

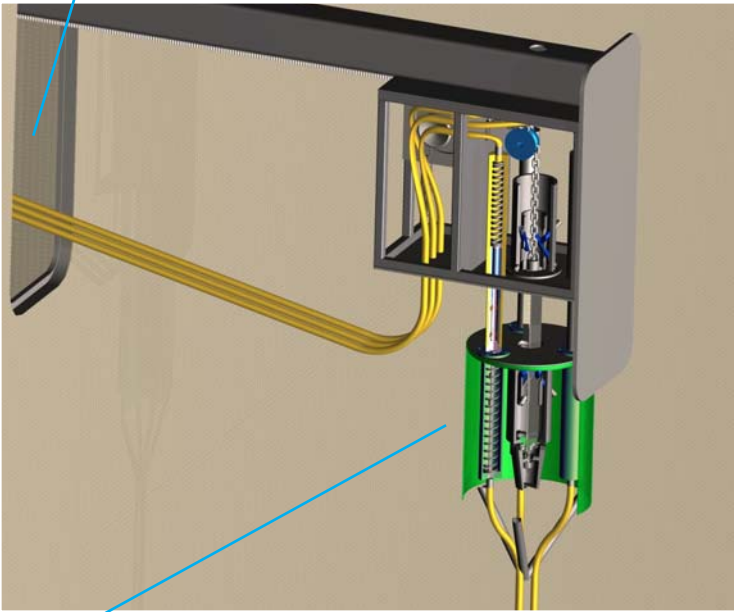
# NG<sup>2</sup>



**PLUG by NG<sup>2</sup> :**  
**the UP and**  
**coming**  
**cold ironing**  
**standard!**

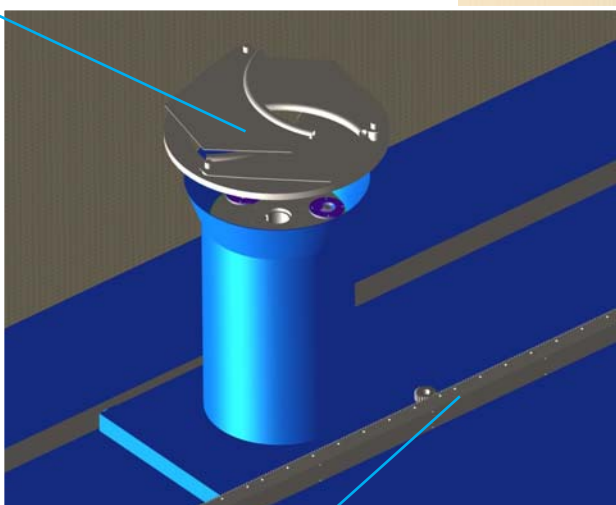
***Power Generation during Loading & Unloading***

● A water tight door protects the whole system when at sea



● A torque meter monitors the force on the power line : in case of excess force, an alarm is set to de-energize the power line and if required release the connector in a controlled manner to avoid any mechanical failure or injuries.

The diaphragm of the power line storage system is closed above the connector to protect it when not in use.



● The connector basket can slide along the quay to match the vessel power interface location

## Responding to tighter environmental constraints :

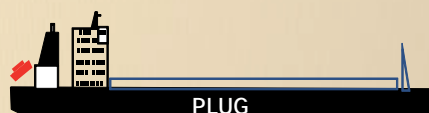
A growing number of public and harbor authorities are requiring “cold ironing” in order to reduce local and global emissions. **NG<sup>2</sup>** is meeting this challenge with PLUG (Power Generation during Loading & Unloading) by providing a unique technology compatible with the most stringent operational, economical and safety requirements (eg. LNG carriers).

## Bringing an opportunity for extra profit :

By drastically reducing Cold Ironing Capital and Operational Expenses, PLUG allows a quicker return on investment for both ship owners and port operators, bringing benefits of greener, less expensive on shore power sources....

## Main design features :

- Fully automated process
- Self mating / de mating connector
- Meets or supersedes upcoming ISO, IACS cold ironing requirements



## Cost effective for the ship owner :

- Compact, fits within one frame space, can be easily implemented without interfering with the payload volume and operations
- Minimum cost on board: power cables remain on the quay side
- Operation by a single crew member
- Connect/disconnect the power line within seconds
- Low maintenance, fully protected from the environment at sea

## Cost effective for the port operator :

- No shore side personnel required
- Low maintenance, fully protected from the environment when stored
- Minimum footprint on quay

## User friendly & Safe :

- “Hands Off “ and “Fool Proof “ design reducing :
  - Operator skill requirements
  - Hazards for crew, harbor personnel and the public
- Self sealing, watertight connector preventing any contact with live parts
- Built in safe emergency release capability





## Versatile :

- From 440 to 11 000 V...
- From 300 KW to 12 MW...
- May be implemented on either side or on the transom stern...
- Compatible with an installation on the quay side or a floating line...
- No manual handling weight constraints : Cable size and length can be optimized for implementation at any deck level and any power requirements.

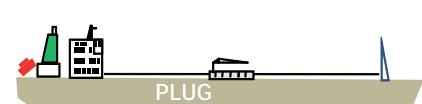
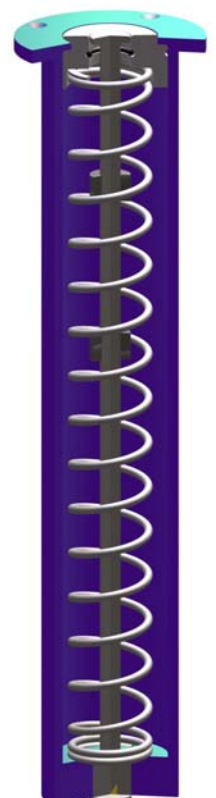
## Project Status:

- Summer 2009 : Market release for first Ferry applications...
- 2009-2011 : Development of PLUG concepts for other types of vessels...



A triangular shape shuttle bar performs the automatic coupling / decoupling as well as the alignment of the contacts.

Spring loaded water tight lids protect the electrical parts and avoid any risk of contact with lives parts as soon as the connector is released from the socket.



# A UNIQUE CONNECTOR TECHNOLOGY :

The PLUG is based on a unique and patented guiding system and self mating /de-mating connector concept.

1

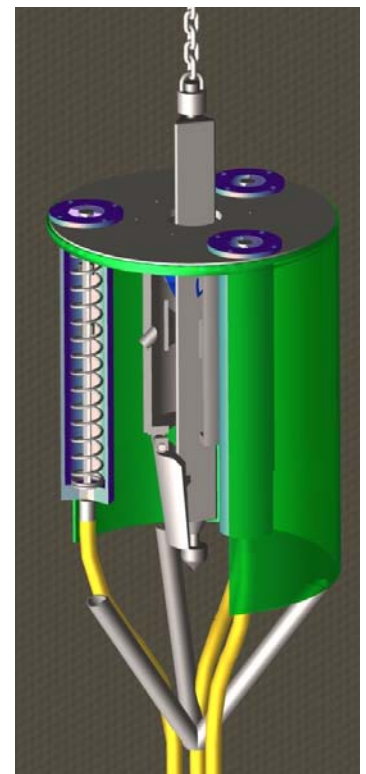
## Capture of the shuttle bar



The diaphragm closes and grabs the shuttle bar to align with the quay side connector.

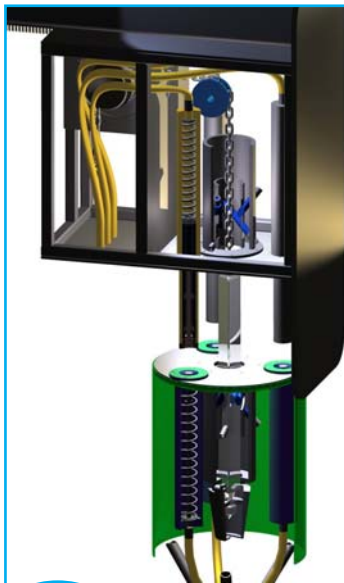
2

## Rotation and self locking of the shuttle bar



3

## Rotation and alignment with the on board socket



The quay side connector is pulled up towards the socket. The rollers rotate the whole shuttle bar and the quay side connector to align the contacts

4

## Ready for power exchange

Moving upwards, the connector pushes the springs and inserts the contacts into the socket.



The rollers rotate the shuttle bar to index it with the contacts. The jaws of the automatic hook lock the connector to the shuttle bar

# Company profile :

New Generation, Natural Gas, (**NG<sup>2</sup>**) is a European start up company which has developed an innovative system and equipment for improving the environmental and economical performances of not only LNG carriers and terminals but, more generally, the whole shipping industry. Created in July 2008, the company is the winner of the French national startup innovation award. Its first developments are aimed at reducing boil off gas rates by 10% in membrane carriers and land based storage tanks.



## Join the "PLUG IN" R&D initiative :

To collect user requirements and take them into account in the PLUG design, **NG<sup>2</sup>** is proposing a European R&D initiative (*dead line for submission : December 2009*) called "PLUG IN" : "Power Generation during Loading & Unloading : Implementation & Network".

The objective is to gather European stakeholders (ship owners, harbor operators, shipyards, class societies...), to develop suitable cold ironing systems for each type of vessel : cruise, ferries, container carriers, tankers, RORO, car carriers, bulk carriers, services, etc...



## Join in this project to :

- Influence specifications to meet and optimize your cold ironing needs ;
- Build up and benefit with other European partners a global cold ironing solution ;
- Receive funding to cover your Cold Ironing R&D effort from requirement assessment to full size demonstration tests !

## Looking for agents and partnership

**NG<sup>2</sup>** is looking for agents and partners, involved in electrical systems for ships and terminals, worldwide.

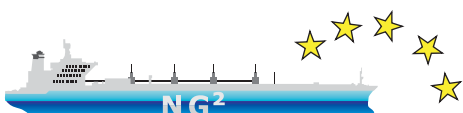
### Contacts :

For further enquiries : [damien@ng-two.com](mailto:damien@ng-two.com)

Mobile : +33 647 881 193

**New Generation, Natural Gas**

174 boulevard Haussmann, 75008 Paris, France.



*New Generation, Natural Gas*

