CUSTOMER

WIND TURBINE COMPANY LOCATION TARANTO, ITALY / 2013-2014 EQUIPMENT V70 WIND TURBINE APPLICATION GEAR BOX

PROVEN RESULTS

IMPROVED GEARBOX RELIABILITY

••• The company was amazed by how much contamination was retained by the magnetic filter element" - Alex Priori, Renox

CHALLENGE

Traditional filtration is unable to filter wear contamination under 4 microns in size that causes wear on close tolerance components such as bearings, gears and shafts.

A bearing failure in a wind turbine gearbox can cost in excess of \$500,000. This figures does not account for downtime and maintenance.

SOLUTION

Install an OEI ADD-Vantage 9000 on the gearbox to test it's sub-micron filtration capability. The test took place after the windmill had been overhauled and flushed with new gear oil.

RESULTS

The photo shows contamination removed from the system after 7 months of operation.











RESULTS

403.242.4221

The analysis shows that both ferrous (48.3%) and non-ferrous (51.7%) contamination down to 4 microns and below.

1.0		^	RENOX Srl		A
M	EC		Alastine (D	VESTAS - WIND TURBINES GIORGIONE 5 V47 12569 Gearbox Particulate from Magnetic Rod	MINUTE HISTORY CONTROL
			Motor	Hansen - EH652C - 002/	
			-	AM0052	
DIAG	NOSI ME	CCANICHE	A State of Management	Userrots.	
Specifi	i Sumilii Ko	eetted con Storen Double antificate ISO 9001 Cen RINA A/193697	doth. Request Particulate ma by washing particulate as under viscout washed with observed und For a chert composition spectrometry- the particulati pom. The c quantistive of presence of silicon, zinc, sopper, and n	te detected and in most of natur	culate-matter. the cloth (cm Ex5) inical action. The vered and filtered sk, subsequently articulate matter tached photos). of the elemental occeded to RDE dak electrode with with standard oil 0 measure semi- ate matter, High a of phosphonas, lockm, chromium, re magnetic metal
			-	DolL Assistanting P	4. Style=1, 30 Huly 201-
TEXICONE	ROPA 320	Sample D	539745E P462031	120L Ana Agrico P	16 Jorgan L 30 Way 2014
	ROP4 320			1201_AllaAlar.tho P	6 20 pmL 30 10 44 201
	ROPH 300	Sorrario ID Sorrario Dallo Dalle Received		Upoli, Awanay the P	P. P. Sand St. Cont. Sol.
	R0P4 320	SAVEN DAN	22 mm 2014	Upoli, Awanay the P	N WYML XI NAF XI
	ROPH 300	Sovuelo Dato Data Received	22 mm 2014	Upott, Awanay the P	er ochert 30 erst 201
	ROPH 380	Sovieto Dato Date Received. HA (200 Co)	22 mm 2014	Upoli, Awanay ino P	6 24 juit 20 10 4 201
	R0(94 32)	Sawalo Delo Dale Received HH 1288 OF Heat IV	22 mm 2014	Upoli, Awanay ino P	6. 27 juit 20 may 201
		Sovephy Dello Date Received WH Filter OF Health (1) Hardy Sogle	22 999 2014 211 may 2014	Upott Analysiso P	6. 27 juit 20 may 201
	ROPH 300	Sawalo Delo Dale Received HH 1288 OF Heat IV	22 mm 2014	Upoli, Awanay ino P	њ. заранц. 30 мар 201
	Iron	Sovieto Bello Dani Received HH LEN OF Hells D Lai dy toget	22 www.2014 28 www.2014	Upoli, Awarday the P	4. 27jani, 30 may 201
Vede:	Iron Document	Sovupio Dello Dale Receive d HH Little Cor Have put Sogler ppm gain	9452011 22 mm 2014 211 mm 2014 211 mm 2014 1796 111	Upoli, Awarday the P	4. 2rjan I. 30 may 20
ASTIN CARSO	Iron Dhomsan- Nickei	Sovupio Dello Tase Received HH Tole Cur HH	9450011 22 0 mity 2014 28 mmy 2014 28 mmy 2014 1796 1111 BD	Upoli, Awarday the P	4. 27 pm L 30 may 20
ASTRA CARSON METALLIC WETALLIC	Iron Discon attri- Nicon a Moligitationary	Sovupab Dello Dale Received Hit Tale Car Heller (17) Marie Nogle Saler- galer- galer- galer-	3450011 22 mmy 2014 28 mmy 2014 28 mmy 2014 111 80 41	Uboli, Awanay ino P	6 27 jan L 30 may 20
ASTIN CARSO	Iron Dimonsum Nick is Molgisteruurt Kjernitslags	Sovephy Dello Dam Received He Totar OF Heat for South Heat for South Heat Heat Heat Heat Heat Heat Heat Heat	рискон 22 кину 2014 211 жину 2014 1796 1111 80 41 22	Upoli, Awarday 190 P	6. organi, 30 may 20
ASTRA CARSON METALLIC WETALLIC	Iron Discors auto Noing Estimators Asian Industri Estan Industri Long I	Sovieto Dello Dani Recoverd Hit i Tala Cor Hitta Cor Hit	Microin 22 mmy 2014 21 mmy 2014 21 mmy 2014 1796 111 B0 41 22 24	Upoli, Awarday the P	њ. ₂₀ ран <u>I</u> 30 мар 20
ASTRU CASSS METALLIC WETALLIC	Iron Dirozmiam Notis Motjssimuert Alien Hitap Lonat Cooper-	Sovupio Dello Tase Receive d HH I Tas UP Have put sogne ppm pare pare pare pare pare pare pare	34/3011 22 mmy 2014 211 mmy 2014 1796 111 80 <11	Upoli, Awarday the P	4. 27 jan (. 20 may 201
ACTU/CASSS METALLIC WETAL	Iron Dhromain Nickie Malgistereurt Klernitaus Linki Dispar Th	Sovupio Dello Tase Received HH Tale Cur HH	9452011 22 mmy 2014 211 mmy 2014 1796 1111 BD 41 22 24 87 41 87 41	Uboli, Awanay ino P	4. 20 per 1 30 may 201
ACTU/CASSS METALLIC WETAL	Iron Dimonsum Nick simulari Kien islari Linki Doppor Tas Siyen	Sovupio Dello Dale Received HH Tole Cur HH	3453031 22 mmy 2014 28 mmy 2014 28 mmy 2014 1796 111 80 41 22 24 87 61 61	Upoli, Awarday 190 P	6. 27 juit 20 may 201
ACTUI CUESS WETALLIC WETALLIC WETAR ELEMENTS	Iron Discussion Noing Sciencers Science Sciencers Science Science Science Science Science Science Science The Science The Science The Science The Science The Science The Science The Science Science Science The Science Science The Science	Sovieto Dello Dani Recoverd Hit i Recoverd Hit i Recoverd South So	Mc2011 22 mmy 2014 21 mmy 2014 21 mmy 2014 21 21 111 80 41 22 24 87 41 22 24 87 41 2	Upoli, Awarday 190 P	6. 20 per 201
ACTU/CASSS METALLIC WETAL	Iron Discontain Nick III Nick III Nick III Nick III Stant III Disper The Styles The Styles Theorem Antencery	Sovupio Dello Dalla Recoverd HH Talla UP Harris UP Harris UP Harris Dalla South South South South South South South South South South South	Microin 22 mmy 2014 21 mmy 2014 21 mmy 2014 21 1796 111 80 41 22 24 87 41 21 24 87 41 2 45	Uboli, Awanay ino P	4. 27 per L 30 4 4 4 201
ACTU CASS WETALLC WETALLC ELEMENTS	Iron Diroomiam Nick is Mohjssimuurt Alien Hilap Lond Long Tis Styler Tis Styler Tisson Styler Antimony Mohjarkese	Sovupio Dello Tase Receive d HH Filler UP Have pro sogne ppm gains gain	HC2011 22 mmy 2014 211 mmy 2014 1796 111 80 41 22 24 87 41 2 24 87 41 2 24 87 43 45 204	Uboli, Awanay ino P	4. 27 juni (30 m 4 201
ASTINI CHESS METALLIC THEAR ELEMENTS	Iron Dhomain Nick e Molystemuer Alien tutas Leavi Dopper Tis Styler Tis Styler Tise Styler Tiseur Antrosoy Morganese Stice Stolken	Sovieto Dello Dale Receive d HH LEE OF Roger Parts ppm parts parts parts parts parts parts parts parts parts parts parts parts parts parts parts parts parts parts	Microin 22 mmy 2014 210 mmy 2014 210 mmy 2014 111 80 41 22 24 87 41 22 24 87 41 2 41 2 41 2 41 2 45 204 327 4		6. 27 juil (30 may 201
ASTINI CHESS METALLIC THEAR ELEMENTS	Iron Discursum Noing Sciencers Sciences Lossi Despar- The Styler The Styler The Styler The Styler The Styler Styler Styler Styler Styler The Styler S	Sovieto Dello Dam Recoverd HH TERIO Notes (D) Notes (D)	Microin 22 mmy 2014 21 mmy 2014 21 mmy 2014 21 1796 111 B0 41 22 24 87 <1	Uboli, Awas Agri 190 P	4. 20 per 1, 20 may 201
ASTINI CHESS METALLIC THEAR ELEMENTS	Iron Disconstants Nick te Mick te Mick te Mick te Listeri Dopper The Dopper The Dopper The Styler The Antencey Mick te Stice States Stockets Stockets Stockets Stockets Stockets Dopper	Sovieta Dello Dale Recover d HH Tale VIP Harry VIP Harry VIP Harry VIP Harry VIP Harry Har	H(201) 22 mm, 2014 21 mm, 2014 21 mm, 2014 1796 111 B0 41 22 24 B7 <1	Upoli, Ania Agri Bo P	4. 27 per L 30 4 4 4 201
ASTINI CHESS METALLIC THEAR ELEMENTS	Iron Dhoamiam Nick is Mohjstemuurt Alian Haap Lenkil Dooper Tits Styler Tits Styler Titseitam Antenony Mohjarkese Stica Stolarn Vorken Poblosiam	Sovupio Dello Tase Receive d HH Tale XV Have pro sogne ppm quero q	NICROFIL 22 mmy 2014 211 mmy 2014 211 mmy 2014 1796 111 B0 41 22 24 B7 41 2 24 B7 41 2 24 B7 43 21 204 327 4 2 12 12/12		4. 27 juit 20 may 201
ASTRA CHESS METALLIC WEAR ELEMENTS ASTM CHESS CONTAINING MIT	Iron Dinosculari Nicki Billionuuri Alian Itulari Laudi Dopper Tita Selver Titaniare Antropoy Alian Bartose Silica Social	Sovieto Dello Dale Receive d HH LEE OF Fores OF	H(201) 22 mm 2014 211 mm 2014 1796 111 80 41 22 24 87 41 22 24 87 41 2 24 87 41 2 24 87 41 2 24 87 4		
METALLIC WEAR ELEMENTS	Iron Dhoamiam Nick is Mohjstemuurt Alian Haap Lenkil Dooper Tits Styler Tits Styler Titseitam Antenony Mohjarkese Stica Stolarn Vorken Poblosiam	Sovupio Dello Tase Receive d HH Tale XV Have pro sogne ppm quero q	NICROFIL 22 mmy 2014 211 mmy 2014 211 mmy 2014 1796 111 B0 41 22 24 B7 41 2 24 B7 41 2 24 B7 43 21 204 327 4 2 12 12/12		

QUOTES@ONEEYEINDUSTRIES.COM