

# VEEMScan

Presentation  
January 2018



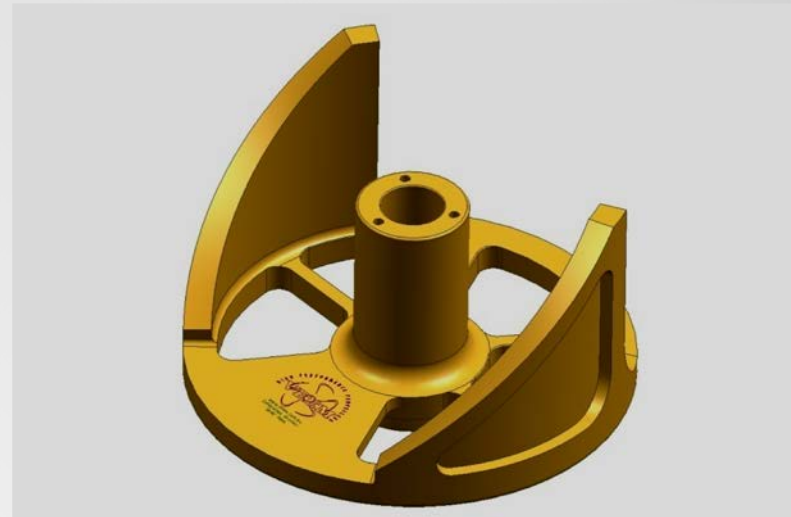
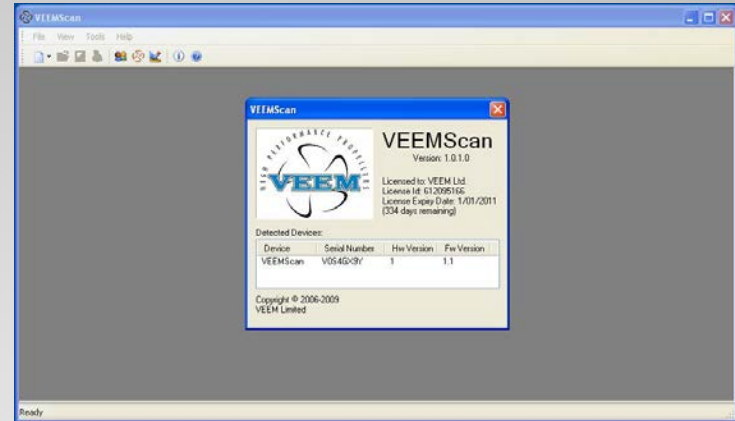
- VEEMScan is a VEEM “in-house” developed system aimed at enhanced and simplified dimensional inspection of VEEM propellers
- VEEMScan incorporates software, measuring hardware and special tools for system calibration and validation
- VEEMScan will provide VEEM representatives access to proprietary design information to assist in propeller checking and repair

## Introduction

- Some existing systems use basic, non-absolute nor incremental measuring systems
- Poor diagnostic or calibration facility
- Reliance on custom made measuring components
- High reliance on operator skill to avoid accumulation errors due to hardware design
- Setup is critical to reduction of errors
- Design data is modified to account for probe diameter rather than correctly offsetting measured data .... reporting therefore states adjusted rather than true pitch
- Chord truncation increases uncertainty
- Non “international” standard reporting

## Background

- Concept
- System Overview
- Hardware Overview
- Artefact
- Software Overview
- Software Details



Content

- To produce a flexible system that provides improved accuracy, lower uncertainty and offered tools to validate the system performance
- Known and logical maths in geometry analysis functions
- Highly configurable
- Make use of existing hardware where possible
- Familiar output
- Advanced features to support VEEM representatives

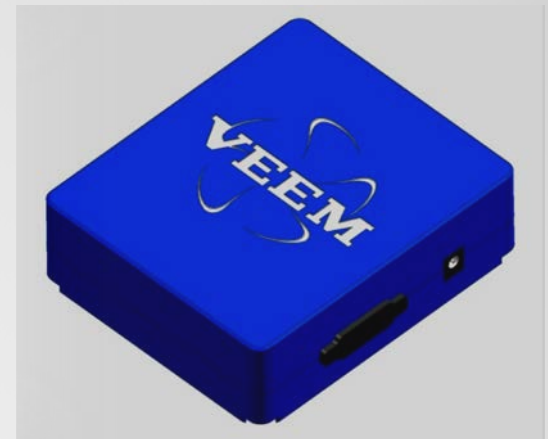


## VEEMScan Concept

- Hardware
  - USB based interface to measuring components
  - Encoders and mechanical components
  - Cables / Junction Boxes
- Software
  - VEEMScan PC software (Windows)
  - VEEMScan interface firmware
  - Oracle XE Database
  - License control software
- Artefact
  - Calibrated pitch gauge with left and right hand pitches

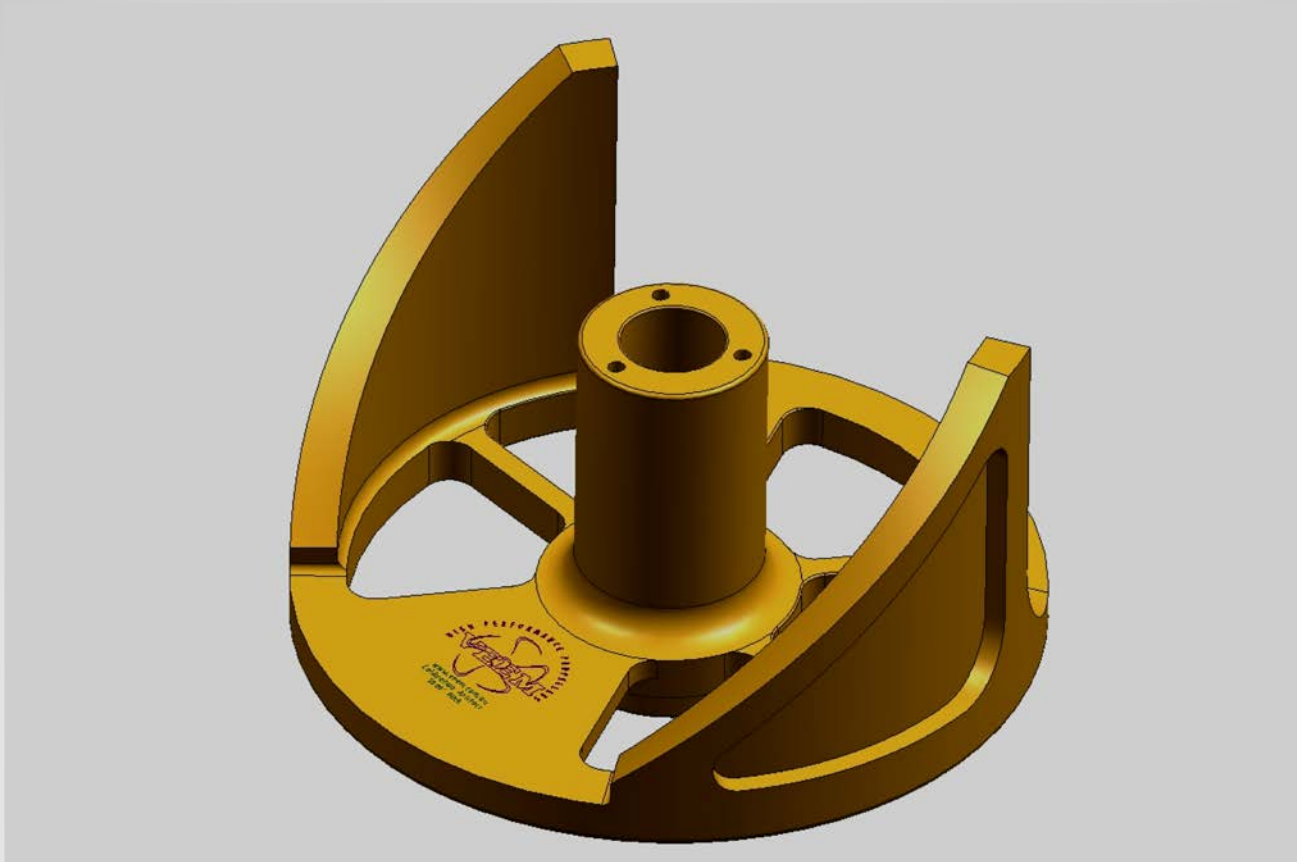
## VEEMScan System Overview

- USB measuring system interface
- Absolute measuring system capability
- Industry standard quadrature encoder interface
- Up to 3+1 axis (3 quadrature, 1 single channel)
- Compatible with custom made hardware
- Additional inputs and outputs
- Propscan compatible
- Hale MRI compatible
- Firmware updateable online



## VEEMScan Hardware Overview

- Calibration tool for system setup verification and measurement uncertainty determination



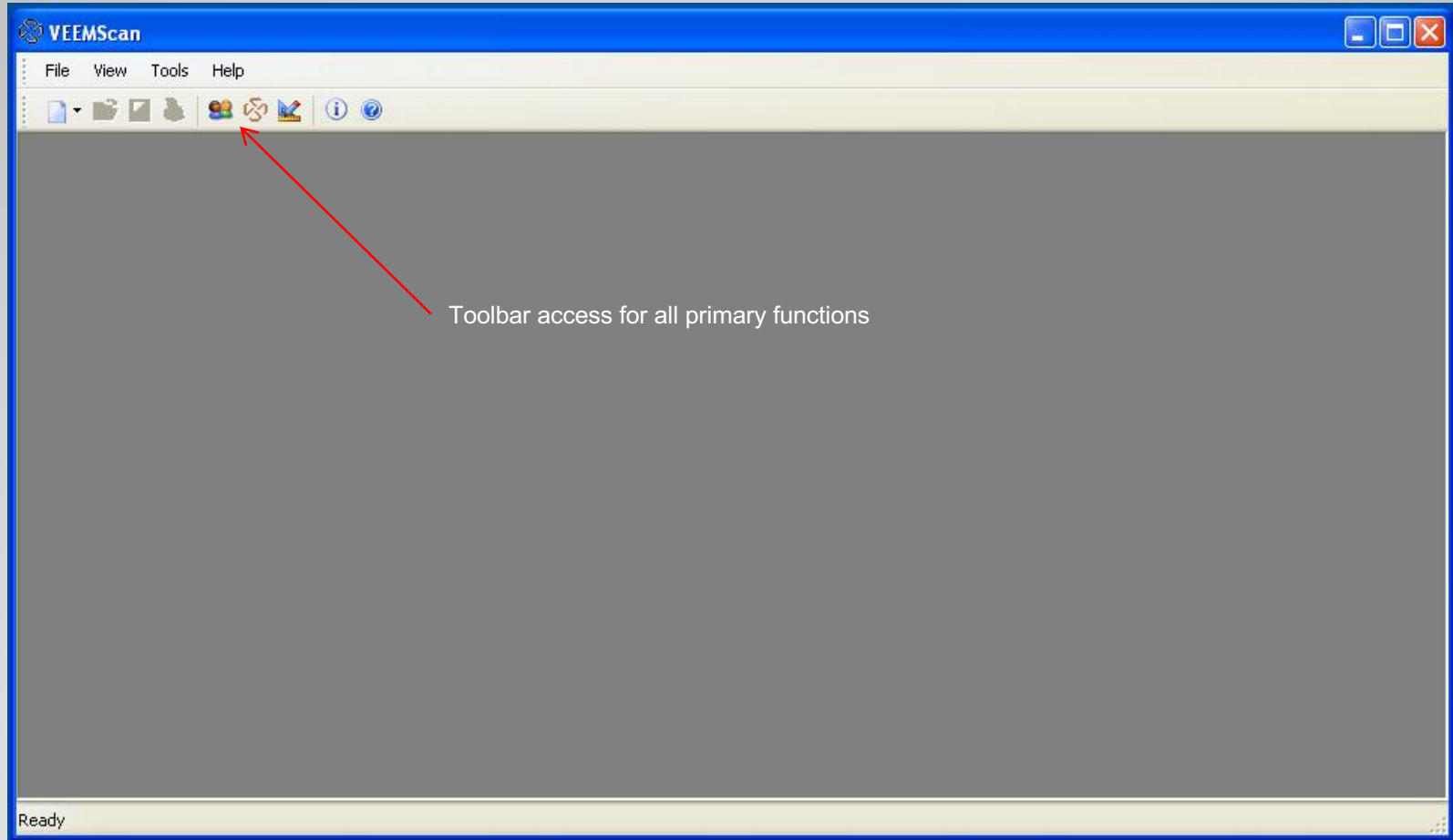
**VEEMScan Artefact**



- Windows based (XP, Windows 7 32/64 bit)
- Oracle 10g XE database
- Multi-user
- Flexible configuration
- Diagnostic tools
- Single button measuring operation
- Universal interface for old and new hardware
- Import existing data and designs
- Updates available on-line
- Licensing provides for full or partial versioning

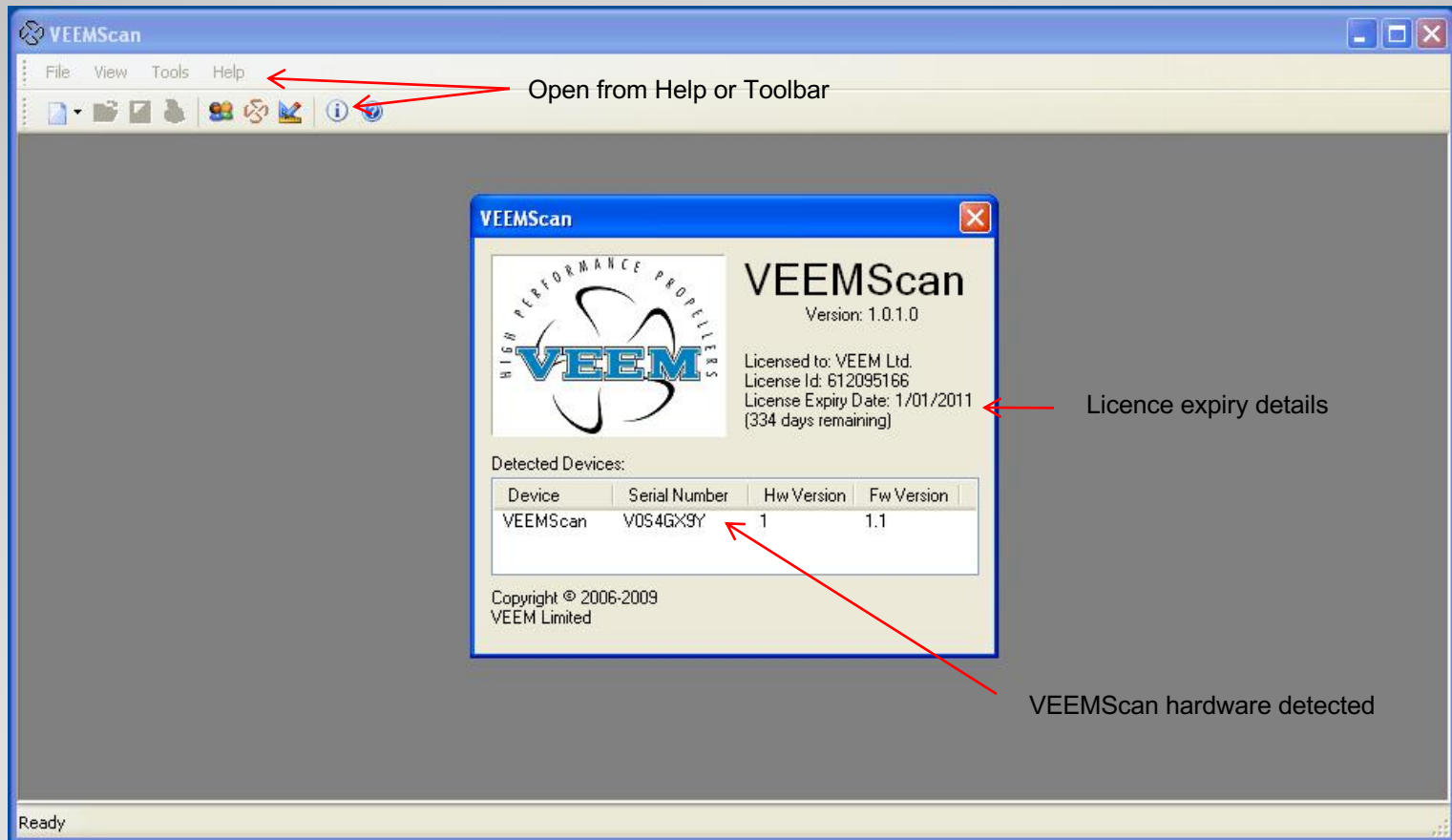
## **VEEMScan Software Overview**

- VEEMScan application main screen



# VEEMScan Software Details

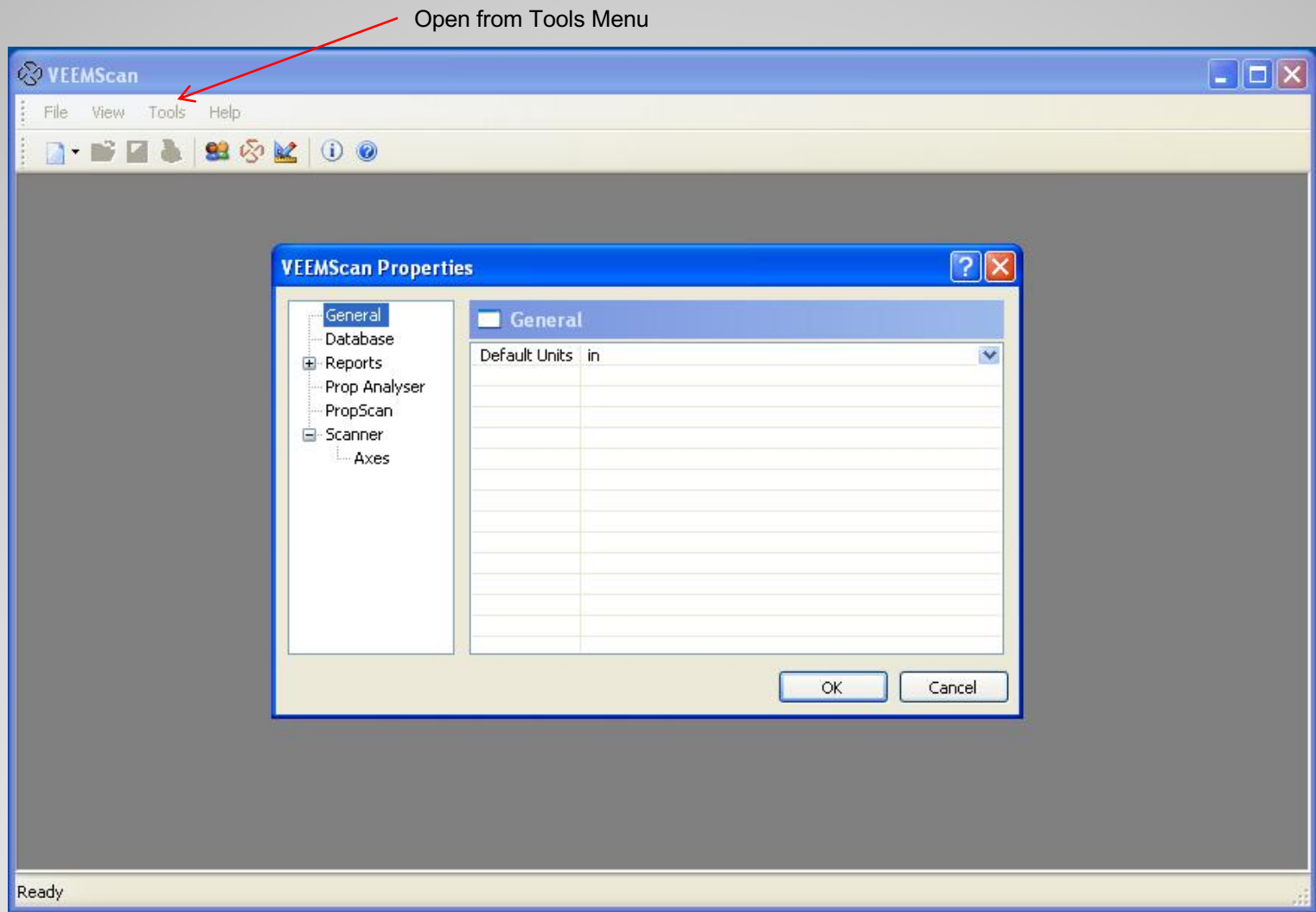
- Version, licence and hardware information



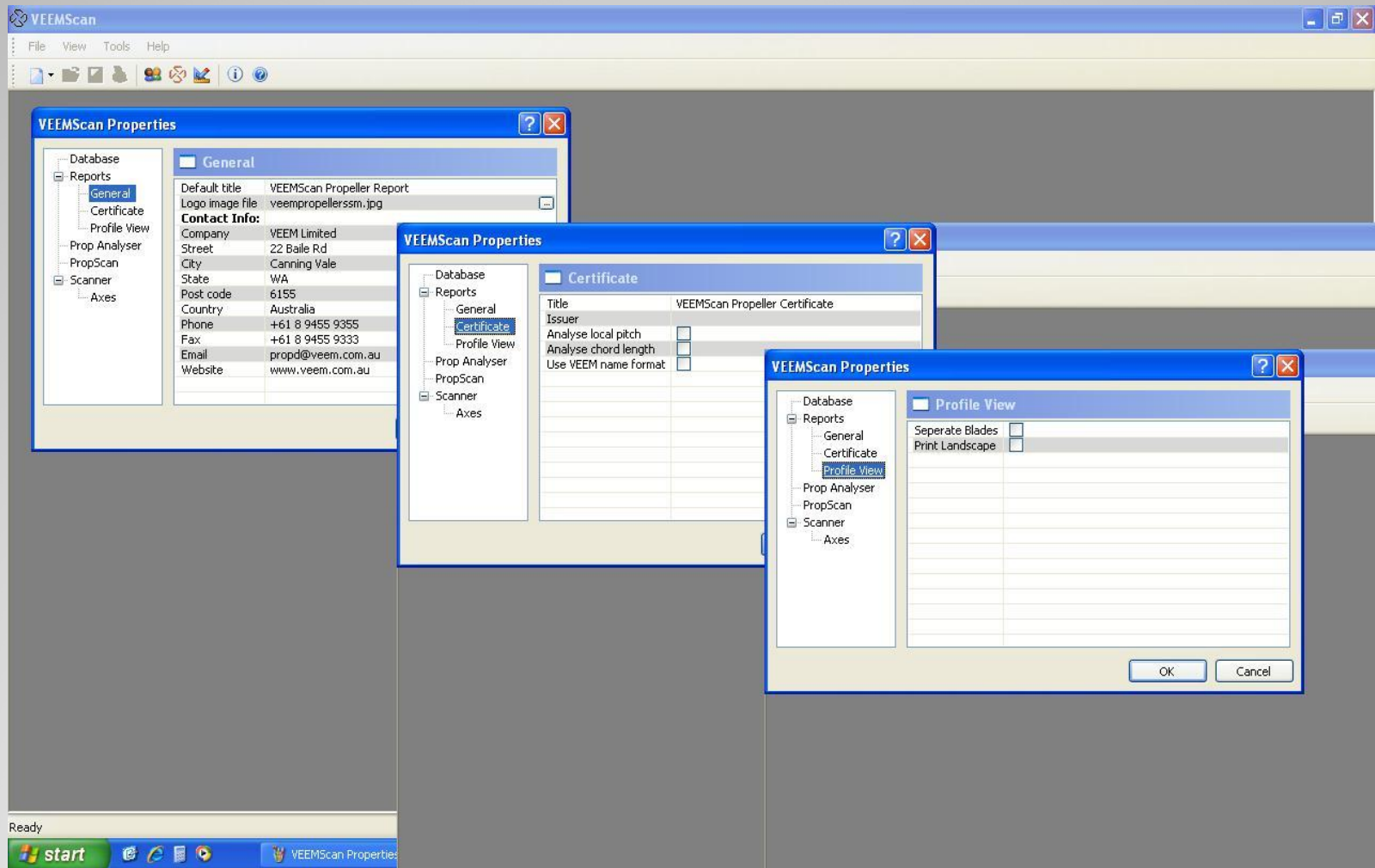
# VEEMScan – About

- Configuration “Properties” pages
  - Define defaults (units, etc.)
  - Specify data source (database, account, etc.)
  - Define user details for reporting
  - Specify company logo
  - Define report contents and format
  - Define geometry analysis principles
  - Define import location and properties
  - Setup of measuring system arrangement
  - Specify measuring system resolution
  - Allocate button function

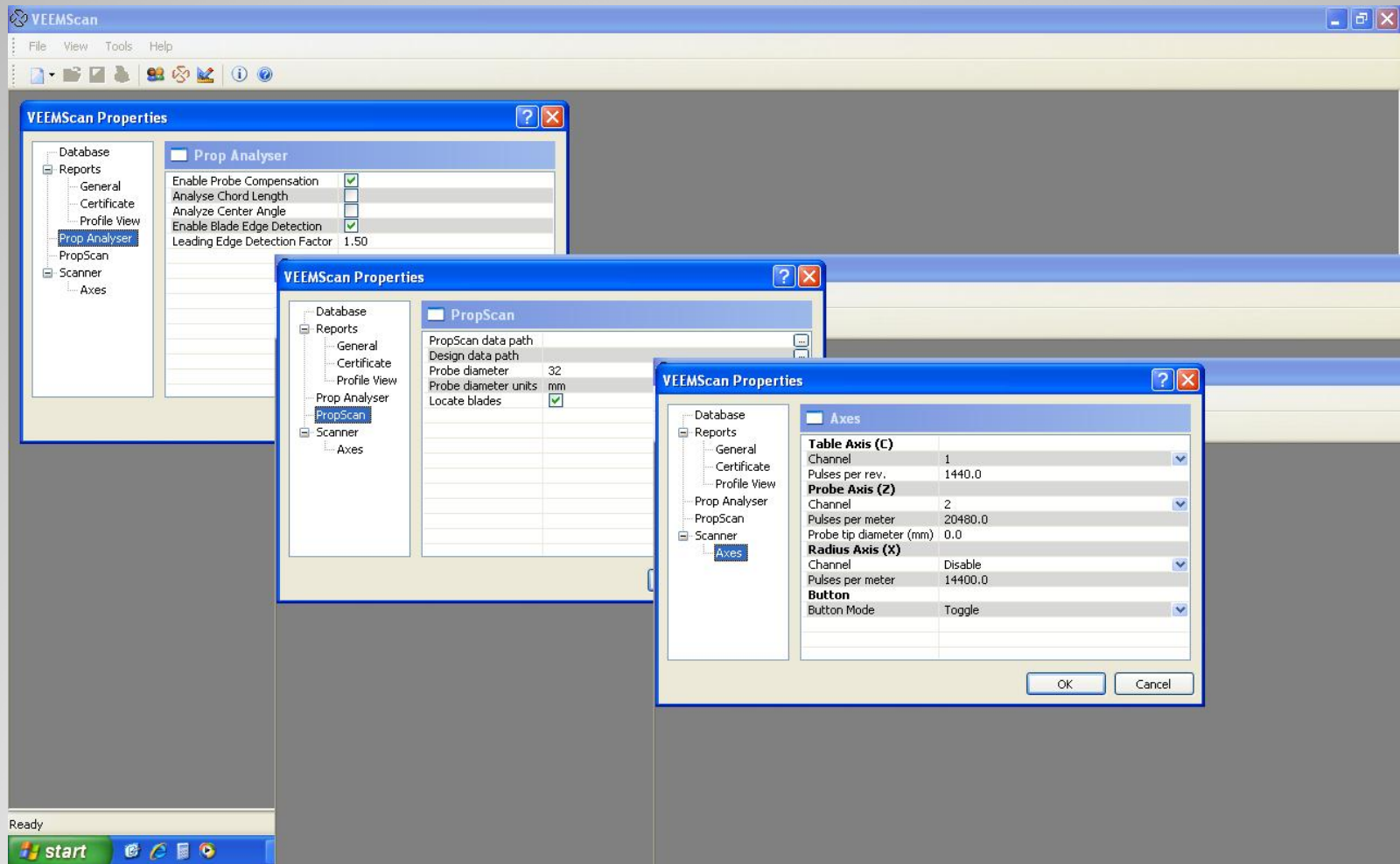
## VEEMScan Configuration



# VEEMScan - Properties



# VEEMScan - Properties

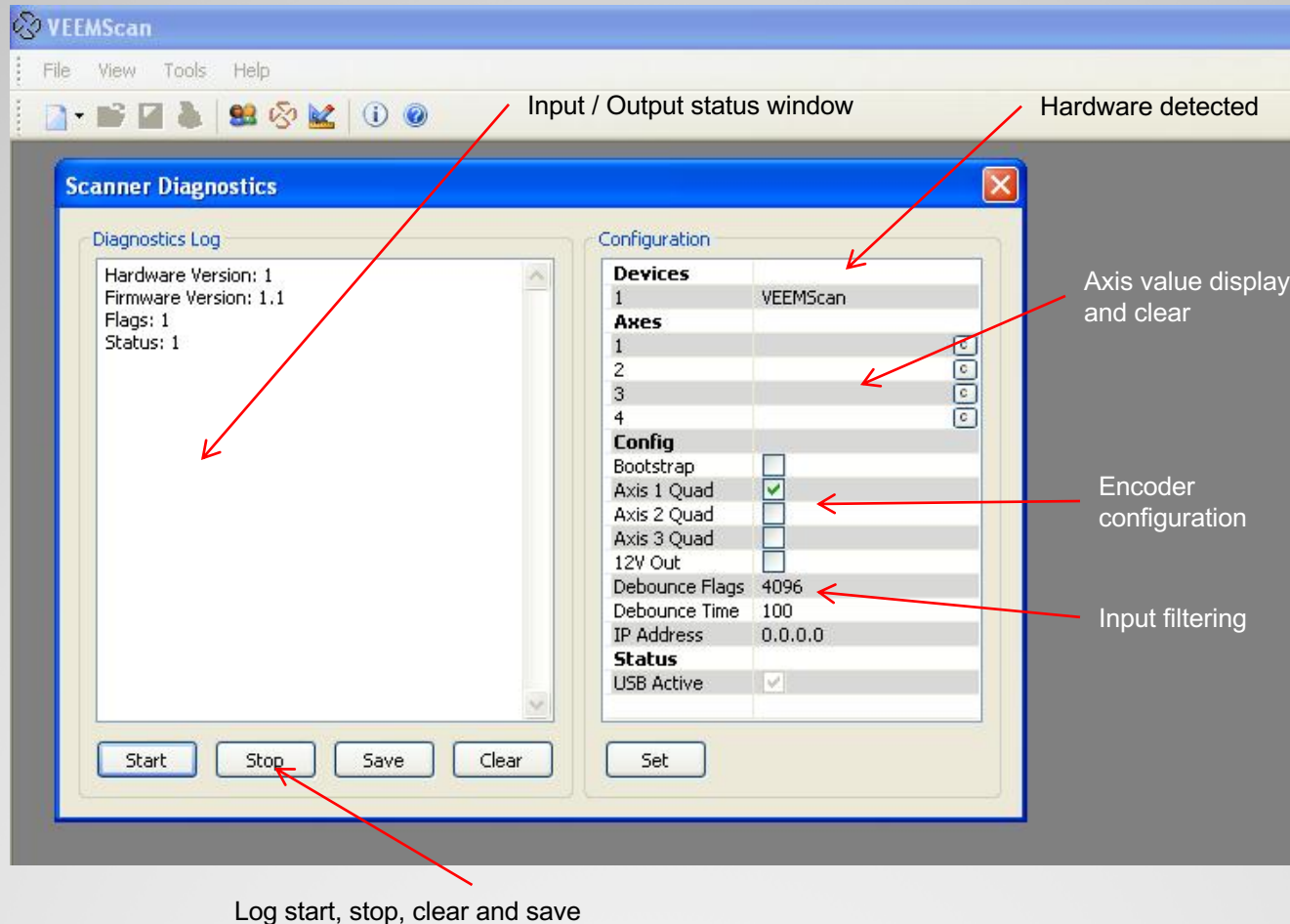


# VEEMScan – Properties

- Measuring system hardware detection
- Measuring system hardware configuration
- Data display for measuring system testing
- Input filtering
- Data capture for factory assistance

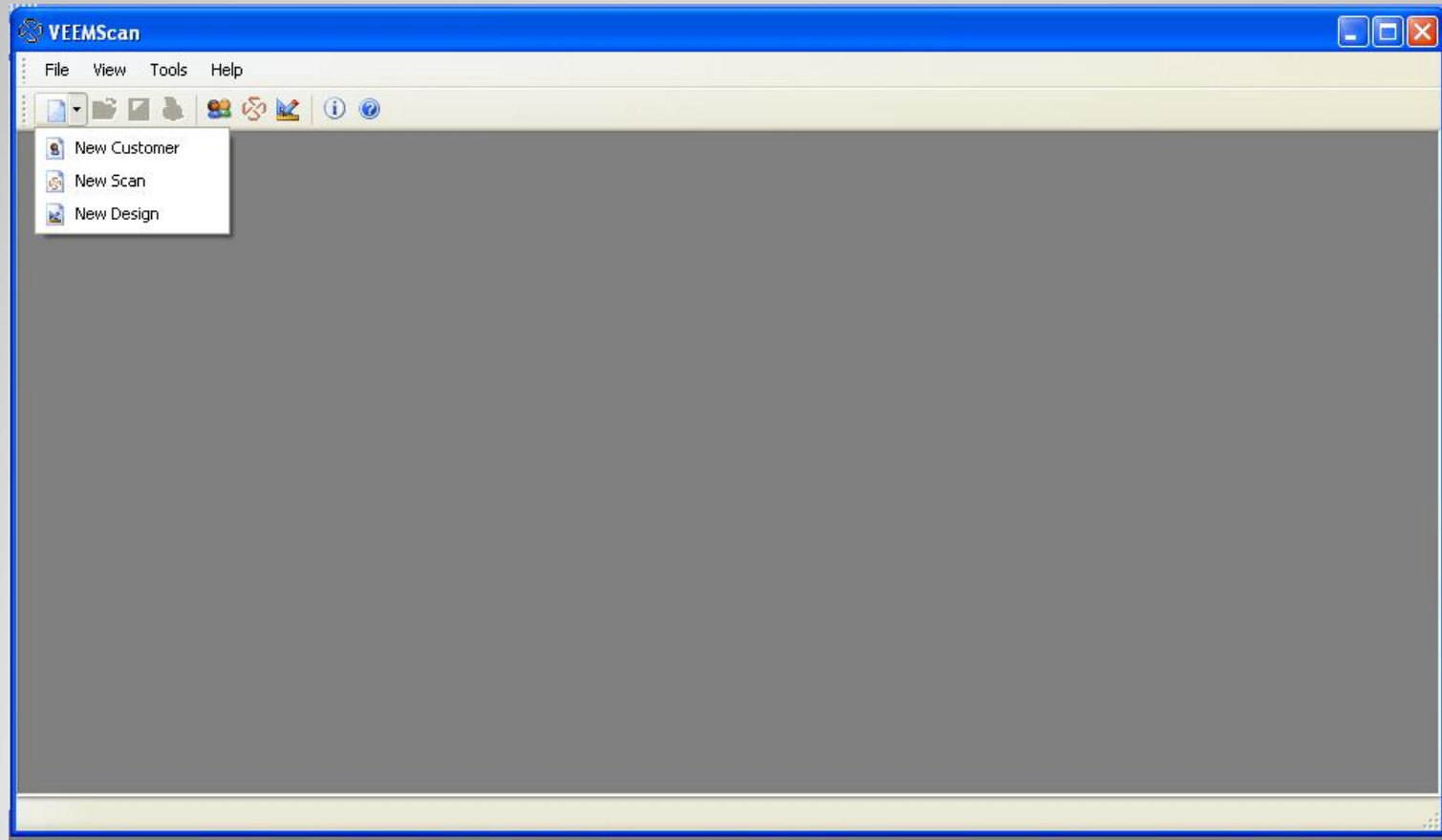
**VEEMScan – Scanner Diagnostics**





# VEEMScan – Scanner Diagnostics

- Create new customer, scan or design



**VEEMScan – New Toolbar**

The screenshot shows the VEEMScan application window with a 'Customer' dialog box open. The dialog box contains a table with the following fields:

Customer
Street
City
State
Postcode
Country
Contact
Phone
Email
Note

At the bottom of the dialog box are 'OK' and 'Cancel' buttons. The main application window has a menu bar (File, View, Tools, Help) and a toolbar with various icons. The status bar at the bottom of the application window displays 'Ready'.

# VEEMScan – Customer Details

- Customer data is held in the database and is re-useable for subsequent jobs

VEEMScan

File View Tools Window Help

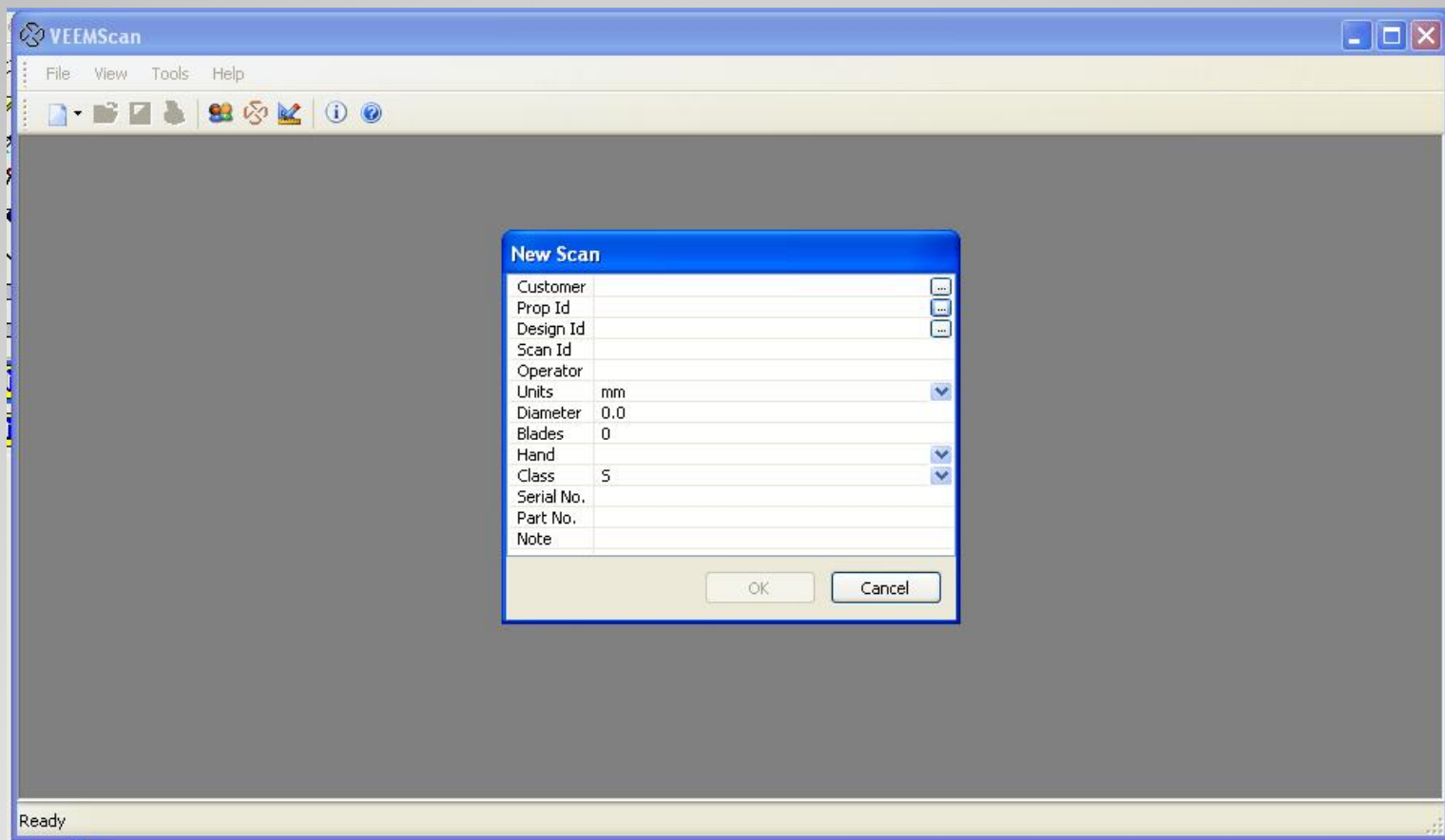
Customers (91)

CUSTOMER	PROPS	STREET	CITY	STATE	POSTCODE	COUNTRY	CONTACT	PHONE	EMAIL	UNITS
PRECISION PROP TECHNOLOGY	1	3005 S.W.2ND AVENUE	FT. LAUDERDALE	FL	33315	USA	MARK TOMLINSON	+1 954 763 8883		mm
116880/02BLACK DOG PROPELLERS	1	212 LOG CANOE CIRCLE	STEVEYSVILLE	MARYLAND	21666	USA	STEVE KING	+1 410 739 7490		mm
117182/02GENERAL PROPELLER Co	1	1415 9TH AVENUE EAST	BRADENTON	FL	34208	USA	JOEL KMETZ	941 748 1527		mm
118864/01PRINCESS YACHTS INT.	2	NEW PORT STREET STONE HOUSE	PLYMOUTH	DEVON	PL1 3QG	GBR	ALEX STEVENS	+44 1752517 081		in
119PRINCESS YACHTS INT.	1	NEW PORT STREET STONE HOUSE	PLYMOUTH	DEVON	PL1 3QG	GBR	ALEX STEVENS	+44 1752517 081		in
ACCU PROP	0	805 South Pace Blvd	PENSACOLA	FL	32501	USA	DAVID MASSEY	850-439-0100		in
AJKA PTY LTD.	2						JOE GOBIN	0886 833 111		
AQUALUMA	1									mm
AQUILLA CARTERS	2						JOHN	0428271498		mm
AUSTAL IMAGE	27									in
AUSTRAL PROPELLER CO	95	38-40 STANLEY ST	PEAKHURST	NSW 2210			steve vincent			in
AUSTRAL PROPELLER Co.	100	38-40 Stanley Street	PEAKHURST	nsw	2210					in
AUSTRAL PROPS	0		COTTESLOE	WA	6011					in
AUSTRAL SHIPS	0									in
AUSTRALIAN MOORING SERVICES	0	32 HOWSON WAY UNIT 6	BIBRA LAKE	WA	6163	AUSTRALIA	GRANT MCCLEARY	9434 9684		in
BAE SYSTEM (FORMERLY TENIX )	4									
BAE SYSTEM (FORMERLY TENIX )	1									
BAY PROPELLER	61	3231 S. MILITARY HWY	CHESAPEAKE	VA	23323	USA	JERRY DURAND	+ 757 485 0166		in
BERG PROPULSION	5	NYA BERG PROPULSION BOX 1005	S430 90 OCKERO			SWEDEN	YUKI HUANG			mm
BIG ROCK PROPELLERS	9	111A TURNERS DAIRY ROAD	MOREHEAD CITY	NC	28557					in
BLACK DOG PROPELLERS	157	212 LOG CANOE CIRCLE	STEVEYSVILLE	MARYLAND	21666	USA	STEVE KING	+1 410 739 7490		mm
BONDALL MARKETING	1		HENDERSON	WA	6166	AUSTRALIA	MARK CRYSTAL	0400 7 705 776		in
BRADLEY MOORE	2									mm
cantieri di pisa	2	via aurelia sud	kim334	pisa na 56121						mm
CHRIS NORMAN	2									
CJR PROPS	75	70-72 QUAYSIDE RD BITTME MANOR	SOUTHAMPTON		SO18 1AD					in
DAMEN SHIPYARDS	0	29 TUAS CRESENT	SINGAPORE		638720	SINGAPORE	WEE GHIM SIANG	0011 65 6861 4180		in
EAGLE YACHTS	2	GOLD COAST CITY MARINA	COOMERA	QLD	4209	AUS	ALFREDO ANADUTO	9429 3400		in

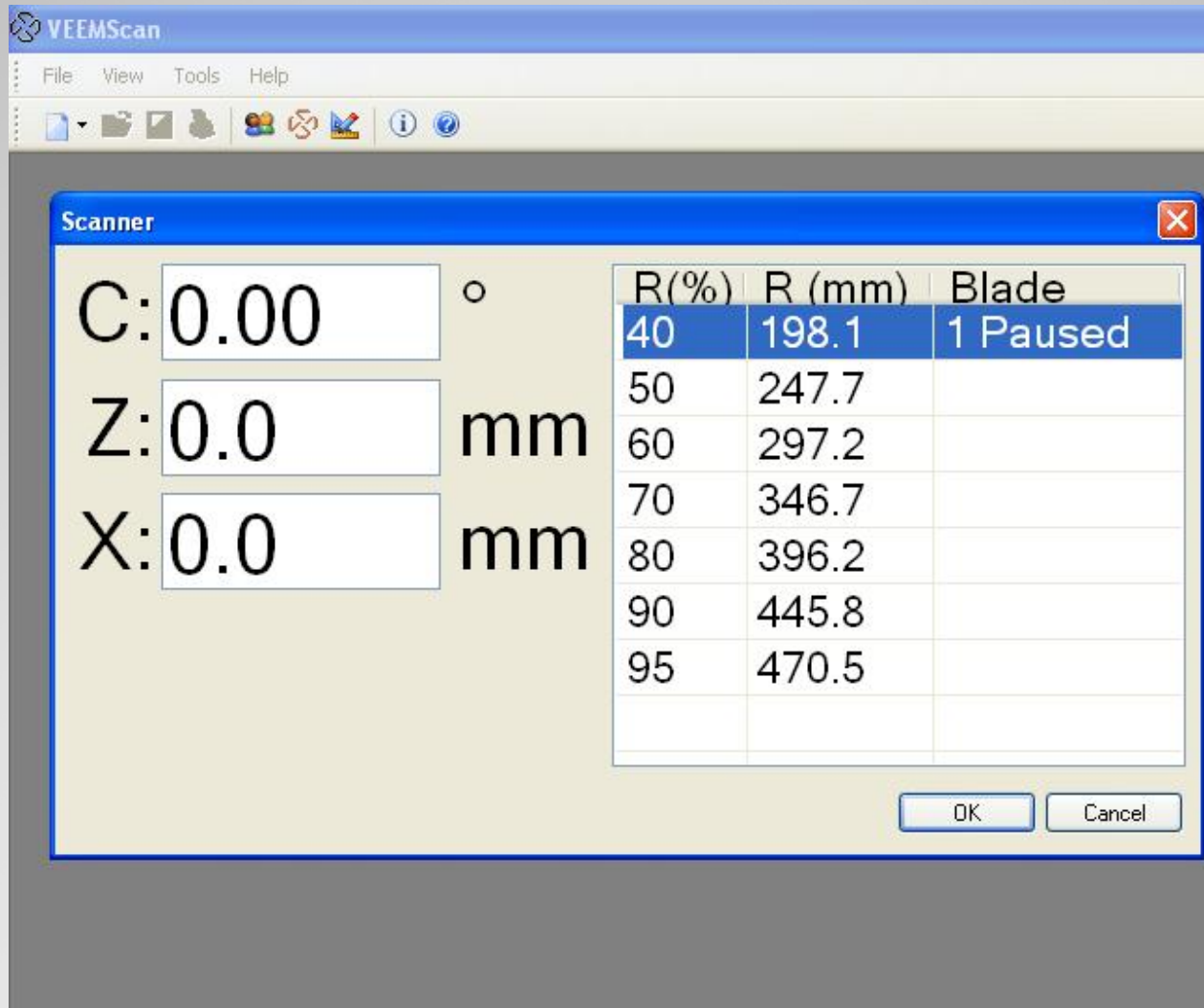
Ready

start VEEMScan New Desig... VEEMScan 11:58 AM

# VEEMScan – Customer Data



# VEEMScan – New Scan Details



**VEEMScan - Scan**

- Press button to start scan, press button to pause
- Rescan radius by reselecting
- Number of blades determined from data entry
- Live measure system position display
- Radial position prompt

The Scanner dialog box contains three input fields for position: C: 0.00, Z: 0.0 mm, and X: 0.0 mm. To the right of these fields is a small circle icon. Below the inputs is a table with three columns: R(%), R (mm), and Blade. The table contains data for R values from 40 to 95, with the Blade column showing '1 Paused' for R=40 and empty for others. At the bottom right are OK and Cancel buttons.

R(%)	R (mm)	Blade
40	198.1	1 Paused
50	247.7	
60	297.2	
70	346.7	
80	396.2	
90	445.8	
95	470.5	

# VEEMScan - Scan



VEEMScan

File View Tools Window Help

Props (1475)

CUSTOMER	PROP	SCAN	DESIGN	DIAMETER	HAND	PARTNO	SERIALNO	BLADES	OPERATOR	SCANDATE
NEW ARTIFACT	0000000001	3		491612	RH			7	STEWART	7/08/2009 3:13:29 PM
FRIGATE	001	1		470	RH			3	BOLLOCKS	2/12/2009 11:23:15 AM
FRIGATE	001	2		470	RH			3	BOLLOCKS	11/12/2009 10:06:03 AM
BLACK DOG PROPELLERS	101026/02	1	121026-1	711.2	LH			4	DAN	3/11/2009 9:06:59 AM
BLACK DOG PROPELLERS	101985-1	3	120530-1	1117.6	LH			5	RAY	22/09/2009 4:34:34 PM
RIVIERA MARINE(INT)	112459/01	112459/01	108270-1	698.5	RH			4	stewart	29/12/2008 6:47:12 AM
RIVIERA MARINE(INT)	112459/02	112459/02	108270-1	698.5	LH			4	stewart	5/01/2009 8:16:20 PM
GENERAL PROPELLER Co	115897/02	115897/02	108308-11	749.3	LH			4	RAY	5/01/2009 9:29:11 PM
PRINCESS YACHTS INT.	116216/02	116216/02	115242-1	863.6	LH			5	ray	23/12/2008 1:01:53 PM
PRINCESS YACHTS INT.	116216/03	116216/03	115242-1	863.6	LH			5	ray	25/12/2008
BLACK DOG PROPELLERS	116442/1	One	115224-1	939.8	RH			5	Rob	27/11/2008 2:07:45 PM
BLACK DOG PROPELLERS	116448/016	116446/01	116311-1	762	RH			5	RAY	12/01/2009 4:06:19 PM
BLACK DOG PROPELLERS	116448/016	17	116311-1	762	RH			5	RAY	14/01/2009 6:55:43 AM
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	RH			5	stewart	29/12/2008 7:00:12 AM
BLACK DOG PROPELLERS	116455/02	116455/02	115394-1	939.8	LH			5	RAY	30/12/2008 3:52:27 PM
BLACK DOG PROPELLERS	116455/03	116455/03	115394-1	939.8	RH			5	stewart	29/12/2008 7:00:12 AM
BLACK DOG PROPELLERS	116456/01	116456/01	116189-1	863.6	RH			5	stewart	23/12/2008 7:00:13 AM
BLACK DOG PROPELLERS	116456/02	116456/02	116189-1	863.6	LH			5	LUKE	6/01/2009 6:56:54 AM
PRINCESS YACHTS INT.	116505/02	116505/02	116505-1	762	LH			4	stewart	23/12/2008 6:48:24 AM
CJR PROPS	116538/01	116538/01	116538-1	1225	RH			5	Danijel	10/01/2009 2:26:12 PM
CJR PROPS	116538/02	116538/02	116538-1	1225	LH			5	Danijel	9/01/2009 1:42:08 PM
PRINCESS YACHTS INT.	116599/01	116599/01	116599-1	965.2	RH			5	stewart	23/12/2008 7:14:36 AM
PRINCESS YACHTS INT.	116599/02	116599/02	116599-1	965.2	LH			5	RAY	29/12/2008 8:45:41 PM
PRINCESS YACHTS INT.	116628/01	116628/01	116628-1	1041.4	RH			5	Danijel	9/01/2009 3:03:29 PM
PRINCESS YACHTS INT.	116628/02	116628/02	116628-1	1041.4	LH			5	Danijel	10/01/2009 12:12:38 PM
PRECISION PROP TECHNOLOGY	116644/01	116644/01	114574-1	863.6	RH			5	114574-1	29/12/2008 6:44:10 PM
PRECISION PROP TECHNOLOGY	116644/02	116644/02	114574-1	863.6	LH			5	stewart	29/12/2008 7:20:25 AM
BAY PROPELLER	116693/02	116693/02	116693-1	863.6	LH			5	stewart	24/12/2008 9:15:15 AM
CJR PROPS	116735/01	116735/01	116735-1	660.4	RH			4	stewart	22/12/2008 7:11:26 AM
CJR PROPS	116735/02	116735/02	116735-1	660.4	LH			4	stewart	22/12/2008 7:28:55 AM
BAY PROPELLER	116770/01	116770/01	116770-1	838.2	RH			5	stewart	23/12/2008 8:56:09 AM
BAY PROPELLER	116770/03	116770/03	116770-1	838.2	LH			5	RAY	7/01/2009 4:15:09 PM
PRINCESS YACHTS INT.	116788/01	116788/01	116788-1	863.6	RH			5	RAY	30/12/2008 3:11:34 PM
PRECISION PROP TECHNOLOGY	116789/01	116789/01	116789-1	914.4	RH			5	stewart	23/12/2008 9:59:32 AM
PRECISION PROP TECHNOLOGY	116789/02	116789/02	116789-1	914.4	LH			5	stewart	23/12/2008 10:08:20 AM
AUSTRAL PROPELLER Co.	116845/02	116845/02	116845-1	1135.1	LH			4	dan	7/01/2009 10:43:34 AM
BLACK DOG PROPELLERS	116854/01	116854/01	108894-1	838.2	RH			5	stewart	22/12/2008 6:55:32 AM

Ready

start VEEMScan Customer.... VEEMScan 11:59 AM

# VEEMScan – Propeller Scan Data



- Scan data is stored to create propeller records
  - Multiple scans per propeller
  - Select a record, double click to view, edit or rescan
  - Right click menu to
    - Create a design
    - Delete a scan
    - Delete a propeller
  - Click titles to sort
  - Multiple scans open

VEEMScan

File View Tools Window Help

Propellers (1482)

CUSTOMER	PROP	SCAN	DESIGN	DIAMETER	UNI
NEW ARTIFACT	000000001	3		491611.9	
FRIGATE	001	1		470.0	
FRIGATE	001	2		470.0	
BLACK DOG PROPELLERS	101026/02	1	121026-1	711.2	
BLACK DOG PROPELLERS	101985-1	3	120530-1	1117.6	
RIVIERA MARINE(INT)	112459/01	112459/01	108270-1	698.5	
RIVIERA MARINE(INT)	112459/01	112459/01	108270-1	698.5	
RIVIERA MARINE(INT)	112459/02	112459/02	108270-1	698.5	
PRINCESS	116216/02	116216/02	115242-1	863.6	
PRINCESS	116216/03	116216/03	115242-1	34.00	
BLACK DOG PROPELLERS	116442/1	One	115224-1	37.00	
BLACK DOG PROPELLERS	116448/016	17	116311-1	30.00	
BLACK DOG PROPELLERS	116448/016	17	116311-1	30.00	
BLACK DOG PROPELLERS	116448/016	116446/01	116311-1	30.00	
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	
BLACK DOG PROPELLERS	116455/01	116455/01	115394-1	939.8	
BLACK DOG PROPELLERS	116455/02	116455/02	115394-1	939.8	
BLACK DOG PROPELLERS	116455/03	116455/03	115394-1	939.8	
BLACK DOG PROPELLERS	116456/01	116456/01	116189-1	863.6	
BLACK DOG PROPELLERS	116456/02	116456/02	116189-1	863.6	
PRINCESS YACHTS INT.	116505/02	116505/02	116505-1	30.00	
CJR PROPS	116538/01	116538/01	116538-1	48.23	

Ready

# VEEMScan – Propeller Data

- New design data can be entered directly based on regular propeller geometry definition principals.
- Design data can also be automatically generated
  - based on existing scan
  - imported via file or web
  - imported from other application

The screenshot displays the VEEMScan software window with a menu bar (File, View, Tools, Window, Help) and a toolbar. The main content area contains three data entry sections:

**Prop Data**

Code	
Name	
Units	mm
Diameter	0.0
Blades	0
Pitch	0.0
Rake	0.0

**Chord Data**

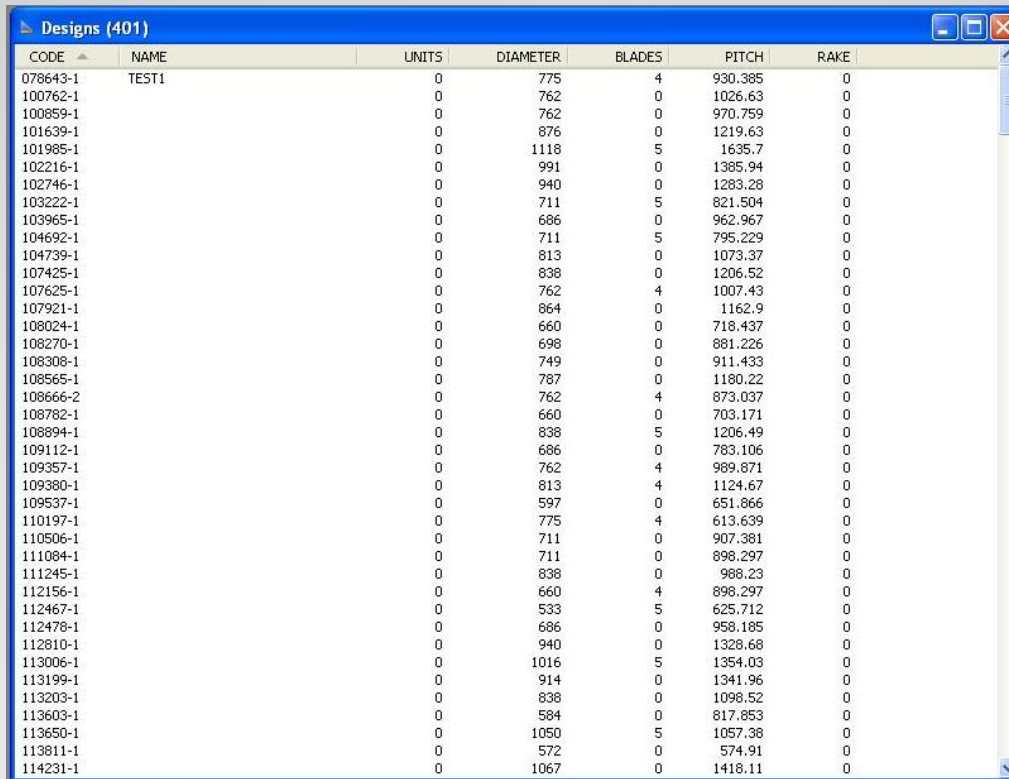
	R0.2	R0.25	R0.3	R0.4	R0.5	R0.6	R0.7	R0.8	R0.9	R0.95	R1.00
Pitch											
Chord Length											
LE-GL											
LE-MT											

**Face Offset Data**

rR \ cR	LE100	LE97.5	LE95	LE90	LE85	LE80	LE60	LE40	LE20	MT	TE20	TE40	TE60	TE80	TE100
R0.2															
R0.25															
R0.3															
R0.4															
R0.5															
R0.6															
R0.7															
R0.8															
R0.9															
R0.95															
R1.00															

# VEEMScan - Design

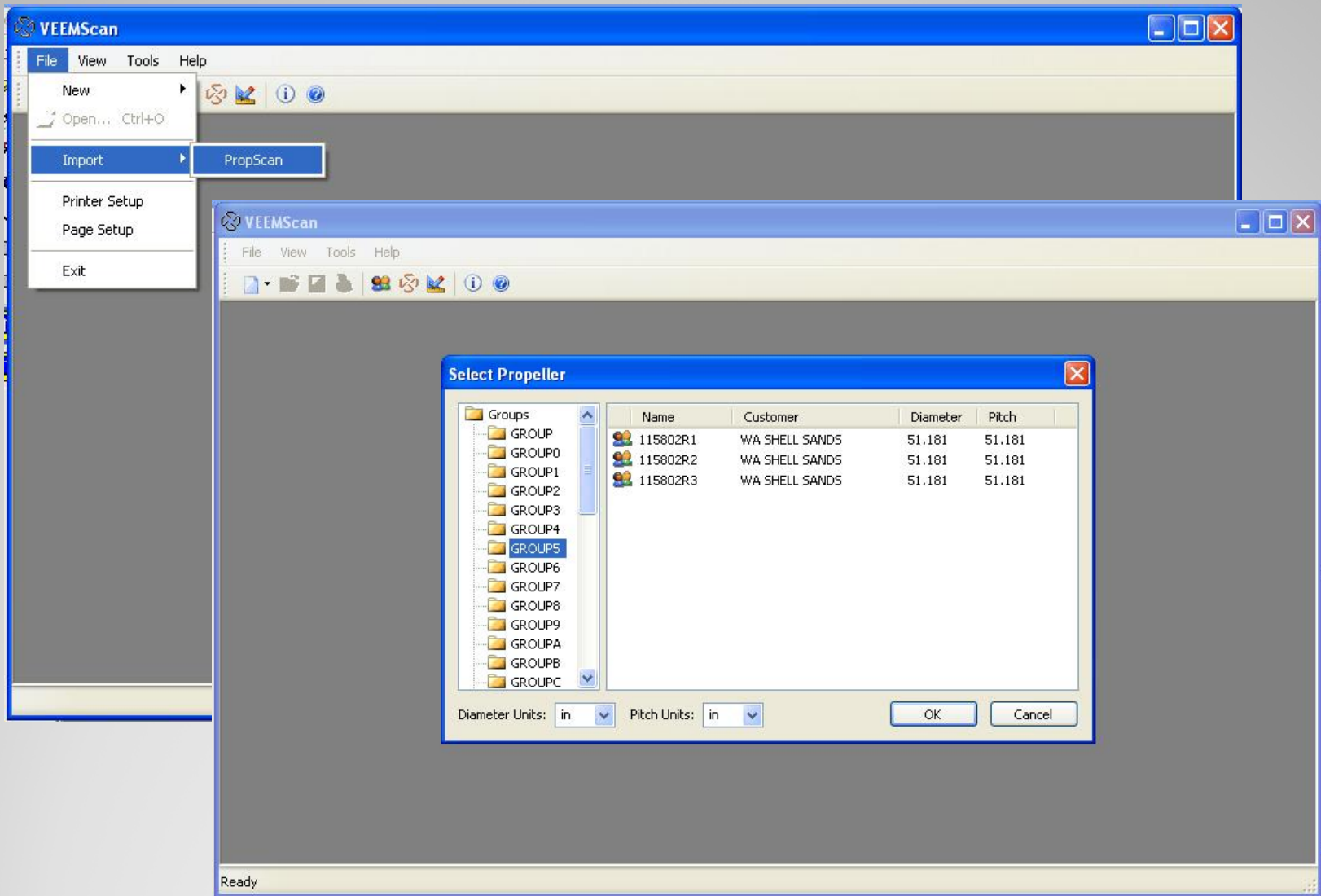
- Retrieved and edit designs as required
  - Double click to open
  - Right click menu to delete



The screenshot shows a software window titled "Designs (401)". Inside is a table with 7 columns: CODE, NAME, UNITS, DIAMETER, BLADES, PITCH, and RAKE. The table contains 40 rows of data, each representing a different design. The first row has CODE "078643-1", NAME "TEST1", UNITS "0", DIAMETER "775", BLADES "4", PITCH "930.385", and RAKE "0". The last row has CODE "114231-1", NAME "", UNITS "0", DIAMETER "1067", BLADES "0", PITCH "1418.11", and RAKE "0".

CODE	NAME	UNITS	DIAMETER	BLADES	PITCH	RAKE
078643-1	TEST1	0	775	4	930.385	0
100762-1		0	762	0	1026.63	0
100859-1		0	762	0	970.759	0
101639-1		0	876	0	1219.63	0
101985-1		0	1118	5	1635.7	0
102216-1		0	991	0	1385.94	0
102746-1		0	940	0	1283.28	0
103222-1		0	711	5	821.504	0
103965-1		0	686	0	962.967	0
104692-1		0	711	5	795.229	0
104739-1		0	813	0	1073.37	0
107425-1		0	838	0	1206.52	0
107625-1		0	762	4	1007.43	0
107921-1		0	864	0	1162.9	0
108024-1		0	660	0	718.437	0
108270-1		0	698	0	881.226	0
108308-1		0	749	0	911.433	0
108565-1		0	787	0	1180.22	0
108666-2		0	762	4	873.037	0
108782-1		0	660	0	703.171	0
108894-1		0	838	5	1206.49	0
109112-1		0	686	0	783.106	0
109357-1		0	762	4	989.871	0
109380-1		0	813	4	1124.67	0
109537-1		0	597	0	651.866	0
110197-1		0	775	4	613.639	0
110506-1		0	711	0	907.381	0
111084-1		0	711	0	898.297	0
111245-1		0	838	0	988.23	0
112156-1		0	660	4	898.297	0
112467-1		0	533	5	625.712	0
112478-1		0	686	0	958.185	0
112810-1		0	940	0	1328.68	0
113006-1		0	1016	5	1354.03	0
113199-1		0	914	0	1341.96	0
113203-1		0	838	0	1098.52	0
113603-1		0	584	0	817.853	0
113650-1		0	1050	5	1057.38	0
113811-1		0	572	0	574.91	0
114231-1		0	1067	0	1418.11	0

# VEEMScan – Design Data



# VEEMScan - Import

- Propeller scan information/details
- Radius, blade and mean pitch bar graph
- Local pitch bar graphs
- Profile plots with design and profile guides
  - Overlay or separate profiles
- Evaluation to ISO 484 class with graphic

## **VEEMScan - Reporting**

- Propeller scan details display

The screenshot displays the 'Propeller: 121702/01 - 1' window in the VEEMScan application. The window has a blue title bar and standard Windows window controls. Below the title bar is a tabbed interface with tabs for 'Propeller', 'Mean Pitch', 'Local Pitch', 'Profile', 'ISO', and 'Graphic'. The 'Propeller' tab is active, showing two main sections: 'Customer Details' and 'Propeller Details'. The 'Customer Details' section includes fields for Customer (PRINCESS YACHTS INT.), Street (NEW PORT STREET STONE HOUSE), City (PLYMOUTH), State (DEVON), Postcode (PL1 3QG), Country (GBR), Contact (ALEX STEVENS), Email, Phone (+44 1752517 081), and a Notes field with a scroll bar. The 'Propeller Details' section includes fields for Propeller Id (121702/01), Design (117170-1), Diameter (26), Pitch (36.4124), Hand (RH), Serial No., Units (in), Class (S), Scan Id (1), Operator (STEWART), Date (13/01/2010 9:42:04 AM), and a Notes field with a scroll bar. A 'ReScan' button is located next to the Scan Id field.

**Propeller: 121702/01 - 1**

Propeller | Mean Pitch | Local Pitch | Profile | ISO | Graphic

**Customer Details:**

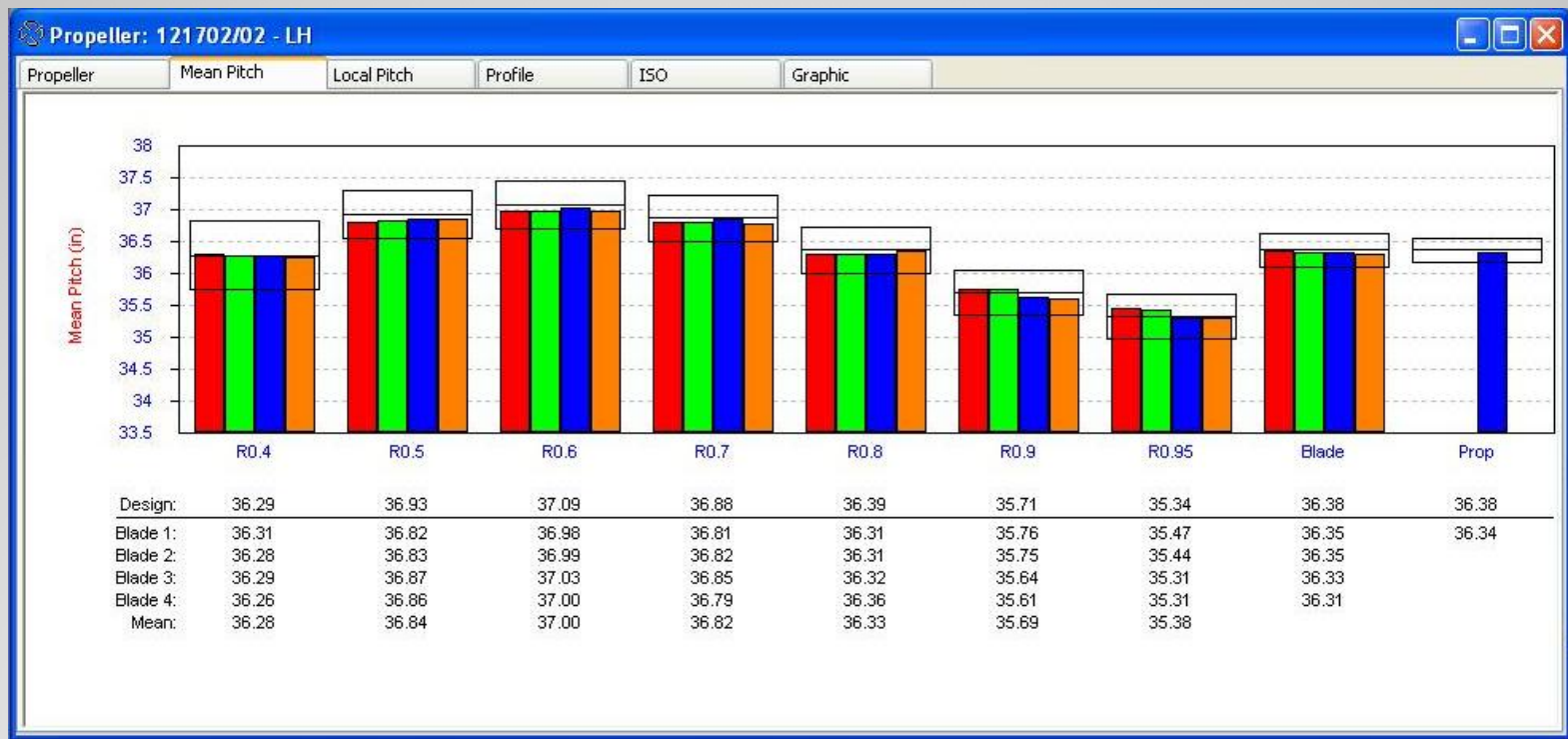
Customer: PRINCESS YACHTS INT.      Contact: ALEX STEVENS  
Street: NEW PORT STREET STONE HOUSE      Email:  
City: PLYMOUTH      Phone: +44 1752517 081  
State: DEVON      Notes:  
Postcode: PL1 3QG  
Country: GBR

**Propeller Details:**

Propeller Id: 121702/01      Scan Id: 1      ReScan  
Design: 117170-1      Operator: STEWART  
Diameter: 26      Units: in      Date: 13/01/2010 9:42:04 AM  
Pitch: 36.4124      Class: S      Notes:  
Hand: RH  
Serial No.:      Part No.:

# VEEMScan – Display Scan

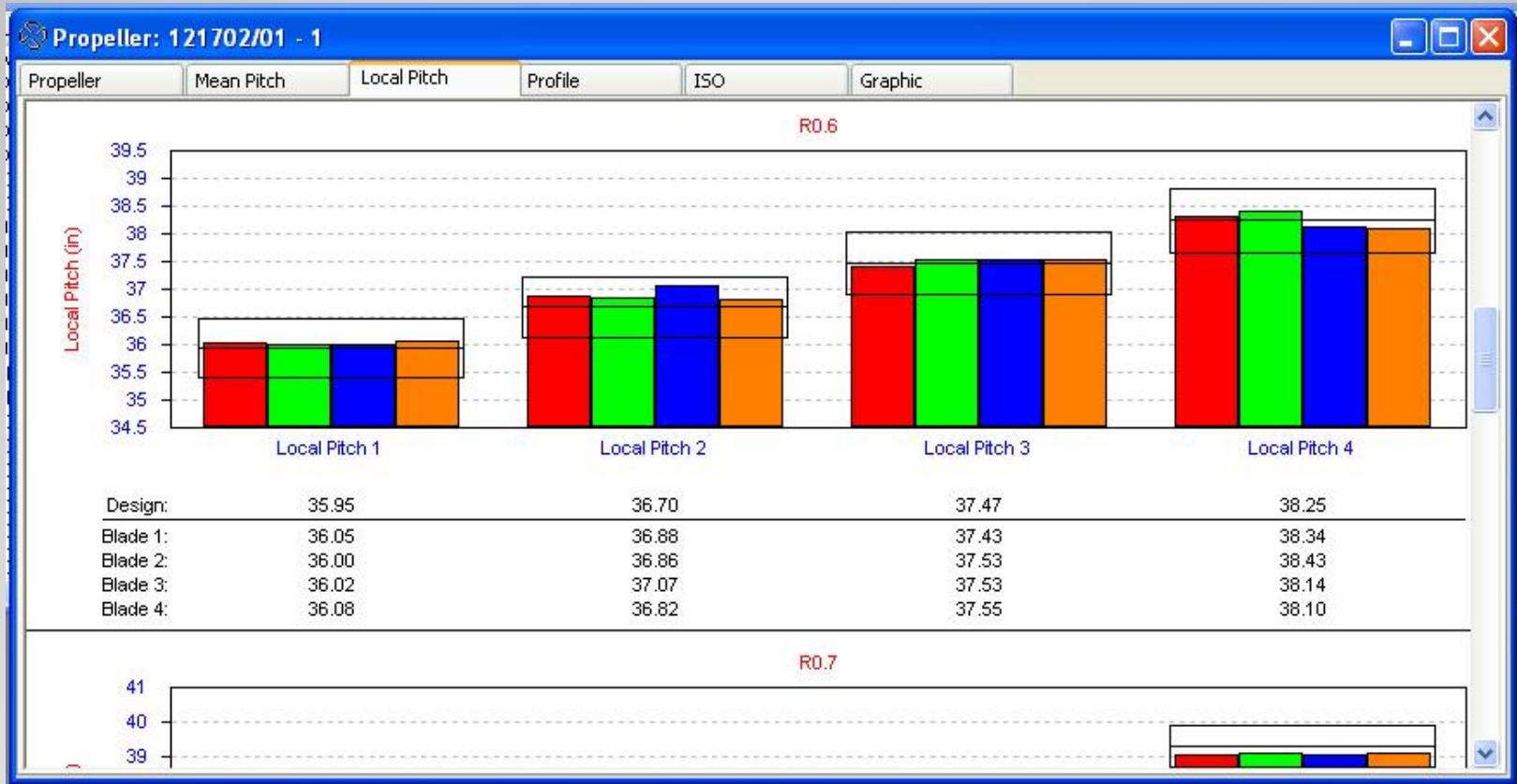
- Familiar radius, blade and mean pitch display



# VEEMScan – Display Scan



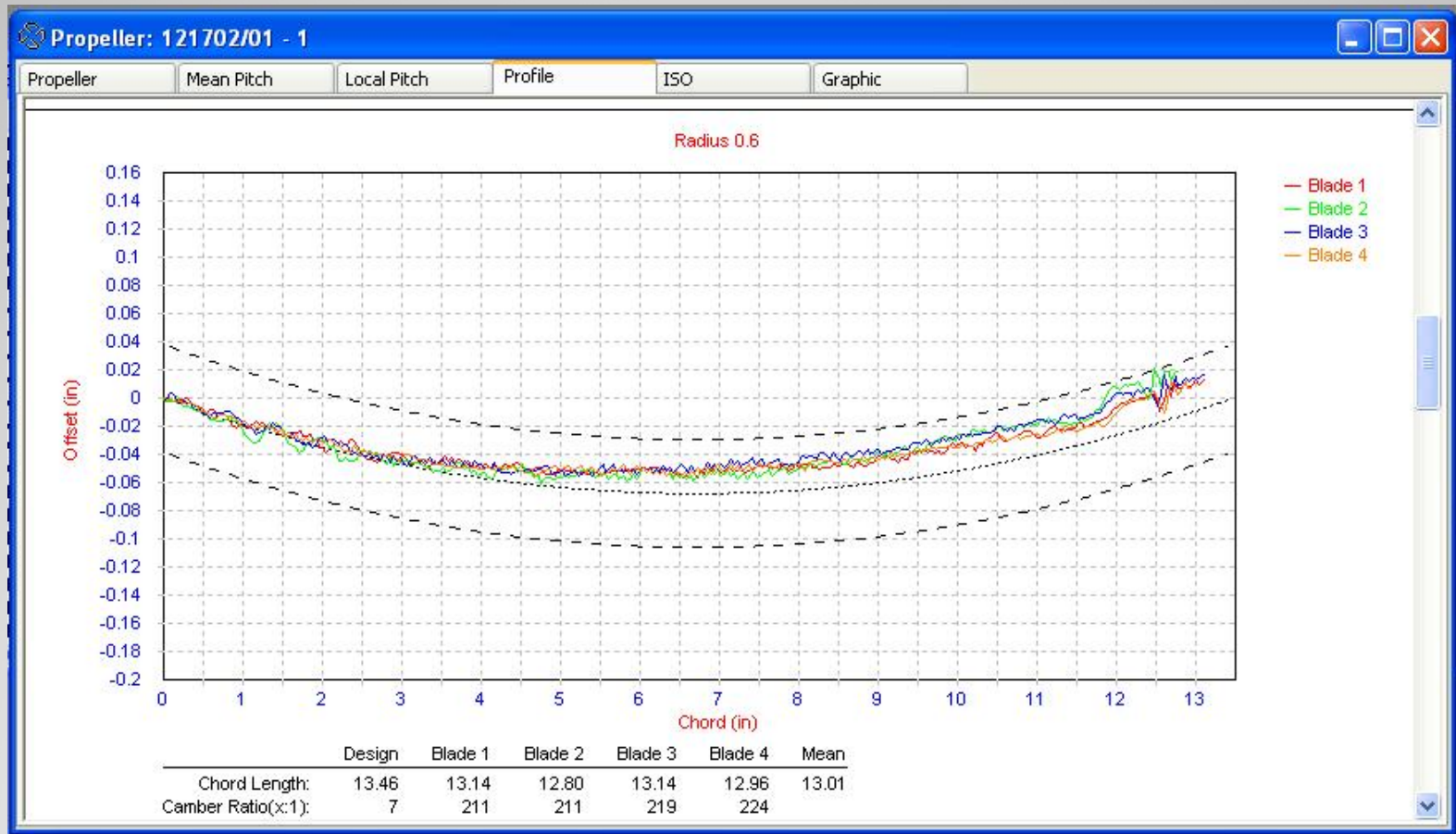
- Local pitch display according to ISO 484 class



# VEEMScan – Display Scan

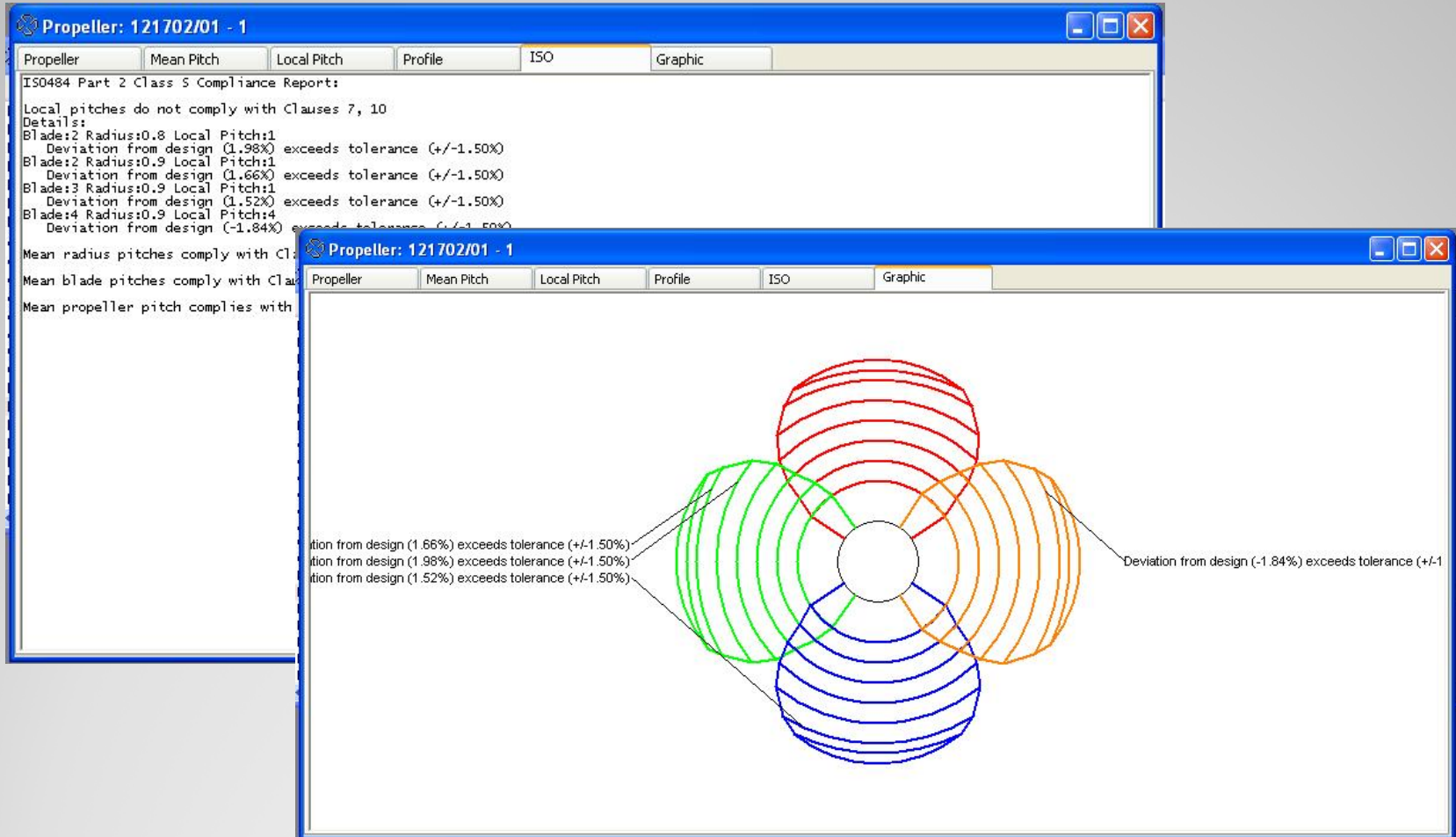


- Profile display with design reference and guides



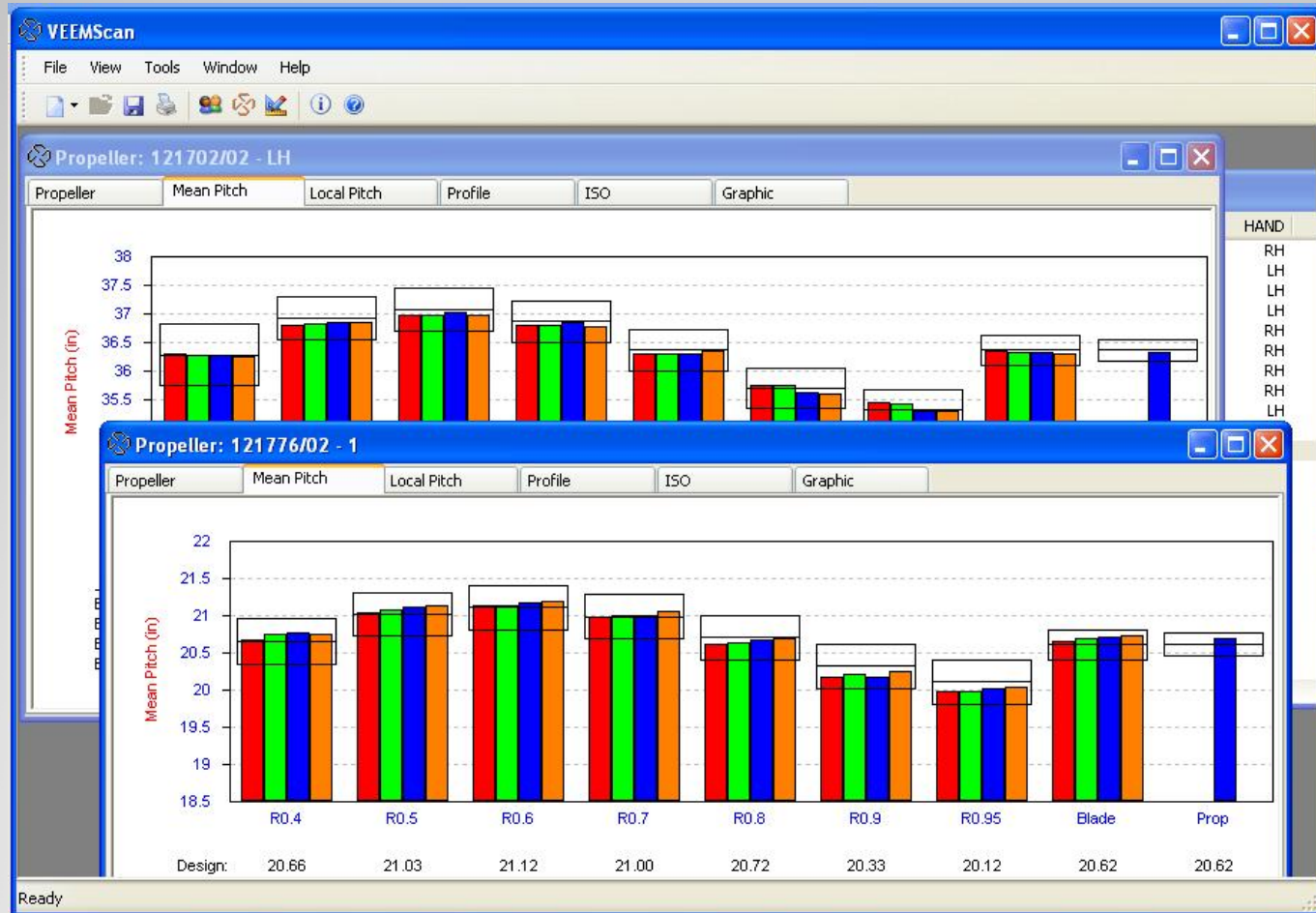
**VEEMScan – Display Scan**

- ISO evaluation / Graphic representation



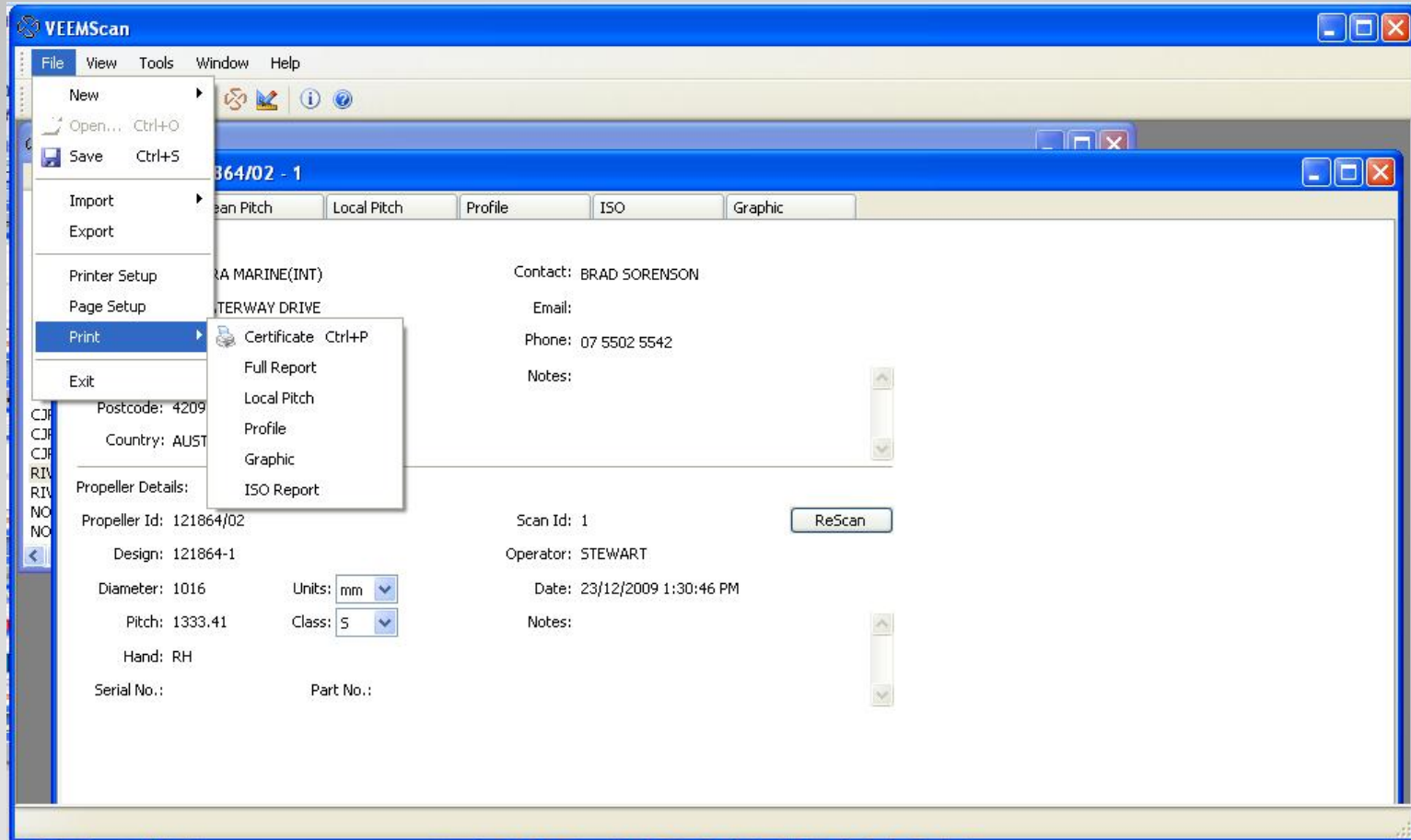
**VEEMScan – Display Scan**

- Open multiple scans at once for comparisons



# VEEMScan – Display Scan

- Print certificate, full or selected reports



# VEEMScan – Print Reports