



**bondura**<sup>®</sup>  
technology



[www.bondura.no](http://www.bondura.no)  
[post@bondura.no](mailto:post@bondura.no)

# SUPERIOR CONNECTIONS

## for increased customer value

Bondura Technology AS design and manufacture pin solutions to customers specifications, based on patented bondura® pin technology with DNV Type Approval and ABS Product Assessment.

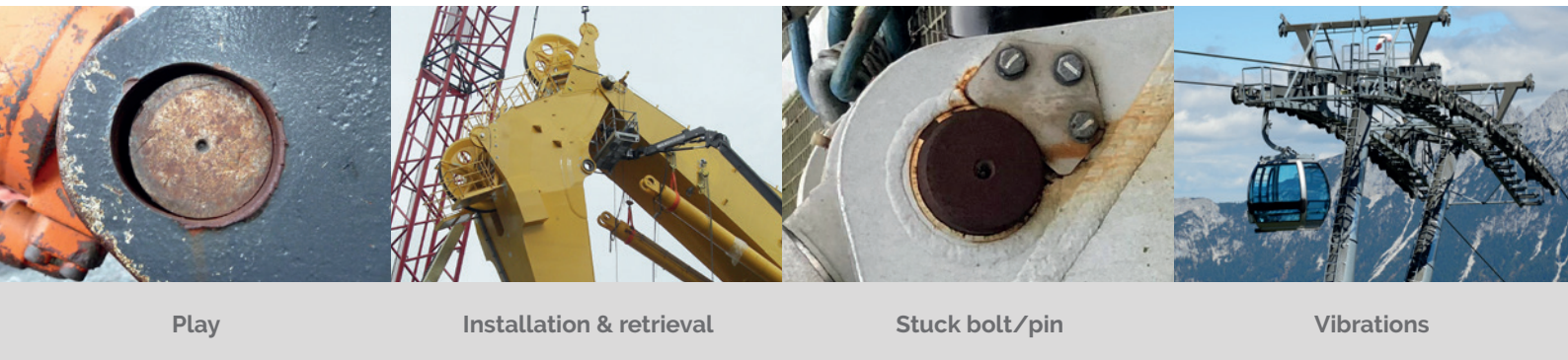
We have more than 35 years of experience delivering expanding pin technology to the most challenging applications world-wide. Our in-house and field engineers will work with you to find the right solution for your project.

**Bondura Technology AS is your preferred global partner in fastening technology!**

We support you in every phase . From on-site advice and proposed solutions, to the engineering, manufacturing, and delivery of your required bolts and pivot pins. Wherever there is an urgent need for reliable, robust, and durable bolt and pivot pin connections; bondura® is the perfect solution.

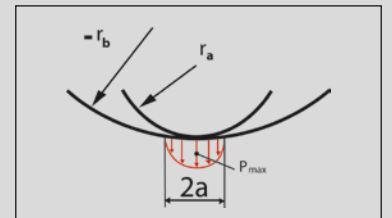
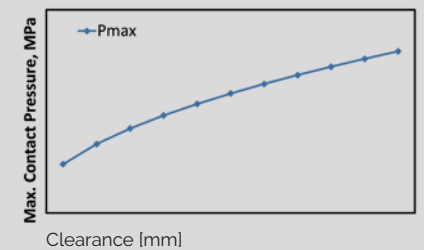
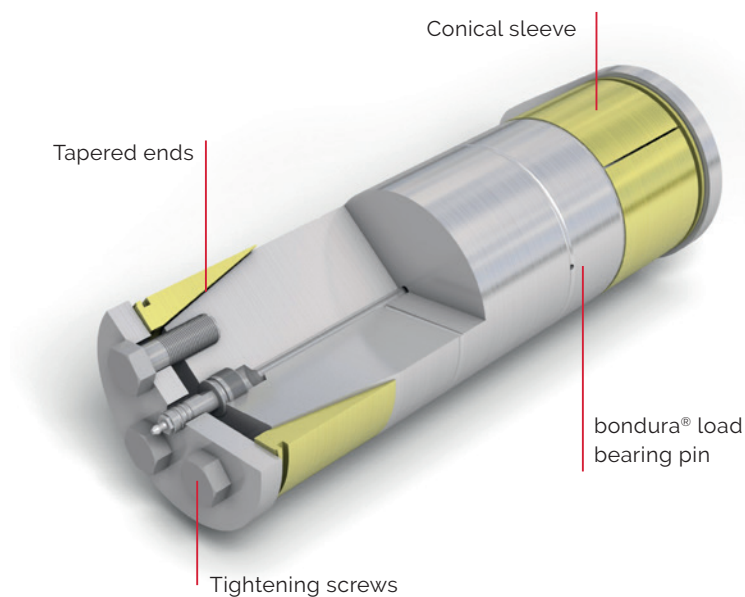


# TYPICAL ISSUES



- Worn housing bores
- Difficult assembly and retrieval (tight tolerances/accessibility)
- Corrosion/cold welding
- Loosening due to vibrations

The contact area between the pin and the housing bore is significantly affected by the installation clearance. The figure on the right shows the increase in Hertzian contact pressure as a function of increasing clearance.

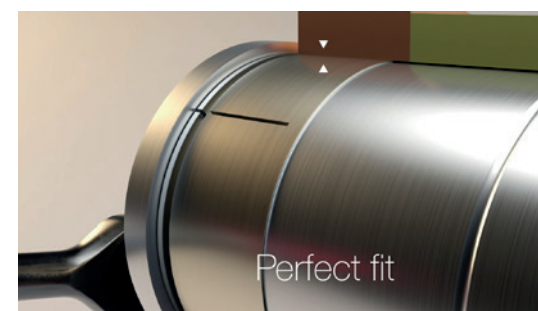


Representation of the real contact area and the associated Hertzian contact pressure

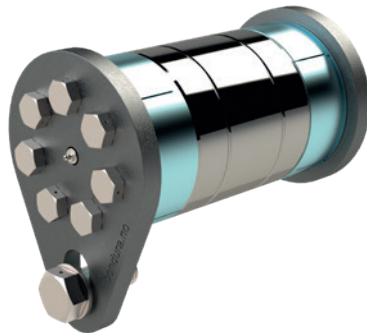
## The principle of bondura® technology is simple and brilliant

The pin can easily be installed because of the tapered ends. The conical sleeves are then installed and tightened according to specification. This causes the sleeves to expand and lock pin into the support. Installation clearance is eliminated and substituted by 360° contact surface between pin and support. This gives an ideal load distribution.

Zero clearance after assembly

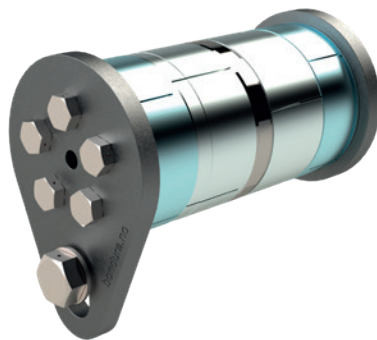


# BONDURA® STANDARD



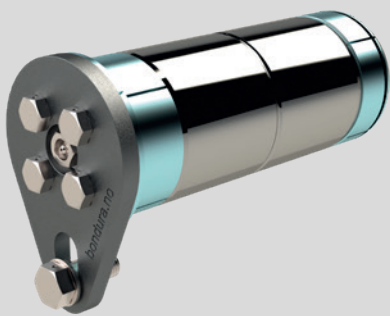
## **BONDURA® PIN TYPE 6.6**

is used where there are no obstacles close to the supports during installation or retrieval of the pin.



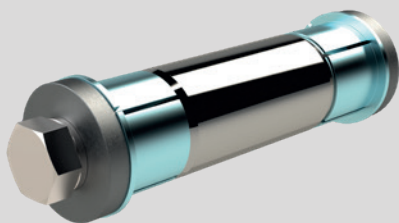
## **BONDURA® PIN TYPE DUAL 66**

is used when you need to lock the pin assembly, not only to the equipment supports, but also to the bearing in a movable joint, or the entire structure in a fixed joint.



## **BONDURA® PIN TYPE 6.1**

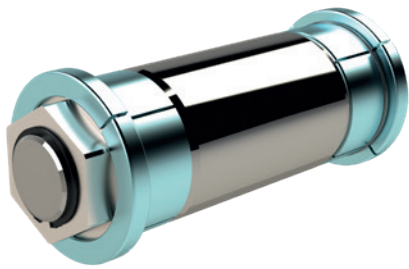
is the perfect choice when you have no access or visibility to one of the sides, but full access to the other during installation and retrieval of the pin.



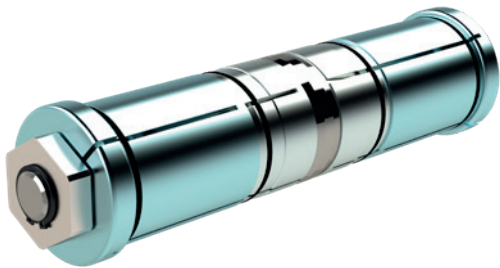
## **BONDURA® PIN TYPE BX**

is a straightforward and economical solution for smaller joint connections.





**BONDURA® PIN TYPE 3.3**  
is used when you need to  
minimize the installation and  
retrieval time

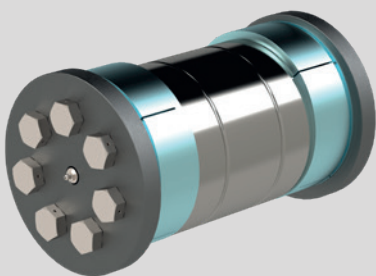


**BONDURA® PIN TYPE DUAL32**  
is used when you need to lock  
the pin assembly not only to  
the equipment supports, but  
also to center area in a fixed  
joint.



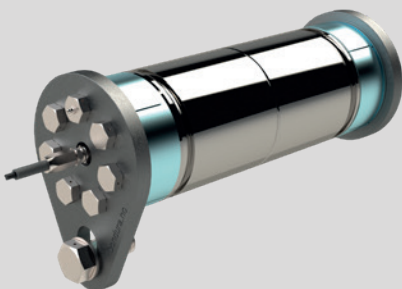
## Special solutions

The modular structure of the bondura® pin system enables a wide range of combinations (design) and adjustments (material and coating).



**BONDURA®  
ECCENTRIC PIN**

For example, in Ferris wheels where wear is to be expected during use, the pin assembly can be turned and re-adjusted for optimal performance. The bondura® system makes it easier to remove and reinstall the pins.



**BONDURA® LMP  
LOAD MONITORING PIN**

LMP is a unique design in load monitoring. Available in 3 different versions of the bondura® series, it combines the special bondura® expanding pin technology with high-quality load measurement electronics for even more precise measurements and longer lifetime for the load monitoring pin.

# ADVANTAGES

## with bondura<sup>®</sup> pin technology

### New systems/Original equipment

- DNV certified Eliminates play
- High quality solution
- Increased lifetime and durability
- Reduced downtime

### Service and Repair

- Reduces play and wear
- Saves time and maintenance costs
- Easy assembly and disassembly
- Compensates for ovality in the support
- No cold welding
- bondura<sup>®</sup> multi-tool for even easier handling



# TYPICAL APPLICATIONS



## Highlighted areas:

- Mining, tunnel machines/underground equipment/demolition equipment
- Bulk handling
- Ship loading and unloading
- Construction machinery and vehicles
- Crane systems & lifting equipment
- Metallurgical & steel industry
- Water ways
- Bridges
- Forest machines
- Marine & offshore (Oil & Gas)
- Aviation and space launch systems
- Renewable energy Military
- Amusement parks

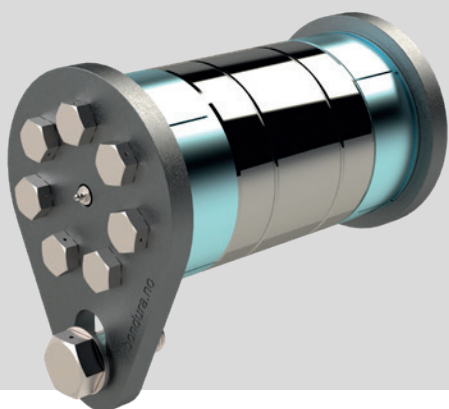
... and many more



# CONSTRUCTION & INSTALLATION EXAMPLES

## PIN TYPE 6.6

Clamped to clevis (sliding bearing design)

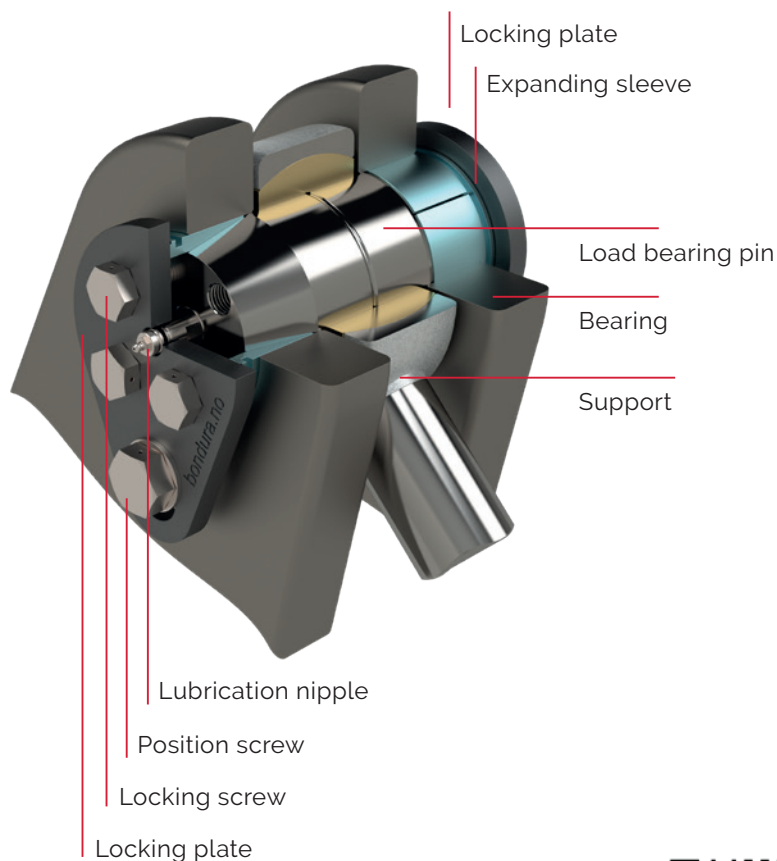


**bondura® pin Type 6.6 is the perfect choice where there are no obstacles close to the supports during installation or retrieval of the pin.**

bondura® pin type 6.6 has been our best seller for many years and is designed to be installed, tightened or retrieved from any side of the supports.

### **Sectional view of an expanding pin assembly with integrated spherical plain bearing (sliding bearing design).**

bondura® pin, equipped with lubricating nipple and channel, allows the spherical bearing to move in the axial direction. The pin assembly expands radially, locks to the clevis, and eliminates any clearance and play.



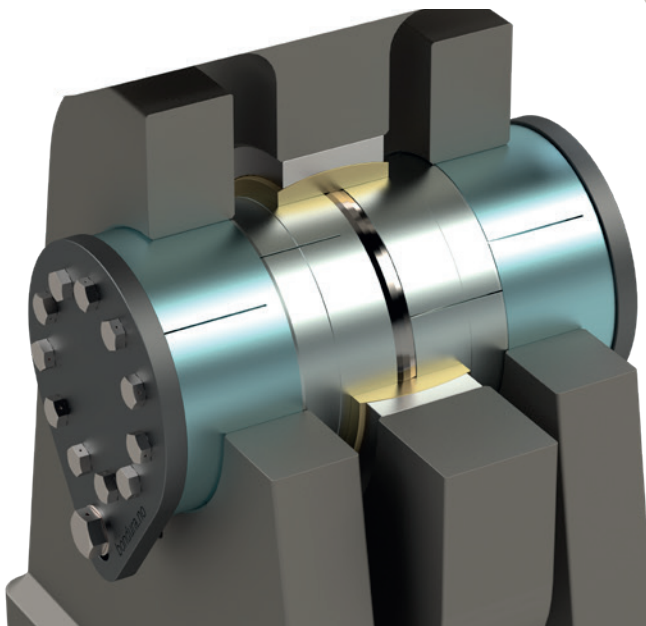
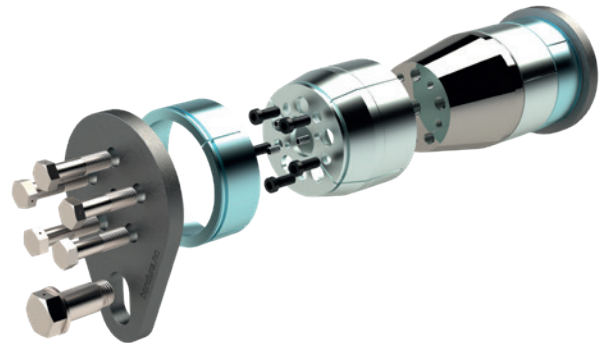
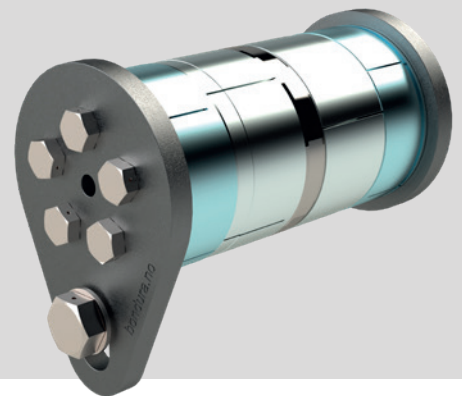
# CONSTRUCTION & INSTALLATION EXAMPLES

## PIN TYPE DUAL PIN 66

Clamped to spherical or rolling bearings  
(fixed bearing design)

**bondura® pin type Dual 66 is the perfect choice when you need to lock pin assembly not only to the equipment supports, but also to the bearing in a movable joint.**

bondura® pin type Dual 66 has been our best seller for many years when you need to protect your bearings, and is designed to be installed, tightened or retrieved from any side of the supports.



**Sectional view of an expanding pin assembly with integrated spherical bearing (fixed bearing design).**

The bondura® pin is firmly connected to the bearing ball and therefore does not allow any axial movement. With the Dual 66, the pin is clamped tightly and without play in the support.



# BONDURA® ENGINEERING

With many years of experience, our engineers are eager to contribute to the development of your solution. Our engineering department will select the appropriate pin design for your application and support you during engineering, project execution phase, and equipment installation.

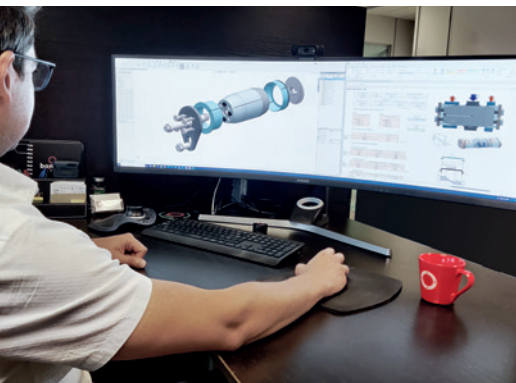
Of course, the input from our customers, especially when developing new solutions, is of utmost importance. The modular bondura® pin technology allows special constructions for all designs as required by our customers, e.g.:

- Asymmetrical designs
- Eccentric designs
- Systems to be used at high or low temperatures
- Materials with increased corrosion resistance

As part of the project execution, we provide our customers with all necessary documentation:

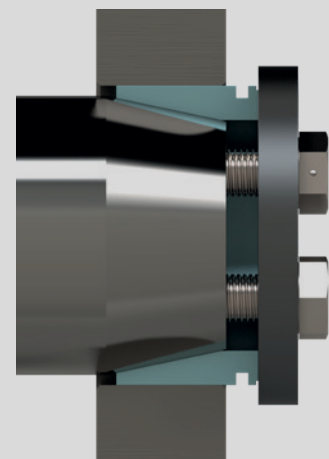
- Calculations such as maximum load capacity
- Material traceability list
- Certificate of conformity
- Technical drawings and 3D models for integration and fitment control
- Material certificate EN 10204 - 3.1 or 3.2
- Non-destructive testing
- Third party design approval
- Assembly & inspection manual

Bondura Technology AS uses quality management system for „Design, development and manufacturing of fastener products“ in accordance with ISO 9001:2015.



## Tailored solutions according to your requirements

Wear in the support bores increases the bore diameter and pin clearance. By use of thicker sleeves the unwanted clearance can be eliminated without major repair of the support bores.



# bondura® DESIGN SHEET

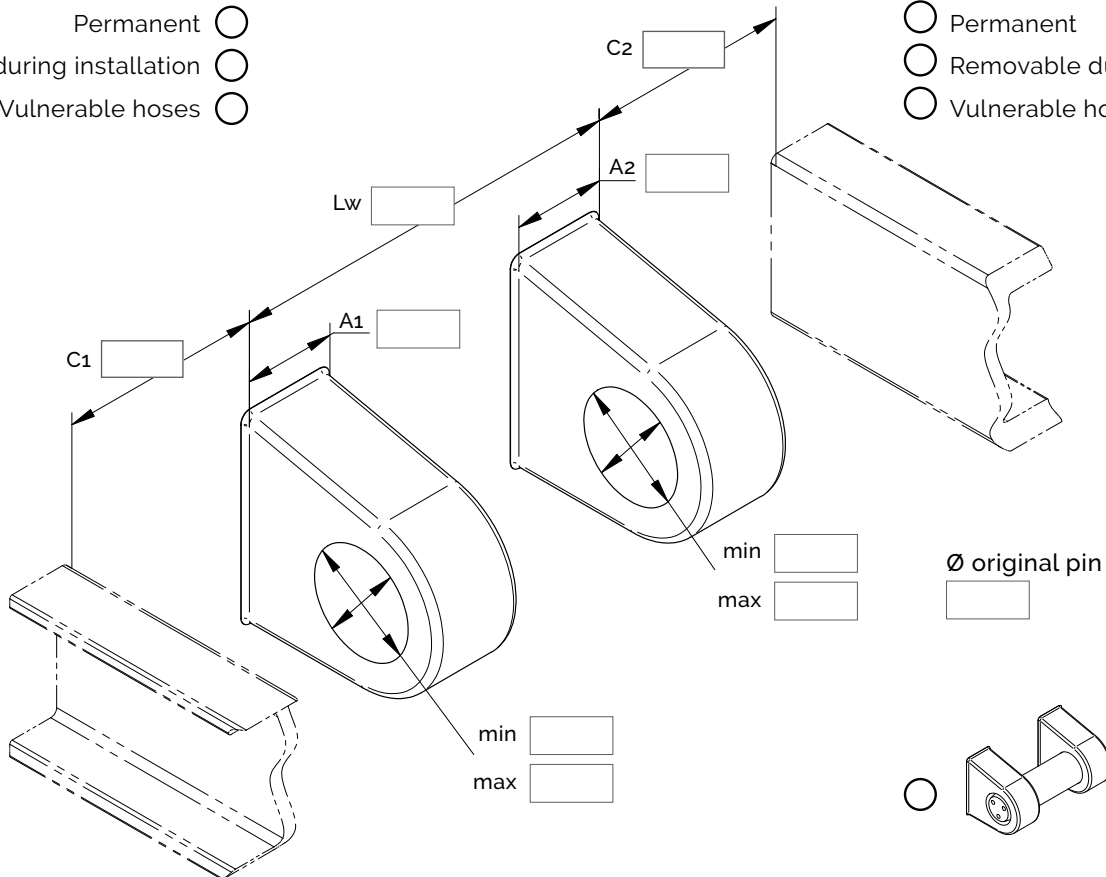
The customer is responsible for the accuracy of all measurements and data written in the design sheet submitted

Type of obstacle:

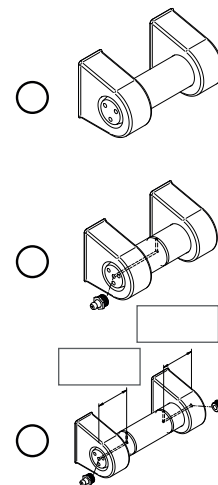
- Permanent ☐  
Removable during installation ☐  
Vulnerable hoses ☐

Type of obstacle:

- Permanent ☐  
Removable during installation ☐  
Vulnerable hoses ☐



Ø original pin

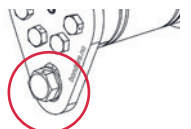


quantity   
material   
equipment   
position

company   
contact person   
telephone   
e-mail   
delivery address

Additional requirements:

- ☐ Documentation incl. 3.1 cert.  
☐ NDT of pin  
☐ Certification (DNV, ABS, etc.)  
☐ Wedgelock washers  
☐ Safety wire holes  
☐ Positioning details



**REDUCE  
INSTALLATION TIME  
AND MAINTENANCE COST  
BY USING DURABLE AND STRONG  
BONDURA® PIN CONNECTIONS**

**PLEASE CONTACT US!**



Bondura Technology AS  
Nordlysvegen 5, 4340 Bryne, Norway  
post@bondura.no · www.bondura.no