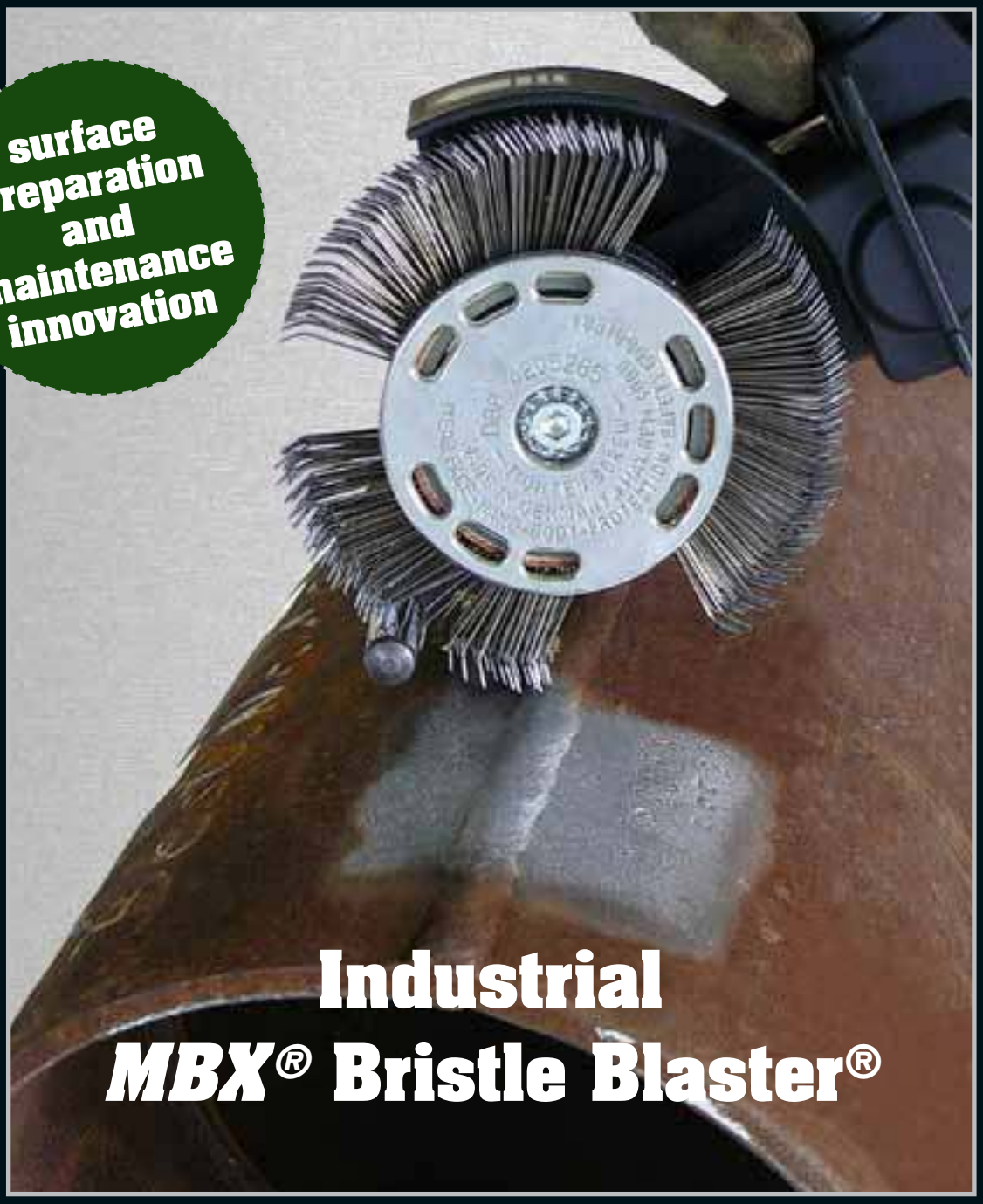
MORE THAN POWER

MONTI
WERKZEUGE GMBH • BONN • GERMANY

surface preparation and maintenance innovation



Industrial *MBX®* Bristle Blaster®

MBX®– 'GREEN' SURFACE PREPARATION SYSTEMS

www.monti.de

QUALITY MADE IN GERMANY SINCE 1987

MORE THAN POWER

MONTI
WERKZEUGE GMBH • BONN • GERMANY

Understanding 3 key features of the

Bristle Blasting Process

1 **Q: What is the Bristle Blasting Process?**

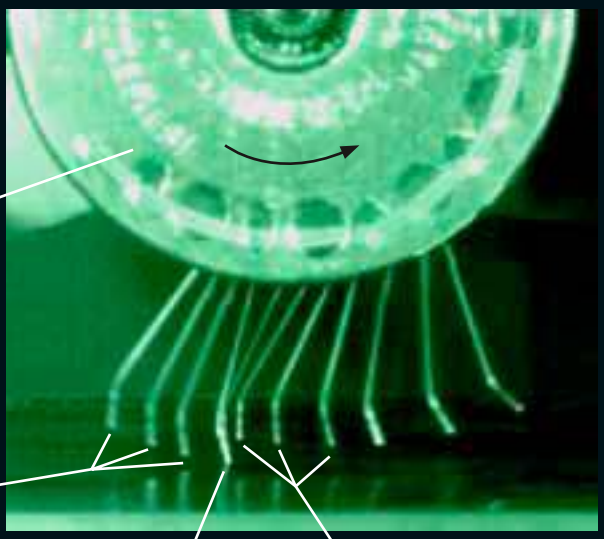
A: Bristle Blasting is a new process that uses a specially designed rotary bristle tool for achieving both corrosion removal and an anchor profile.

2 **Q: How does the tool perform blasting operations?**

A: The rotating bristles are DYNAMICALLY TUNED to the power tool, which results in impact and immediate retraction of bristle tips from the corroded surface (see high speed photography).

3 **Q: How is this process similar to the abrasive grit blasting process?**

A: The bristle tips are designed to strike the corroded surface with kinetic energy that is equivalent to grit blast media, thereby generating a texture and visual cleanliness that mimics the grit blasting process.

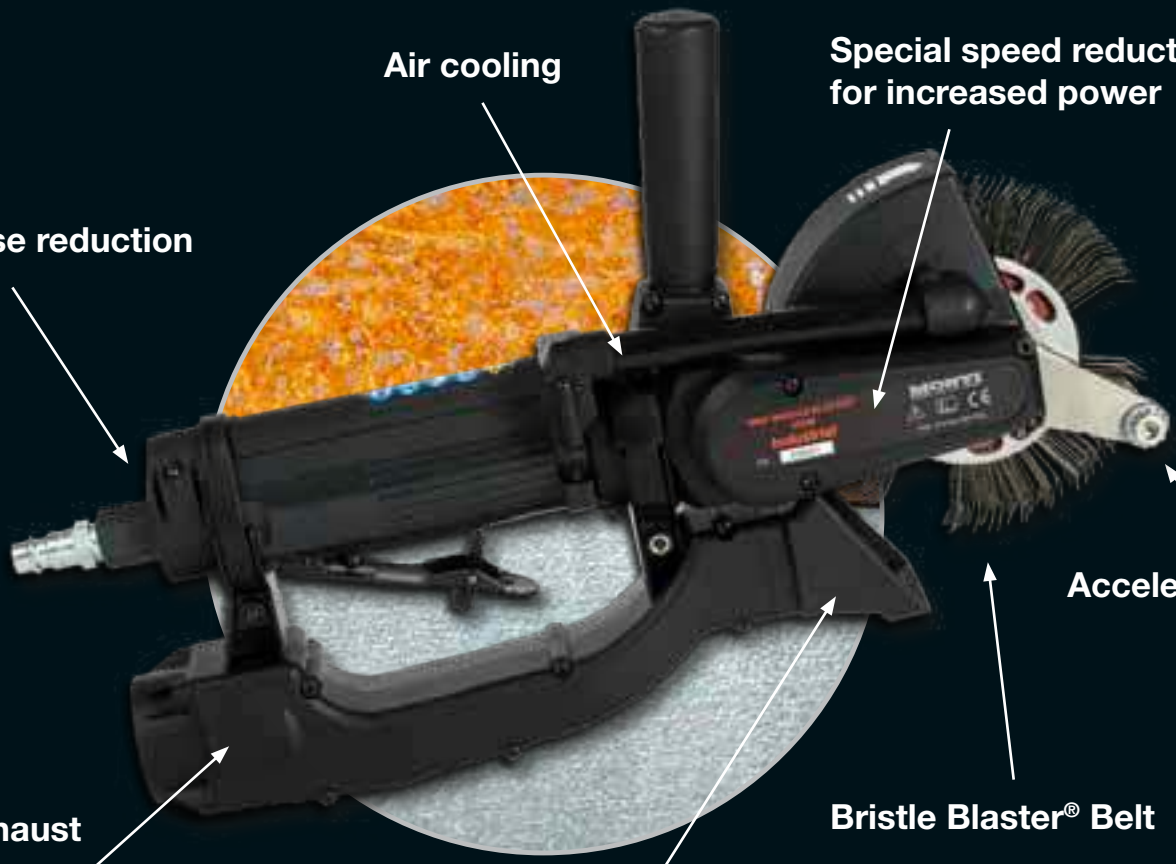


Time-exposed high-speed photography of single bristle illustrating the approach, impact, and retraction of bristle tip from steel surface.

Frame rate: 30,000 frames/sec
Hub speed: 2,500 rpm
Impact duration: 0.0003 sec

MORE THAN POWER

MONTI
WERKZEUGE GMBH • BONN • GERMANY



API 5L Grade X42 piping

- bristle blast
- near-white/white metal
- 1.1 m^2/hr
- 83 R_z

Demonstrated performance in corrosion removal

MORE THAN POWER

MONTI
WERKZEUGE GMBH • BONN • GERMANY

MBX® Bristle Blasters PERFORMANCE

Corrosion, Mill Scale, and Coating Removal ...
Restores surface to near white/ white metal visual standard

Improved Integrity of Treated Surfaces ...
Generates compressive residual stress along treated surface for crack growth resistance, improved fatigue life, and improved corrosion resistance

Surface Texture/ Anchor Profile ...
Roughness capability from 40-120 microns – also on weld seams

Negligible Heat Generation ...
Surfaces free of thermal damage/heat marking

Eco-friendly ...
“green” surface treatment, does not use/produce hazardous materials

Simple/Economical ...
Eliminates the need for complex and costly abrasive blast equipment

conventional Grit Blasting ←

newly developed Bristle Blasting →

MORE THAN POWER

MONTI
WERKZEUGE GMBH • BONN • GERMANY

ANNOUNCEMENT/
PRESS RELEASE

New Corrosion Removal Process, Technology.

MBX®– 'GREEN' SURFACE PREPARATION SYSTEMS

MONTI-Werkzeuge GmbH, Bonn, Deutschland

Recently Developed *Bristle Blasting* Process Simultaneously Removes Corrosion and Generates Anchor Profile*

Process Description and Principles of Operation

The ***bristle blasting*** process is a new innovation that both ***removes corrosion*** and generates an ***anchor profile*** by using a specially designed rotary bristle tool. This tool consists of ***ground wire bristle tips*** that are bent forward and dynamically tuned to a hand-held power tool which operates at approximately 2,500 rpm. The mechanical principles upon which the bristle blasting tool is based are summarized as follows: Bristle tips are designed to strike the corroded surface with ***kinetic energy*** that is equivalent to standard processes that use grit blast media. Immediately after the bristle tips strike the corroded steel surface, they retract (i.e., "rebound") from the surface, which results in both ***corrosion removal*** and a ***micro-indentation*** that exposes fresh surface. Consequently, surfaces that have been treated by the bristle blasting tool have a ***texture*** and ***visual cleanliness*** that mimics those obtained by traditional grit blasting processes.

Tool Performance and Life

Recently completed tests carried out at Marquette University, Milwaukee, Wisconsin, USA, have indicated that the bristle blasting tool can perform on a par with traditional grit blasting processes. That is, corroded/pitted steel surfaces have been restored to a ***near-white*** or ***white metal*** appearance after treatment. In addition, an anchor profile that ranges from ***65 µm to 83 µm (R_z)*** is routinely obtained on standard API 5L steel, which is commonly used for petroleum piping applications. This same testing program has also shown that corroded surfaces can be thoroughly treated at a ***rate of 1.1 m^2/hr.***, which is well within the life of a single bristle blasting tool. Finally, the bristle blasting process simultaneously generates a ***compressive residual stress*** along the treated surface which, in turn, can increase the ability of steel ***to resist cracking***, ***fatigue***, and ***stress corrosion***.

Process Advantages/Benefits

Chief advantages of the bristle blasting process lie in its ***simplicity*** and in its ***economical advantages***. The tool itself is driven by a light-weight hand-held power tool that can utilize either a standard electric power source or compressed air. Safety precautions taken by the operator are the same as those which apply to ordinary hand-held power tools, namely, work gloves, suitable work-clothing and appropriate face/eye protection should be worn. The tool has excellent mobility, and eliminates the need for complex equipment, work-suits, breathing apparatus, and grit-recovery systems that are commonly required for ordinary abrasive blasting processes. In addition, the bristle blasting process is ***eco-friendly***, and does not use or generate hazardous waste, thereby providing a "***green***" approach to corrosion removal and surface preparation of steel components.

Common Applications

Although the bristle blasting process is ideally suited for ***spot-repair*** applications, it can also be readily applied to larger surface areas where the use of other metal cleaning processes may be prohibitive or impractical. The process provides an efficient means for the ***removal of corrosion***, ***mill scale***, ***defunct protective coatings***, and for ***post-weld cleaning operations***. These applications frequently arise in a wide range of fabricating and infrastructure-support operations, such as ***onshore/offshore well drilling installations***, ***bridge refurbishment***, the ***fabrication and repair*** of ***naval/marine vessels***, and ***industrial maintenance applications***.

* Contact person for this document is **Professor Robert J. Stango**, **Ph.D.**, Marquette University, Milwaukee, WI USA **robert.stango@mu.edu**

MORE THAN POWER

MONTI
WERKZEUGE GMBH · BONN · GERMANY

MBX® Bristle Blaster® Industrial Pneumatic

Technical details:

Free speed:	3,500 rpm ± 5 %
Required air pressure:	6.2 bar (90 PSI) > Bristle Blaster Belt 23 mm
	5.2 bar (75 PSI) > Bristle Blaster Belt 11 mm
Average air consumption:	17.5 CFM (0.5 m^3/min) ± 10 %
Required interior air hose size:	3/8" (9.5 mm)
Pressurised air connection:	R 1/4
Weight:	1.2 kg

MBX® Bristle Blaster® Industrial Electric

Technical details:

Free speed:	3,200 rpm
Voltage rating AC (3200):	240 V +/- 10 %
Voltage rating AC (3200A):	120 V +/- 10 %
Amperes (3200):	2 A +/-15 %
Amperes (3200A):	4 A +/-15 %
Weight:	2.2 kg

MBX® Bristle Blaster® Belts
11/23 mm width

0.7 mm carbon spring steel angled and ground bristle tips
OD: 110 mm
ring colour: red

MBX® Bristle Blaster® Belts
11/23 mm width stainless steel

0,7 mm stainless steel angled and ground bristle tips
OD: 110 mm
ring colour: white

MBX® Quick Add®
11/23 mm

MBX® Air Pressure Regulators
11/23 mm

11 mm (blue)
23 mm (silver)
including couplings and nipple

MBX® SC Swivel Connector

MBX® Bristle Blaster® Industrial Sets

MONTI
WERKZEUGE GMBH · BONN · GERMANY

Steinbruchweg 2b · **DE-53227 Bonn**
Telefon +49 (0) 228 85 44 67 0
Telefax +49 (0) 2 28-47 60 99

http://www.monti.de
E-Mail: info@monti.de

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001 · UKAS MANAGEMENT SYSTEMS 001