nanocad.in

New commands & improvements

"VEGETATION BY HEIGHT" COMMAND

The functional of objects classifying by height above the surface is also put into a separate command Vegetation by Height.

The command has parameters identical to those described above. As the surface relative to which the classification will be made, it is necessary to specify the existing triangulation mesh, for example, the one built earlier by the command **Classification of ground** or **Create TIN.**

FILTRATION BASED ON SOURCE CLASSES IN THE "CREATE TIN" COMMAND

The command **Create TIN** (NPC_2D_TRIANGULATION) got new options that allow you to select particular point classes for creation of triangulation mesh based on them. The options are similar to ground classification command **Classification of ground** (NPC_CLS_GROUND).

IMPORTING CLOUDS WITH WGS84 COORDINATE SYSTEM

The possibility to import point clouds from LAS format with WGS84 coordinate system is added. Previously clouds with WGS84 coordinate system were imported with distortion.

CHANGING CLASS FOR VISIBLE POINTS ONLY

A new command Classification by class (NPC_CLS_CLASS) changes class for visible points only. Just cut a part of cloud containing required points with one of the Clip or Section commands and reclassify only visible points by specifying their source class.

COLORING CLOUDS BY "COMPARE POINT CLOUDS" COMMAND

Now the command Compare Point Clouds colors the cloud according to the normal direction (outside/inside) when comparing a cloud with triangulation ground surface. The cloud above TIN surface is colored in the spectrum from green to red, and below – from green to blue. It allows easily determine the position of points relative to the mesh (ground surface).

Changes and Corrections

- Fixed errors of graphics (widget) displaying when comparing clouds.
- Correcting work of the command Fit Cylinder (NPC_FIT_CYLINDER).
- Fixed errors of comparison algorithm in video card.
- Updated icons of cloud points classification commands.