



# **PETROLEUM INDUSTRY**



## **Ma'Aref TECHNOLOGIE (Pvt) Ltd.**

House # 8, Street # 6  
Fizaia Housing Scheme  
Airport Road, Rawalpindi - Pakistan  
TeleFax: +9251 447 0034  
Mobiles: 0336 666 0316, 0336 666 0317  
+92 336 666 0314, +1(973)-786-1576

E-mail: [MaAref@MaArefTech.com](mailto:MaAref@MaArefTech.com); [HYTORC\\_Pakistan@MaArefTech.com](mailto:HYTORC_Pakistan@MaArefTech.com)

[www.MaArefTech.com](http://www.MaArefTech.com)



# Bolting Applications Booklet - Worldwide

**FUTURISTIC LEAKAGE-ZERO  
BOLTING TECHNOLOGY**

**HYTORC**  
Since 1968



PetroChina Dushanzi Petrochemical Company  
Dushanzi City Xinjinag Province, P.R.C

Before Installation



## **PETRO CHINA Dushazi Refinery**

**E402 Diesel Hydrogen Equipment  
Heat exchanger cover plate flange  
A&B.**

**Every flange has 40 M42X3 bolts,  
bolt material 35CrMoA.**



Flange has been  
crushed.



Seal surface has  
been crushed.



Welded and regrounded the nut  
seat before installation.

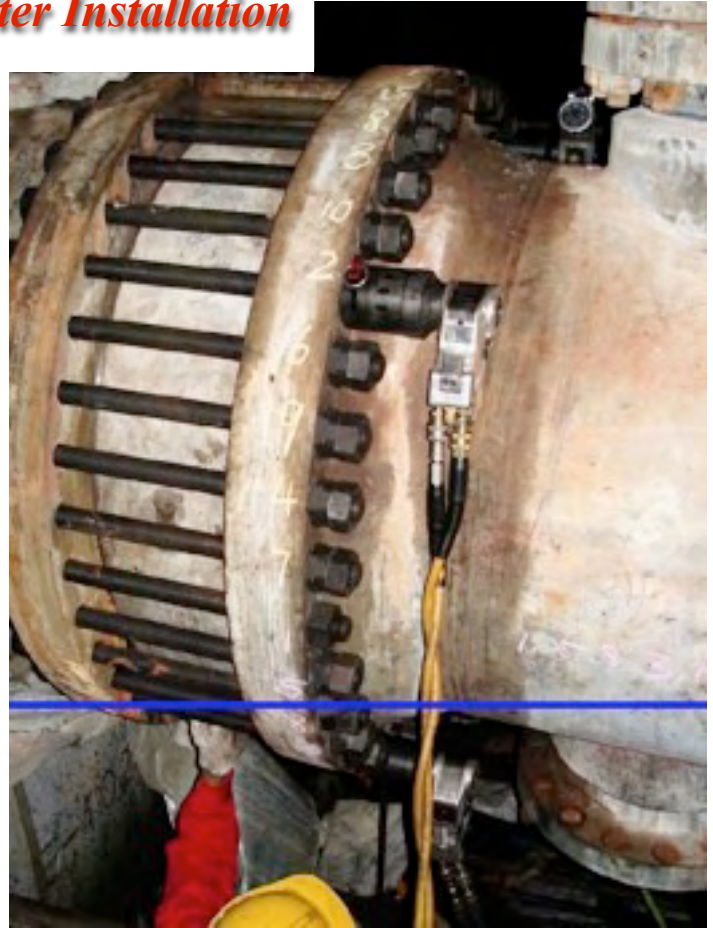


## Bolting Applications Booklet - Worldwide



PetroChina Dushanzi Petrochemical Company  
Dushanzi City Xinjinag Province, P.R.C

### *After Installation*



**TOOLS USED: AVANTI-3 x4 & HYTORC 230 Pump with HYTORC SIMULTORC system.**

**Application: Used 40 HYTORC LoadDiscs on E402 Diesel Hydrogen Equipment & Heat exchanger cover plate. The equipments runs in high pressure and high temperature. Leakage often happened at the flange in the past.**

**We completed the project at September of 2007, till now leakage zero (2009).**



**CHINA**  
**Territory Manager: Bruce Wu**

## Bolting Applications Booklet - Worldwide



**REACTOR-ELBOW FLANGE  
(20) 1-1/2" B16 BOLTS**



**REACTOR-INLET FLANGE A,B,C  
(12) 1-3/8" B16 BOLTS**



**REACTOR-CRUDE LINE FLANGE  
(20) 1-3/8" B16 BOLTS**

**HYTORC**  
Since 1968



**Marathon  
Oil Corporation**

### **PAST PROBLEMS:**

- X NO TOP CLEARANCE TO APPLY TOOLS OR BACK-UP**
- X HOLDING EQUIPMENT UPSIDE-DOWN**
- X USING OPEN END FOR NUT BACK-UP**
- X SINGLE TOOL-EXTENSIVE PROCEDURES**
- X NO QUALITY RECORDS**
- X ASSEMBLY TIME 4-1/2 HR**

### **NOW OPTIMIZED VIA-HYTORC:**

- ✓ TOOLS EASILY APPLY FROM BOTTOM**
- ✓ NUT BACK-UP NOT NEEDED W/HYTORC WASHER**
- ✓ TOOLING LOCKS ONTO WASHER-HANDS FREE**
- ✓ OPTIMIZED PROCEDURES- 2 PASSES**
- ✓ QUALITY REPORT/RECORDS FOR EACH FLANGE**
- ✓ HYTORC ASSEMBLY TIME 38 MIN**



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **LDH1000™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

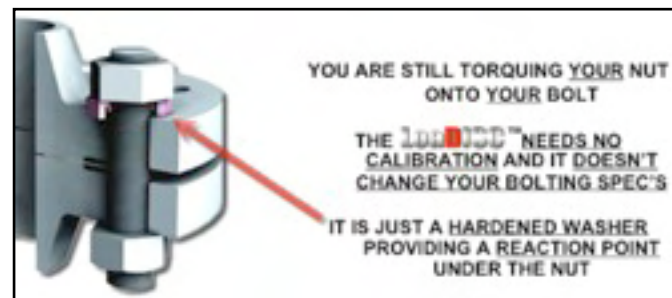
## Bolting Applications Booklet - Worldwide



**REACTOR 7V 108**  
**(38) 1-7/8" B16 BOLTS**



**7V 108**  
**(20) 1-3/8" B16 BOLTS**



**7E 101**  
**(20) 1-3/8" B16 BOLTS**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



**DUSHANZI REFINERY**

**REACTOR GAS PIPELINE**




(28) Pcs M42X4.5 studs,  
(4) AVANTI-3  
Result: Leakage zero

**REACTOR TOWER**



(20) Pcs M27x3 studs,  
(4) AVANTI-1  
(4) flanges



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **1000DD™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

**CHINA**  
Territory Manager: *Bruce Wu*

**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# KARAMAY REFINERY



**STEAM HEAT EXCHANGER**

(44) pcs M42X3 studs  
(4) AVANTI-1  
(2) flanges



**AFTER**

YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE 100000™ NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

**SAFETY - QUALITY - SCHEDULE**

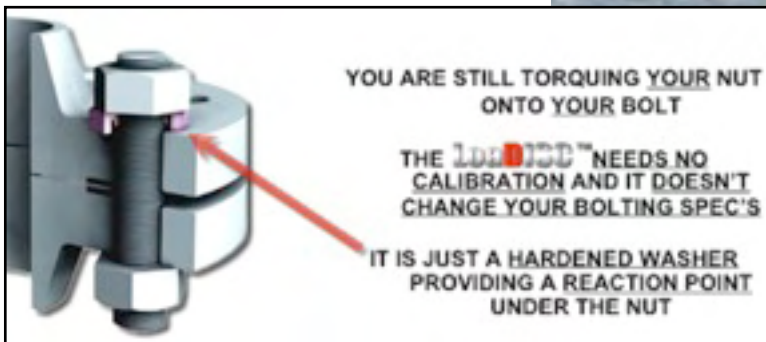
The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

# Bolting Applications Booklet - Worldwide



**KARAMAY REFINERY**

**ISOLATION VALVE**



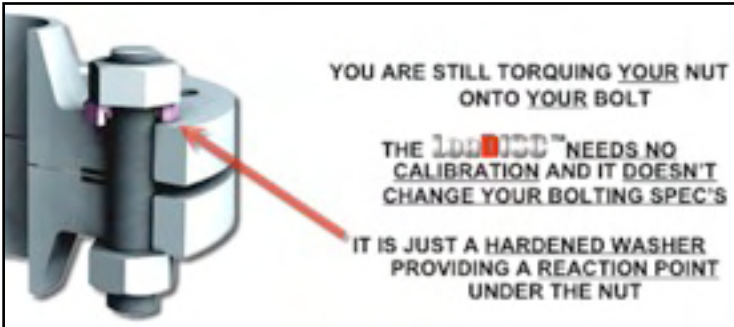
**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN





**KARAMAY REFINERY**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# TARIM SOUTHWEST PETROLEUM



**UREA  
CONVERTER**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## Bolting Applications Booklet - Worldwide



**TARIM SOUTHWEST PETROLEUM**



**AFTER**

(40) X2 pcs M27X3 bolts  
(4) AVANTI-1  
(2) flanges



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# DALIAN PETROCHEMICAL

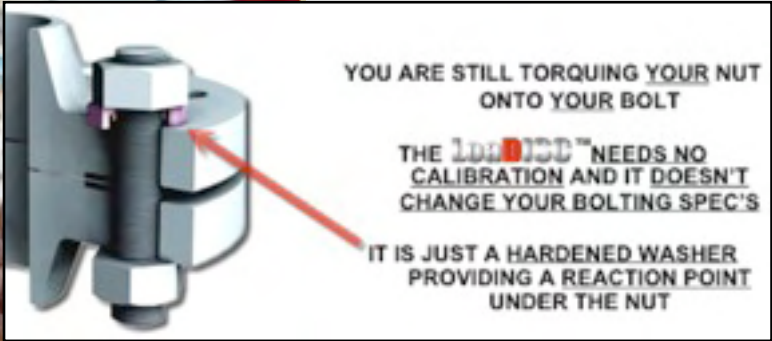
ALL FLANGES ON ONE COMPLETE MIDDLE PRESSURE STEAM PILE LINE

**STEAM CONTAINER  
UPPER FLANGE**

**Total 38 flanges  
installed**  
**Over 500 pcs  
LoaDISCs installed**



**AFTER**

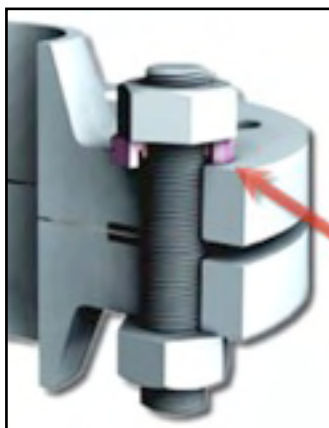


2hours 30 minutes  
finish installed 2  
flanges

**SAFETY - QUALITY - SCHEDULE**



# DALIAN PETROCHEMICAL



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **LD3DCC™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

## SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# QILU PETROCHEMICAL



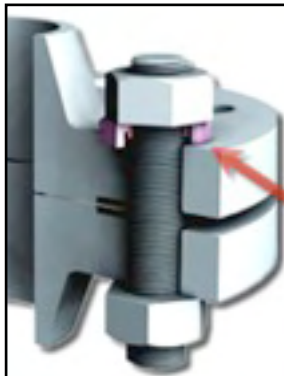
HEATER INLET FLANGE

**BEFORE**

2 flanges, every flange has (20) pcs studs M36X4



**AFTER**



YOU ARE STILL TORQUING YOUR NUT ONTO YOUR BOLT

THE **LD8130™** NEEDS NO CALIBRATION AND IT DOESN'T CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER PROVIDING A REACTION POINT UNDER THE NUT

**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



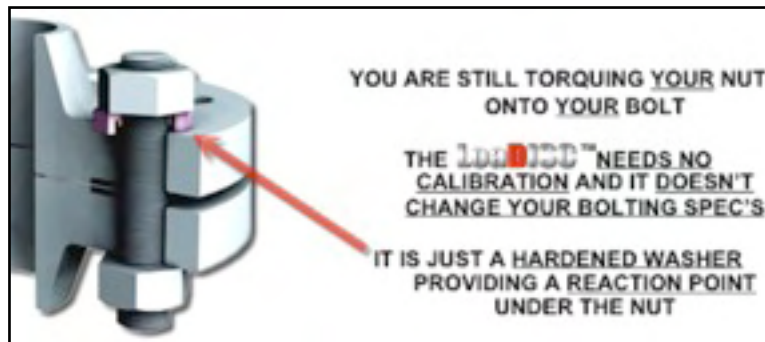
# DALIAN PETROCHEMICAL



**BEFORE**



**AFTER**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# QILU PETROCHEMICAL



FEED WATER PUMP  
FLANGE

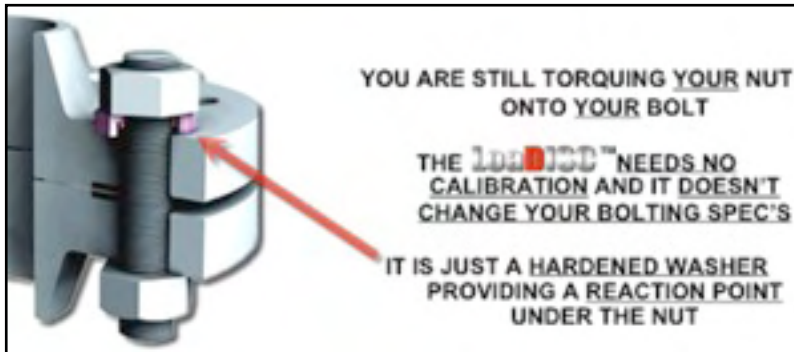
**BEFORE**

Total 3 flanges, every flanges has (12) pcs M39 studs

**AFTER**



6 hours for 3 flanges  
Result: leakage zero



## SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN





# QILU PETROCHEMICAL

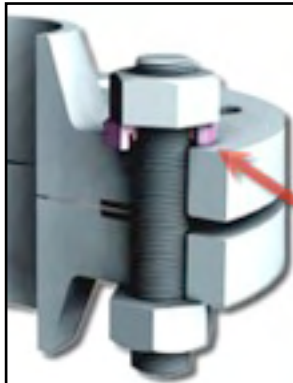
**BEFORE**



HIGH PRESSURE  
BOILER WATER PIPE  
FLANGE

**AFTER**

(16) Pcs M64X3 studs,  
it cost 3 hours  
15minuts.  
Result: Leakage zero



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **LDH100**™ NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

## SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



**GUANGZHOU PETROCHEMICAL**



**BEFORE**



**AFTER**



**HYDROGENATION LOWER  
OUTLET FLANGE**

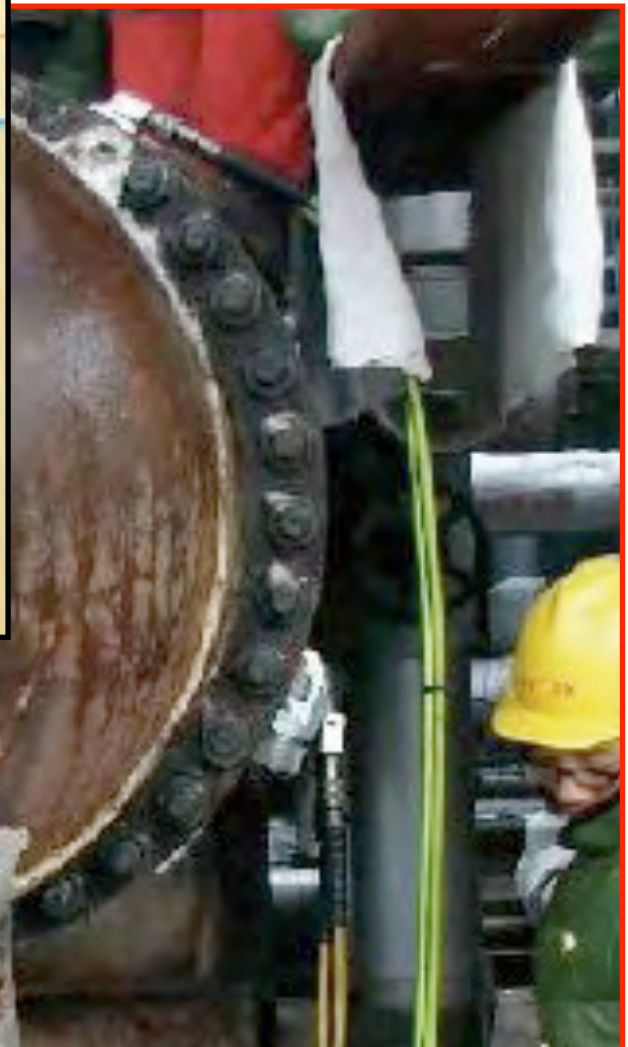
**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



Bolting Applications Booklet - Worldwide

# YANSHAN PETROCHEMICAL



## SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



**YANSHAN PETROCHEMICAL**

**INLET AND  
OUTLET FLANGES**



- (16) X3 pcs M33X2 studs
- (3) Flanges
- (4) AVANTI-1

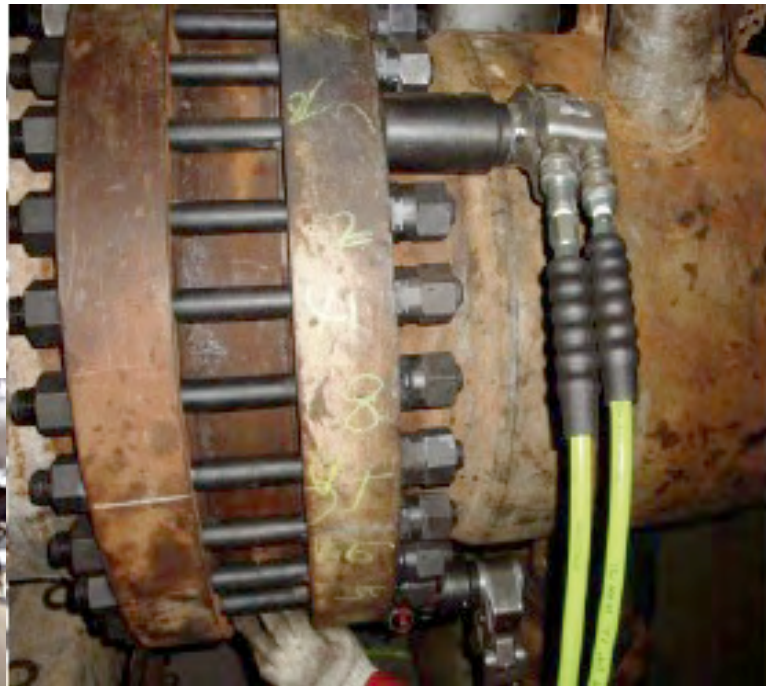
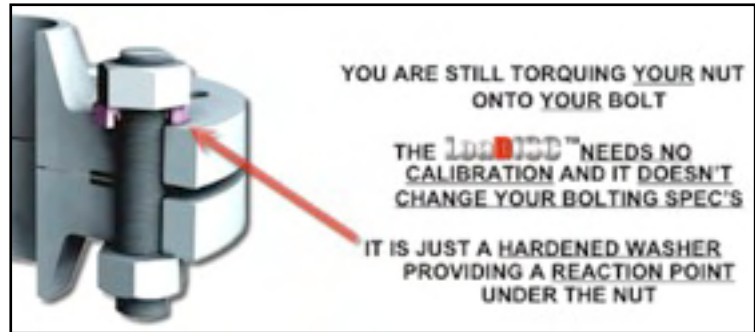
**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

# Bolting Applications Booklet - Worldwide



# SHANGHAI PETROCHEMICAL



# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



**SHANGHAI PETROCHEMICAL**



**REACTOR GAS PIPE LINE**



**AFTER**

(20) pcs M45X3 studs  
(1) Flanges  
(4) AVANTI-1

**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



**YANGZI PETROCHEMICAL**



(16) pcs M30X3.5 studs  
(1) Flanges  
(4) AVANTI-1

YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **AVANTI-1**™ NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

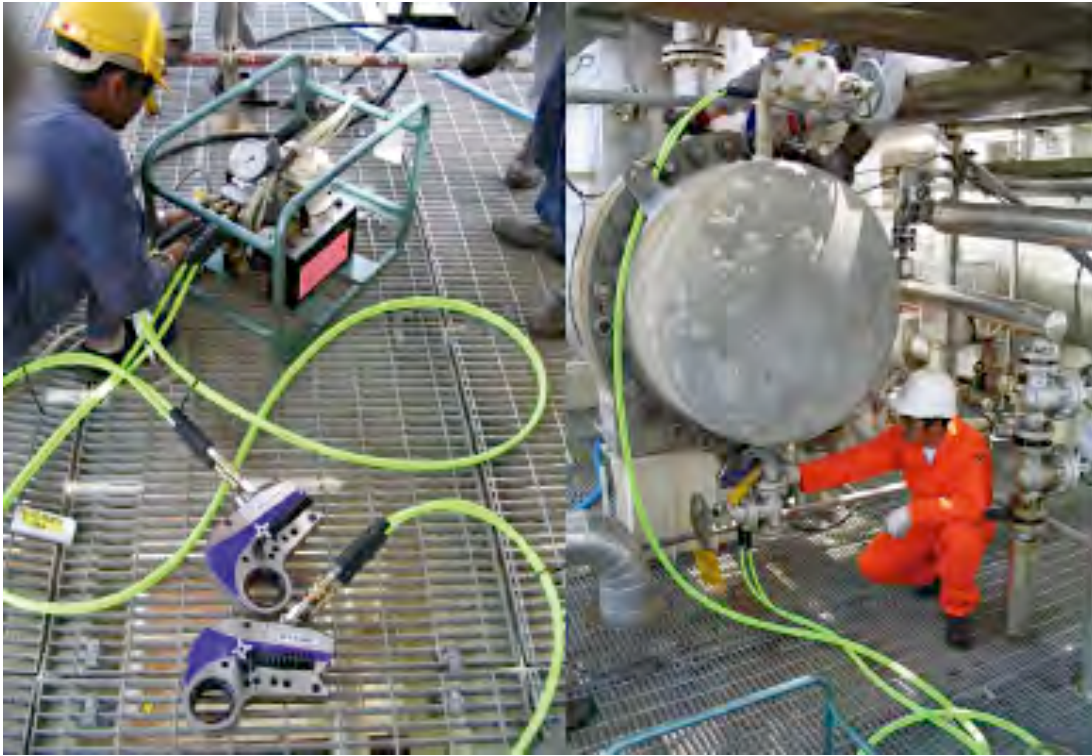
IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



## E102A/B Exchangers



*Use Of Stealth-8s  
To Break Open  
Exchanger  
Covers, 65mm  
AF.*

*Previous method  
of traditional  
flogging was  
time-consuming  
and unsafe work  
practice.*



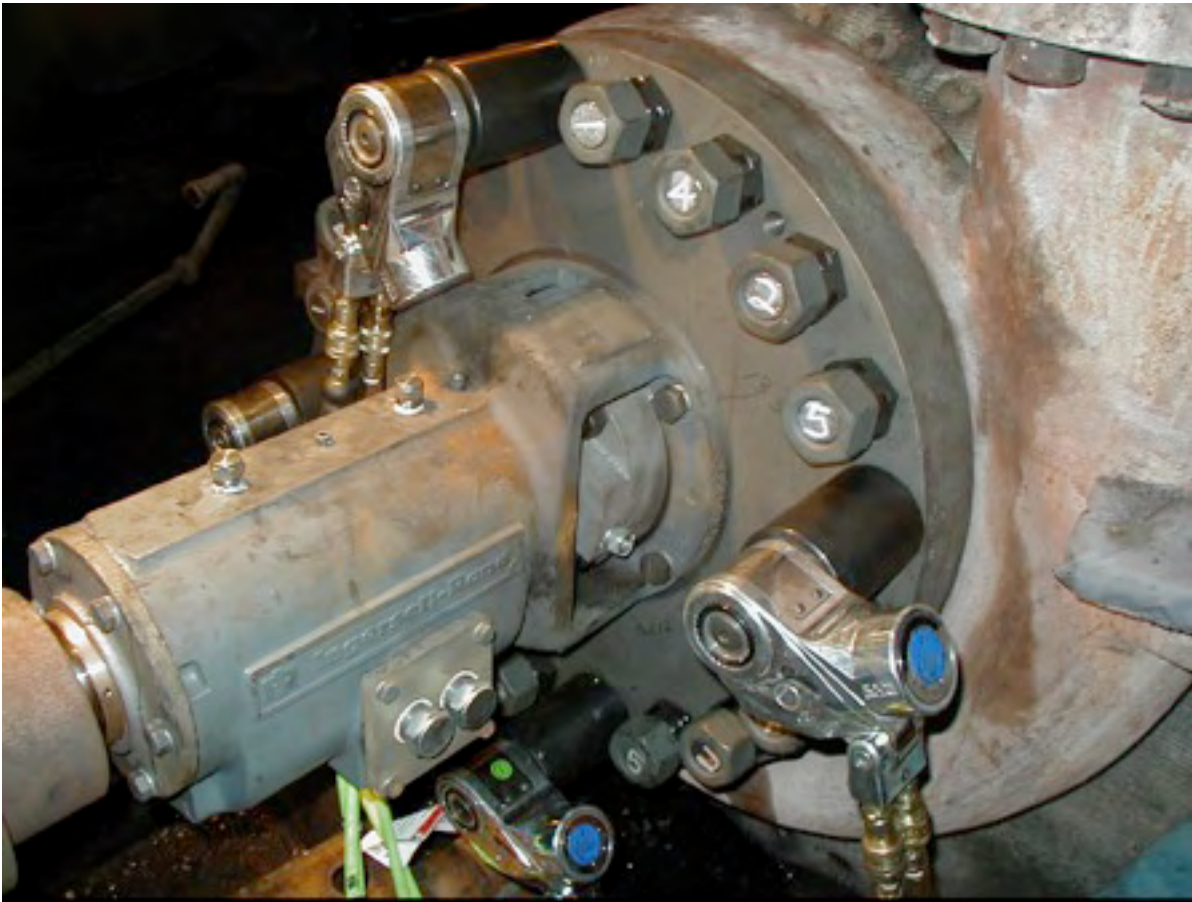
**E102 A/B Exchangers shutdown took only 2½ days, and without any leaks during pressure testing after!!!**

# SAFETY - QUALITY - SCHEDULE

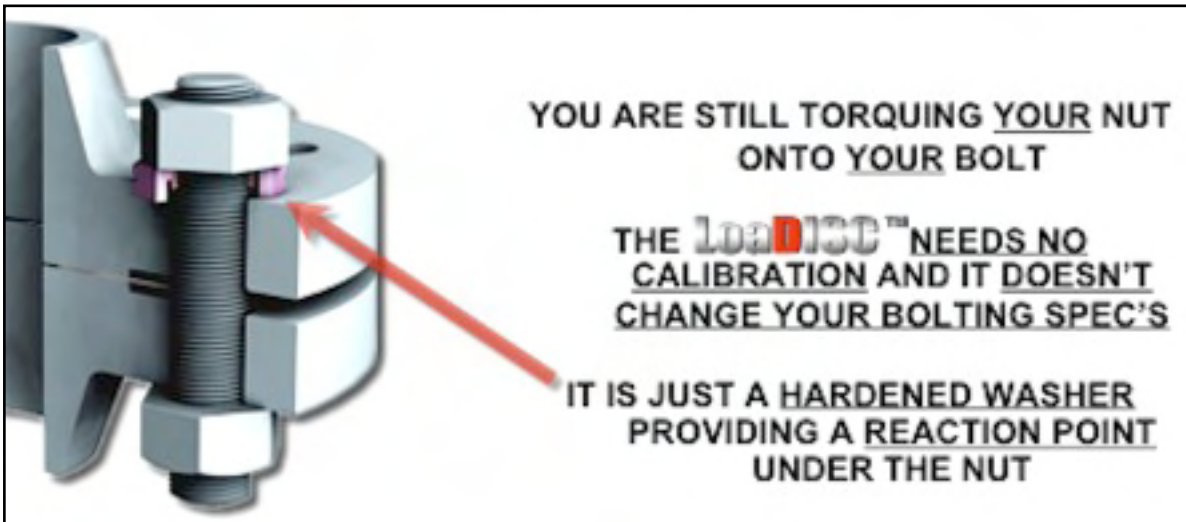
The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



## Bolting Applications Booklet - Worldwide



**FORCED BOILER CIRCULATION PUMP**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

Bolting Applications Booklet - Worldwide

# **PLANT-WIDE BOLTING OPTIMIZATION**

## **FCC - TURNAROUND 05**

**HOVENSA**  
PEOPLE FEELING A BRIGHTER FUTURE

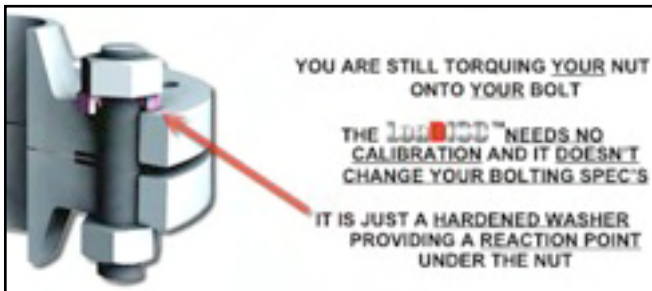
**HYTORC**

### **FCC TURNAROUND 2005**

# **SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

# Bolting Applications Booklet - Worldwide



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **LDI 1000™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

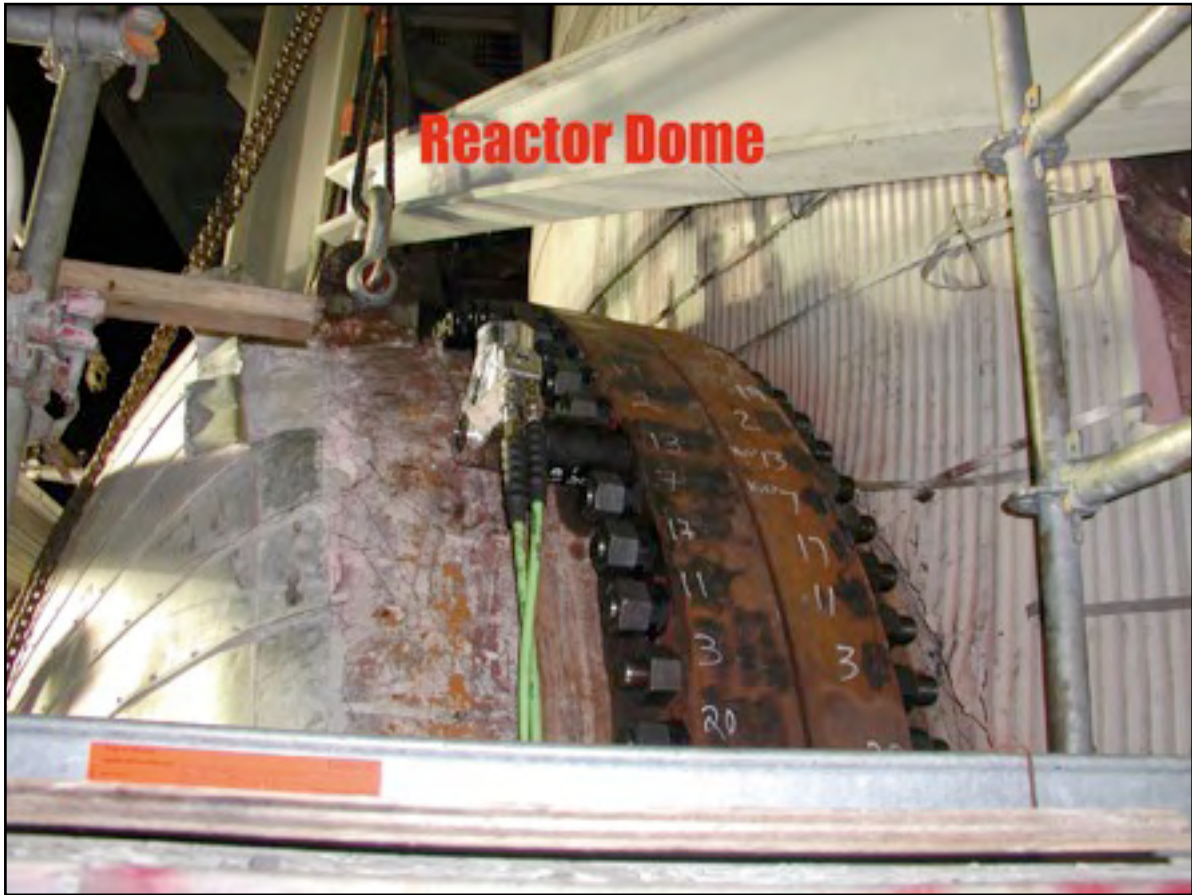
IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

**SAFETY**  
**FREE YOURSELF OF  
REACTION ARM  
BACKUP WRENCH &  
TOOL-HOLDING WITH  
"JUST" A WASHER!**

# SAFETY - QUALITY - SCHEDULE

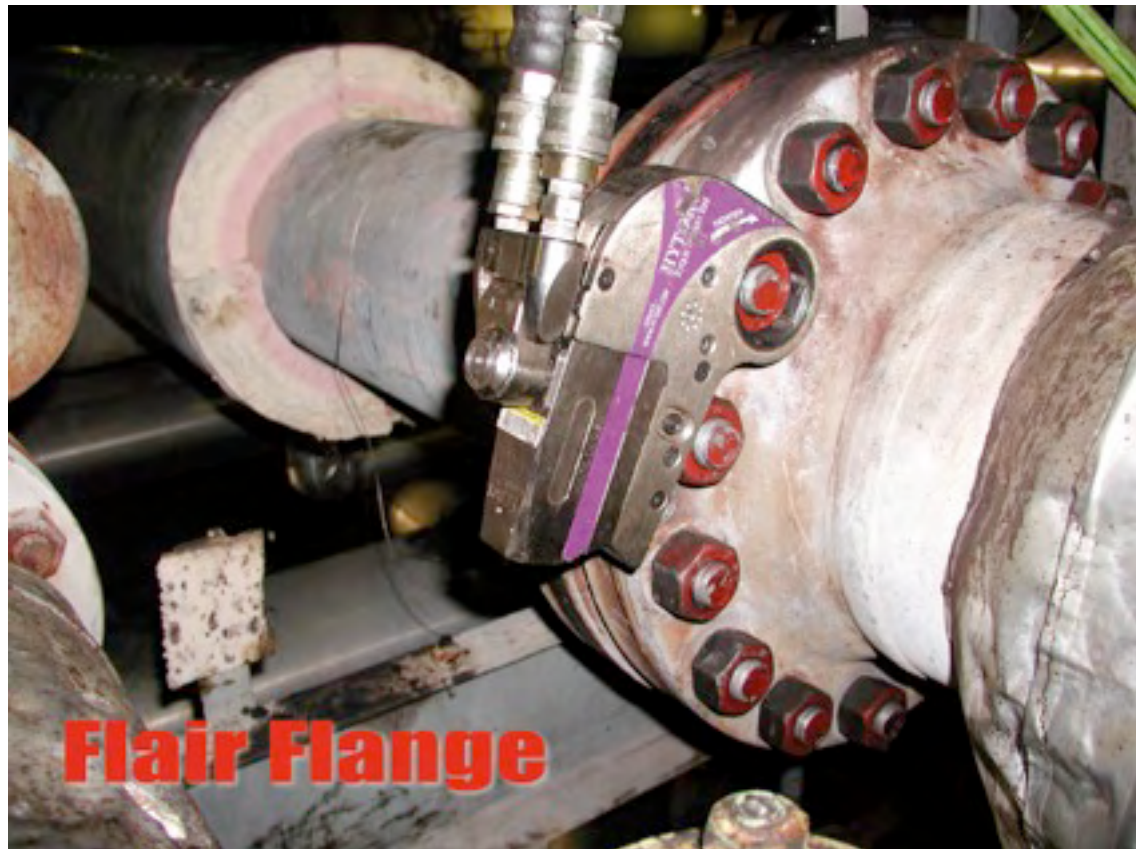
The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## Bolting Applications Booklet - Worldwide



The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

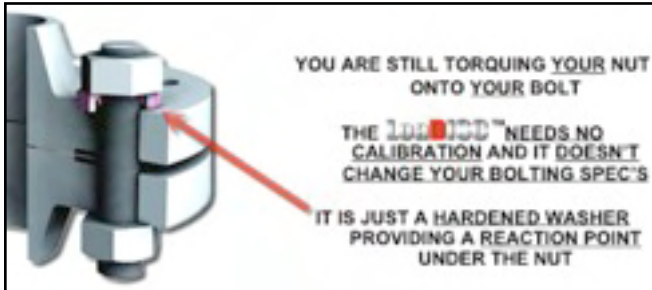
## Bolting Applications Booklet - Worldwide



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## Bolting Applications Booklet - Worldwide



**SAFETY**

**FREE YOURSELF OF  
REACTION ARM  
BACKUP WRENCH &  
TOOL-HOLDING WITH  
"JUST" A WASHER!**



# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

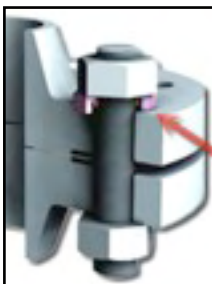
## Bolting Applications Booklet - Worldwide



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## Bolting Applications Booklet - Worldwide



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **ID1000™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER,  
PROVIDING A REACTION POINT  
UNDER THE NUT

**SAFETY**

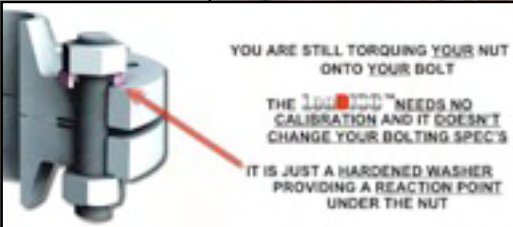
**FREE YOURSELF OF  
REACTION ARM  
BACKUP WRENCH &  
TOOL-HOLDING WITH  
"JUST" A WASHER!**

# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN



# Bolting Applications Booklet - Worldwide



**SAFETY**

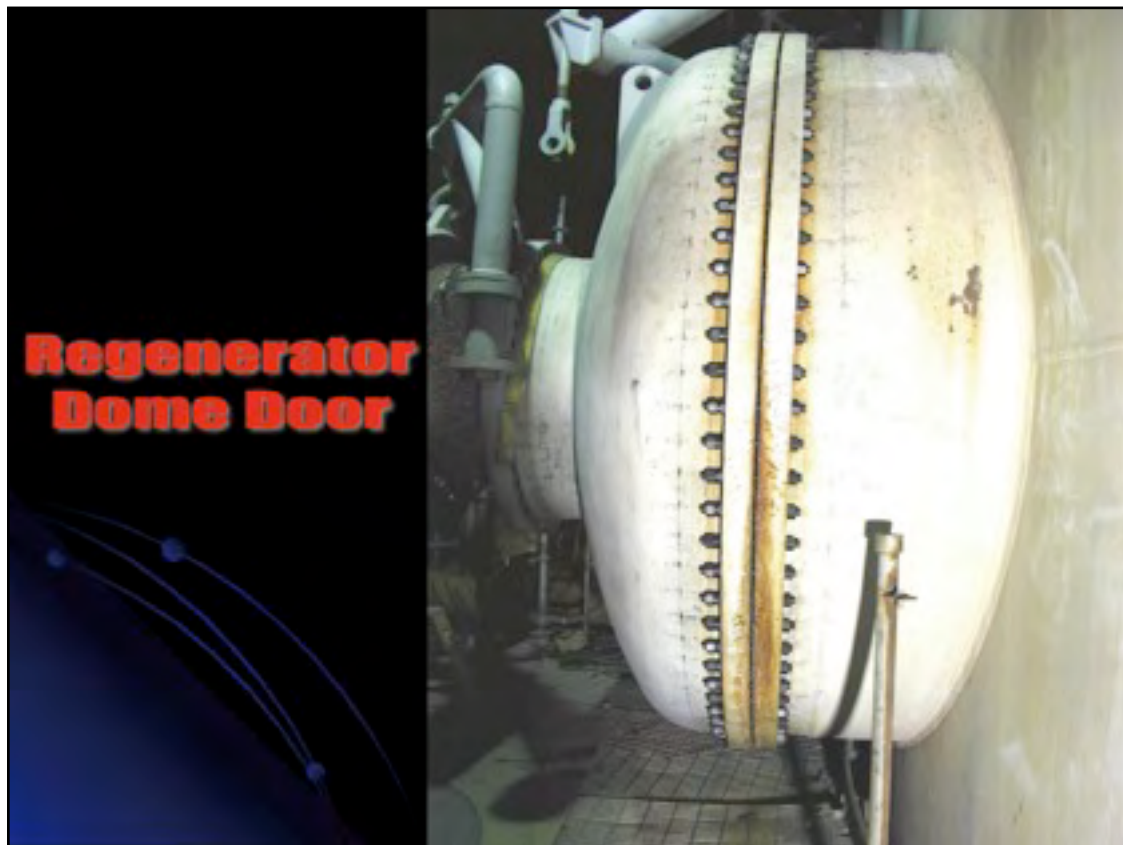
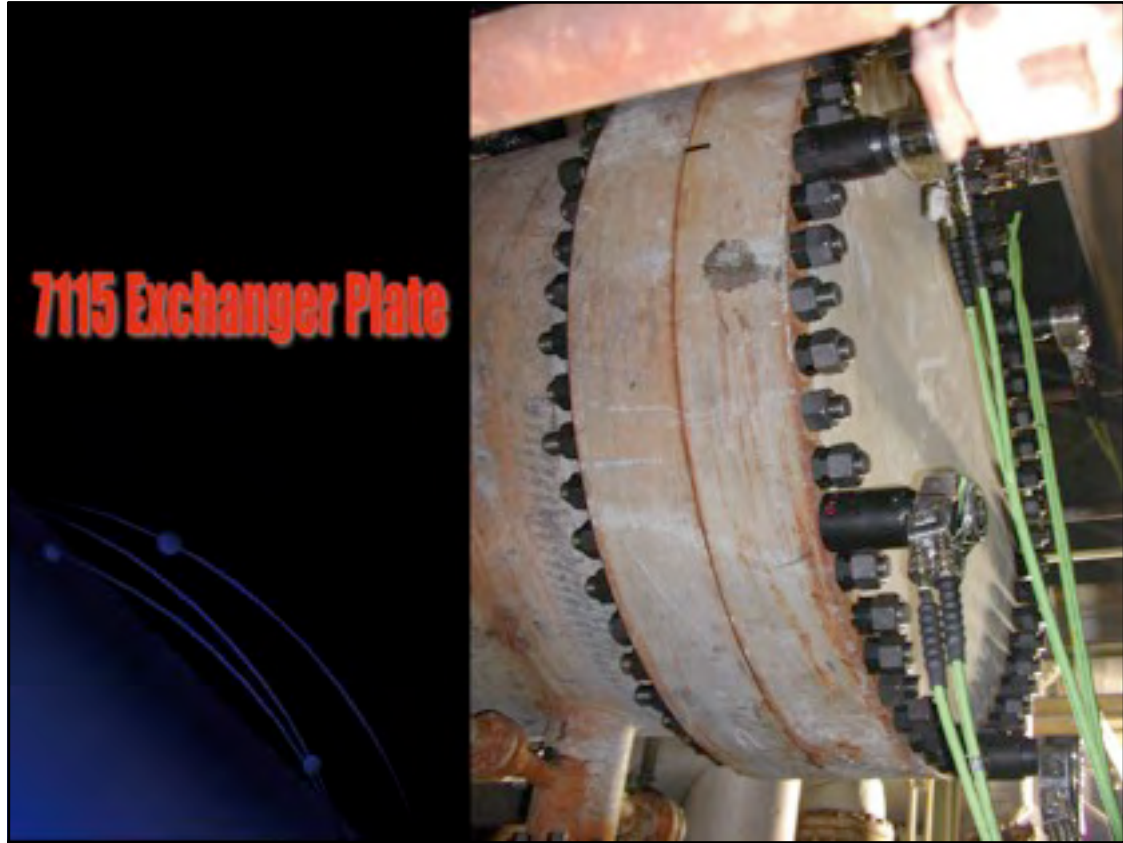
**FREE YOURSELF OF REACTION ARM BACKUP WRENCH & TOOL-HOLDING WITH "JUST" A WASHER!**



# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## Bolting Applications Booklet - Worldwide



# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

## HOVENSA REFINERY

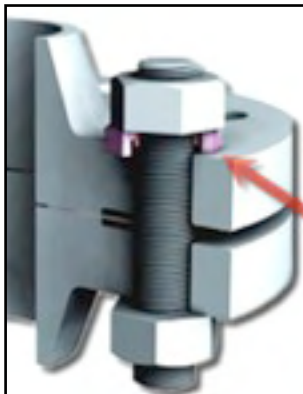
**TURN AROUND MANAGER...**

*"Quickest and most  
Reliable Shutdown ever!"*



HYTORC, Division of UNEX Corporation  
333 Route 17 North, Mahwah, NJ 07430 U.S.A.  
Tel.: 1 201 512-9500, Fax 1 201 512-9615  
Email: [HYTORC1@HYTORC.com](mailto:HYTORC1@HYTORC.com)  
[www.HYTORC.com](http://www.HYTORC.com)

© Copyright 2005, UNEX Corporation



YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT

THE **IDEECS™** NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S

IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT

### SAFETY

**FREE YOURSELF OF  
REACTION ARM  
BACKUP WRENCH &  
TOOL-HOLDING WITH  
"JUST" A WASHER!**

# SAFETY - QUALITY - SCHEDULE

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN

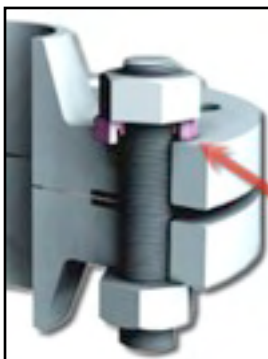
**TONEN GENERAL OIL REFINERY JAPAN**



**AVANTI-20 SIMUL-TORC  
HYTORC AIR Pump.**

**Application: Reactor Top Manway**

**Dramatic Improvements in  
Safety, Speed and Accuracy !**



**YOU ARE STILL TORQUING YOUR NUT  
ONTO YOUR BOLT**

**THE 1DR100™ NEEDS NO  
CALIBRATION AND IT DOESN'T  
CHANGE YOUR BOLTING SPEC'S**

**IT IS JUST A HARDENED WASHER  
PROVIDING A REACTION POINT  
UNDER THE NUT**

**SAFETY**

**FREE YOURSELF OF  
REACTION ARM  
BACKUP WRENCH &  
TOOL-HOLDING WITH  
"JUST" A WASHER!**



# **TONEN GENERAL OIL REFINERY**

## **Reactor Top Manway**



**AVANTI-10  
SIMUL-TORC  
HYTORC AIR Pump.**

**Dramatic  
Improvements in  
Safety, Speed and  
Accuracy !**



**AVANTI  
SIMUL-TORC  
LEAKAGE-ZERO**

**LOADISC**



**SAFETY - QUALITY - SCHEDULE**

The **ONLY** PROFESSIONALIZED BOLTING COMPANY IN PAKISTAN