## **Incredibly User Friendly**

RODSTAR-D for Windows has an improved user interface that is very easy to use. It contains help for each input parameter and for all program features. It displays recommendations and warnings to help you avoid mistakes or to improve system design. With RODSTAR-D for Windows you can enter everything yourself, or have the program do most of the hard work for you.

#### User Customizable Defaults

RODSTAR-D allows you to select English, SI (Metric), or Canadian (mix of English and Metric) units. You can save time by specifying values that usually do not change such as: your company name, electricity cost, standard sucker rod length, tubing size and pump type, rod and pumping unit costs, etc.

Also, you can specify different types of sucker rod guides and how much side load is recommended per guide. The program uses this information to recommend rod guide placement.

### **Outstanding Technical Support**

Theta Oilfield Services is dedicated to your satisfaction. Our technical support whited is the face for the Consulting I UPC first year, includes an emailed newsletter, upgrades, "bug" fixes and immediate response to problems or questions. Program upgrades can be downloaded directly from our web site. When you have a problem, solving it becomes our highest priority.

Carefully follow the instructions below and then click 'Next' to continue.
Excel file(xis): Browse
Select an Excel file (xis) which contains the deviatation survey for this well. The program will open the file and then determine where the column headers are for Measured Deph, Inclination, and Azimuth. If will also try to determine the measurement units, the range of data cells, and the number of rows (including blank lines).

INPUT DATA						CALCULATED RESULTS				
Strokes per minute         9         Fluid level           Yun time (Invidey)         24.0         (ff from surface):         1000           Yung pers, (sw)         100         (to ver pump).         4274           Zasing pres. (sw)         100         Sturface Xr, (to's)         0           Fluid properties         Motor & power meter		Production rate (blpd);         406         Peak pol rod load (bls);         14382           O'li production (bOPD);         162         Min. pol. rod load (bls);         1333           Brokes per minister, mmo);         65         Peintset of all P2;         20.4           Permissible load HP;         57.3         PRHD (PLUP;         104.4           Prival load or outhol bits:         1612         Bitswart rod weathring: 704.4								
		Motor & power meter			Fluid level TVD (ft from surface) 973 N/No: 179 Fo/SKr. 048					
Nater cut: Nater sp. gravity: Dil API gravity: Fluid sp. gravity:	60% 1.008 23.14 .971	Power Me Electricity Type: Size:		KWH A D	Prime mover speed variation Speed variation not considered					
Pumping Unit Luß	in Mark II (M	-456D-305-14	4)		Torque ani	alysis and consumption		NCED Torg)		
API size: M-456-3 Crank hole numbe Calculated stroke Crank Rotation wit Max. CB moment ( Structural unbalan Crank offset angle	ength (in): h well to right M in-Ibs): be (Ibs). (deg):	#1 (out 144.1			Peak gloo Gearbox k Cyclie loa Max. CB m Counterbal Daily elect Monthly el Electr cost	torq.(M in-Ibs): ading. d factor: coment (M in-Ibs): lance effect (Ibs): z use (KV/H(day))	291 64% 1.2 921 103	47. 21 31 56		
Tubing and pump i				0.600	Tubing, pu	mp and plunger o	alculations			
Tubing D. (ins): 2875 Usets dev rod-step hiction: 0.100 Using I.D. (ins): 2441 Downstroke rod-step hiction: 0.100 Pump depth (tt): 5274 Tub anch depth (tt): 5274 Pump solution: Tubing Pump load step (bits): 5274 Pump solution: Tubing Pump load step (bits): 70% Pump state (tta): 2					Tuking stretch (ins). Prod loss due to hubing stretch (bbpd): Gross purps stroke (ins). Hume spacing (in, from bottom): His & Winnum purp length (ft). Becommended purper length (ft).					
Rod string design					Rod string	stress analysis (	service factor: 1	)		
Diameter (inches)	Rod Grade	Length (ft)	Tensile Strength (psi)	Fric Coeff	Stress Load %	Top Maximum Stress (psi)	Top Minimum Stress (psi)	Bot Minimum Stress (psi)	Stress Calc Method	
+ 1 875 .75 + Requires slimhole o NOTE Stress calculat	D (API) D (API) D (API)	749 950 3575	115000 115000 115000	0.32 0.2 0.2	59% 61% 62%	18312 17875 17900	1761 582 -84	446 -61 0	API MG API MG API MG	
to a sense carcar.			ometer Card	Is	-10		Gearbo	ox Torque Plots		
16000. 14000. 12000. 10000. 9000. 6000. 4000.	» » «	~	~ /	ン つ	Net Tprque (M in-lbs)	1000.00 800.00 600.00 400.00 200.00 -200.00 -200.00 -200.00 -200.00	~	Geo	arbox nating	

40 80 120 160 200 240 280 320 36

#### System Requirements

60 80 100 120 140 160

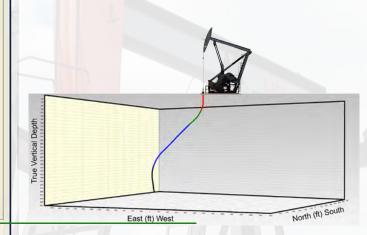
Processor:
1.6 GHz or higher
Operating System:
Windows XP/Vista/7
Memory:
1 GB of RAM or higher
Hard Disk:
125 MB available disk space
Display:
1024 x 768 or higher

Please contact UPC Global for more information RODSTAR-D.

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# **RODSTAR-D**<sup>™</sup>

## for Windows™



## Modern Design and Simulation of Deviated Rod Pumping Systems





www.upcoglobal.com

## **Finally !!!** A Smart Design Program for Deviated or Straight Rod Pumping Wells.

RODSTAR-D is the most sophisticated and most accurate design computer program for rod pumping systems in deviated wellbores. RODSTAR-D makes it very easy to enter deviation data either from a spreadsheet file, or even with Optical Character Recognition

10.2

14.5

182

24 7

29.4

32.1

34.2

36.6

387

39.2

39.2

307.2

271.3

275.

276.5

281 8

283 2

284.1

284.1

281.6

280.9

280.

280.3

281

284 7

281.9

0.04

3.04

1.39

1.01

2.25

07

0.42

262

358

-453

544

636

728

820

912

10 1007

11 1105

12 1194

13 1289

14 1384

15 1479

16 1574

17 1604

(OCR) software. Also, RODSTAR-D has all the powerful "smart" features familiar to ROD-STAR-D users.

You can enter a "target" production (or IPR data) and have the program automatically calculate the pumping speed, plunger size, and the optimum rod string design you need. IPR integration allows you to have RODSTAR-D calculate the target production from pump intake pressure or fluid level, or to calculate the

pump intake pressure from a target production or entered spm. RODSTAR-D can even recommend the pumping unit and motor size you need while it simultaneously designs the rod string for you. RODSTAR-D has a powerful "batch" run capability

RODSTAR-D 1.0 for Window	vs Setup			×				
General	Item:	Default value:						
Batch Mode Cost Database Defaults Output Options	Casing pressure Company name Compressibility index Electricity cost							
Pumping Unit Options     Rod Grade Options	Limits		- 1					
Hou Grade Options	Maximum desirable steel rod loading (%)							
	Maximum desirable fiberglass rod loading	g (%): 95						
	Side Load per Rod Guide Defaults							
	Bare rod load :	50	(lbs)					
	C Use Molded Guides	30	(lbs)					
	C Use Wheel Guides	25	(lbs)					
	Use Other Guides     Sidewinder	r 🛨 60	(lbs)					
1	Rod Length (ft):	25	-					
	Maximum number of guides per rod:	10	-					
	Show Deviation Survey Direction Toolbar							
			OK Can					

that allows unattended execution of as many ROD-STAR-D files as you want. **RODSTAR-D can summarize the results of all these runs in a customizable Excel® spreadsheet file** for easier comparison. This allows you to select the best design with the least amount of work.

RODSTAR-D even calculates the cost of the rods, pumping unit, and monthly electrical bill, for even

Visual Inputos

E-W (H

-2.76

-11.05

-24.7

44 21

-69 69

-99 88

133.68

-171.19

-214 64

-259.27

310.3

-364.42

421.44

479 99

498.55

0.25

2.36

4 88

9.43

24.54

34.13

43.96

52.82

62.51

72.49

83 77

94 97

98.85

542.52

632 37

720 64

807 27

892.42

979.17

1066 42

1142.9

1222 44

1299 87

1375.08

1448.96

1472.21

more accurate comparisons between different system design options.

## Concise Output Report

RODSTAR-D has an improved output report that looks the same on the screen as on the printer. All deviation related plots are one page, saving paper and making the output report easier to use.

## <u>Compare</u> <u>Pumping Units</u>

RODSTAR-D can simulate any pumping unit, including long stroke (Rotaflex) or hydraulic units. It comes with a huge pumping unit data base (with about 4000 units) that includes data for most new and old pumping units. Also, you can enter your own pumping unit dimensions and you can customize the list of units to only show units you have.

## Sophisticated 3-D Wellbore Plot

After you enter (or import) your deviation survey you can select to see a 3-D plot of the wellbore, spin it around to look at different views, zoom in, etc.. The program shows the different sections in the rodstring with different colors and also shows the rest of the wellbore in black. This shows where the pump is located.

## On-Screen Dynamometer Card Comparison and Animation

After you analyze a system with RODDIAG or XDIAG (diagnostic programs developed by Theta Oilfield Services), you can load the RODDIAG or XDIAG file into RODSTAR-D. Then, you can overlay the measured dynamometer card on the predicted dynamometer card plot. This saves time and allows you to determine unknown quantities such as rod-tubing friction, fluid level, detect bad data, etc.

Also, RODSTAR-D for Windows can "animate" its dynamometer card plots by simultaneously showing how the surface and downhole loads change. This allows you to "see" rod stretch effects, load fluctuations on the plunger, the delay between pump and surface position, the severity of fluid pound, and other interesting effects that cannot be seen any other way.

