

[www.recip.org](http://www.recip.org)



# ***Introduction to the EFRC***



*René Peters  
Chairman of  
the EFRC*

# Overview

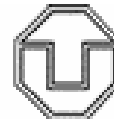
- *European Forum for Reciprocating Compressors*
- *History*
- *Aim*
- *Board*
- *Members*
- *Working groups and activities*
  - *student promotion*
  - *pre-competitive R&D*
  - *standardization*
  - *knowledge exchange*
- *EFRC conference*
- *EFRC training and workshops*



# History

*EFRC has been founded in 1999 by:*

- *NEA*
- *LMF*
- *Hoerbiger*
- *TNO*
- *TU Dresden*
- *Thomassen Compression Systems*
- *Wartsila Compression Systems*
- *Burckhardt Compression*



- *To serve as a platform to facilitate exchange of information between vendors, operators and scientists working in the field of reciprocating compressors.*



# Aim of the EFRC

## 1. Knowledge transfer

Conferences

Internet

Workshops

Training and seminars

## 2. Perform joint research

Pre-competitive

Aiming at improving the performance of the recip

## 3. Improving the image of the reciprocating compressor

Student workshops

Field surveys



# EFRC board

- *Chairman: Dr. Rene Peters*
  - *TNO Energy*
  - *The Netherlands*
- *Secretary: Dr. Peter Steinrück*
  - *Hoerbiger Kompressortechnik Holding GmbH*
  - *Austria*
- *Treasurer: Dr. Matthias Tanner*
  - *Burckhardt Compression AG*
  - *Switzerland*
- *Secretary support: Maja Schutz*
  - *TU Dresden*
  - *Germany*



# Current Members

44 members

- 14 manufacturers
- 6 operators
- 1 packager
- 15 component suppliers
- 4 technology institutes
- 2 consultants
- 2 media representative



**SAFE**  
Gas designed for you



**FRAGOL**

**DRG**  
Dynalloy Research Group



**ANDEROL**  
Specialty Lubricants



**BASF**  
The Chemical Company

**BORSIG**  
COMPRESSION **ZM**

**Burckhardt Compression**

**CAMERON**

**Chockfast**  
Foundation Systems  
Proven Solutions to Difficult Problems / TW Plantgroup

**COOK**  
COMPRESSION  
A BOWEN COMPANY



**COMPRESSOR**<sup>Two</sup>**Tech**  
Dedicated to Gas Compression Products and Applications



**COMPRESSOR PRODUCTS**  
International  
an EnPro Industries company



**DRESSER-RAND**

**DRESSER** **Wayne**

**FLOTECH**



GE Oil & Gas

**HOERBIGER**

**Hofer**  
high tech in high pressure



**LMF**

**Lonza**

**Mehrer**

**MT** **SEALING**  
TECHNOLOGY



**PROGNOST**  
*Intelligence on Duty*

**RWE**  
*The energy to lead*

**SIAD** **MACCHINE**  
**IMPIANTI**

**Howden**

Howden Thomassen Compressors

**TNO** **TECHNISCHE**  
**UNIVERSITÄT**  
**DRESDEN**

**VKA**  
ERBENUNGS  
WACHSEN  
RAFTMASCHINEN  
**RWTH AACHEN**  
**UNIVERSITY**

**WÄRTSILÄ**

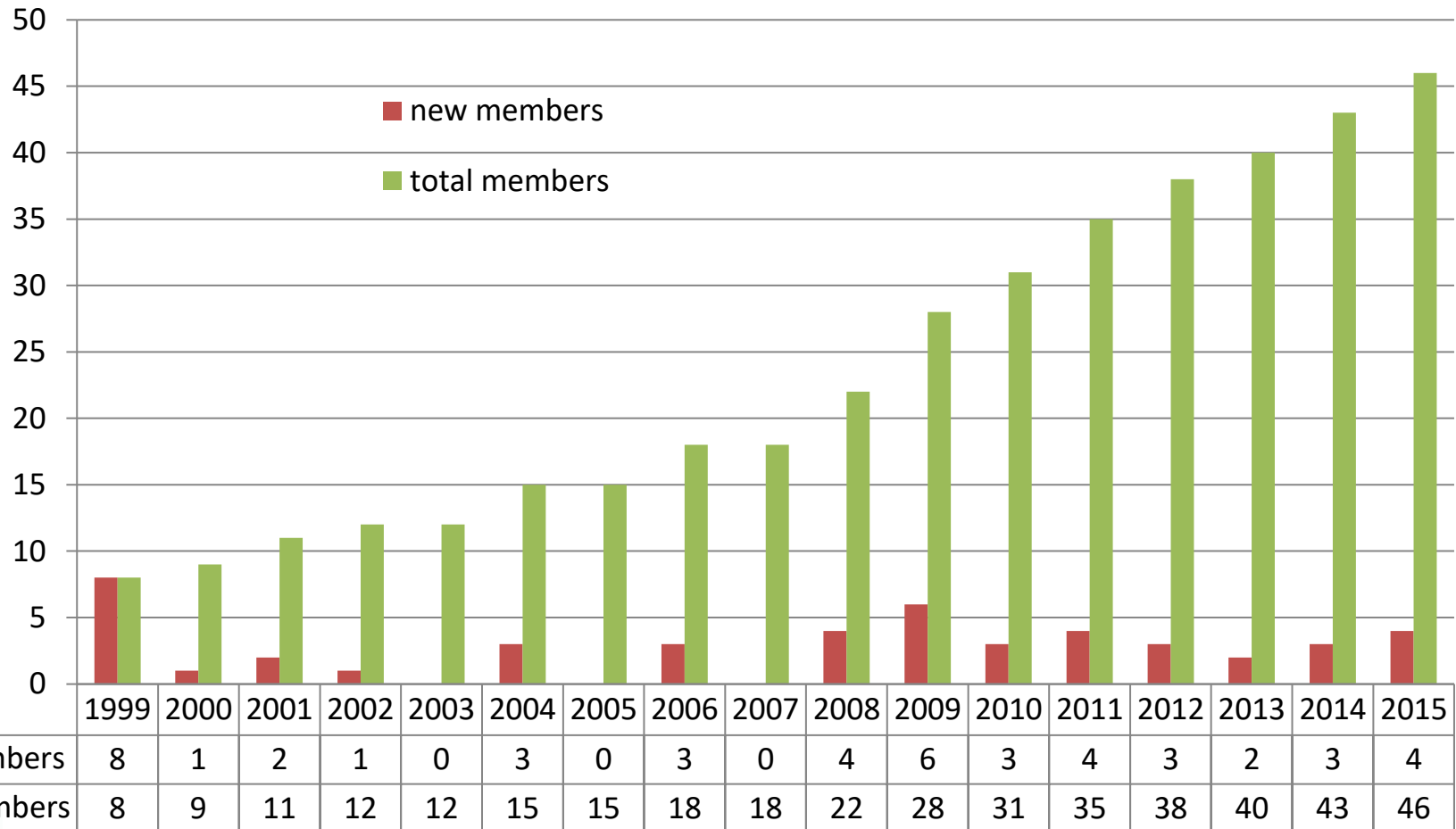
**KÖTTER**  
CONSULTING ENGINEERS

**PSE** **ENGINEERING**  
GMBH

**TU**  
**VIENNA**



# Overview EFRC members



*Currently 45 Members from 11 countries*



**EFRC**

# Working groups and activities

- Pre-competitive R&D
  - Luci Valaer – Buckhardt Compression
  - Initiate and fund R&D projects sponsored by members
- Standardisation
  - Andre Eijk - TNO
  - Work on improvement of API 618 and ISO 13707 standards
- Student promotion
  - Gunther Machu – Hoerbiger
  - Organise bi-annual student workshop
- Training
  - Leonard van Lier – TNO
  - Organise annual training workshops
- Marketing and EFRC conference
  - Martina Frenz - NEA
  - Organise bi-annual EFRC conference
  - Maintain website [www.recip.org](http://www.recip.org)





# Student promotion

- *Site visit OEM's and operations with recips for international students*
- *Participation from many EU countries*
- *Presentations by EFRC members*
- *Excursions to production sites*
- *Exercise for students (incl. award!)*



- *2002 Benelux and Germany*
- *2004 Poland*
- *2006 Italy and Switzerland*
- *2008 Austria*
- *2010 United Kingdom*
- *2012 France*
- *2014 Austria*
- *2016 Germany and Switzerland*



# EFRC conference

- *International conference on reciprocating compressor development and operation.*
- *Strong international participation*
- *Papers by OEM's, operators and suppliers*
- *Training seminar for young engineers*
- *1999 Dresden*
- *2001 The Hague*
- *2003 Vienna*
- *2005 Antwerp*
- *2007 Prague*
- *2008 Dusseldorf*
- *2010 Florence*
- *2012 Dusseldorf: International Rotating Equipment Conference*
- *2014 Vienna*



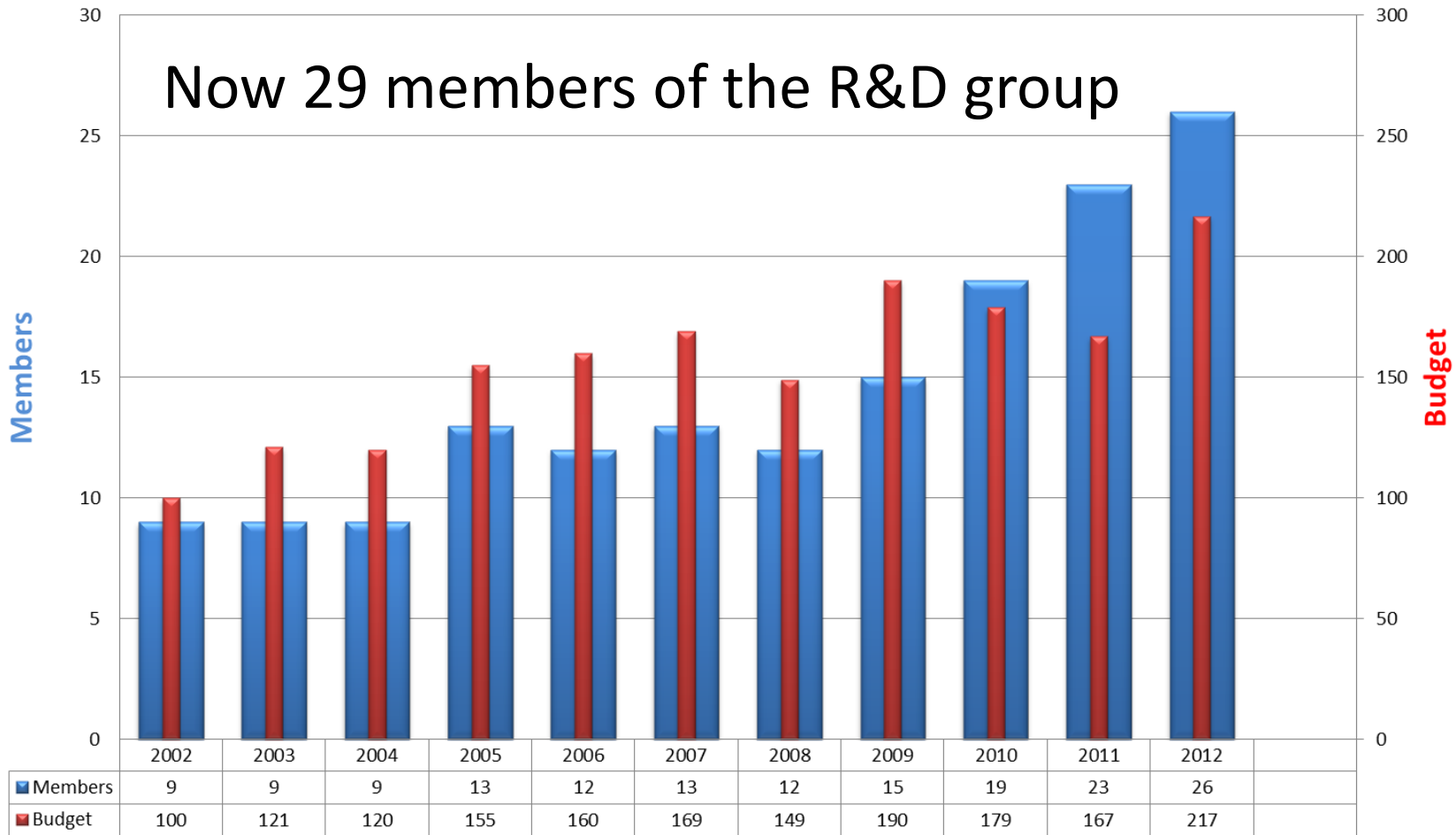
# EFRC Joint Research

- *Combining forces of EFRC members to solve / investigate problems which are beyond the scope of a single player*
- *Basic research and precompetitive research carried out at research institutes or universities*
- *Scientific arm of the reciprocating compressor community*



# pre-competitive R&D budget

Members and budget



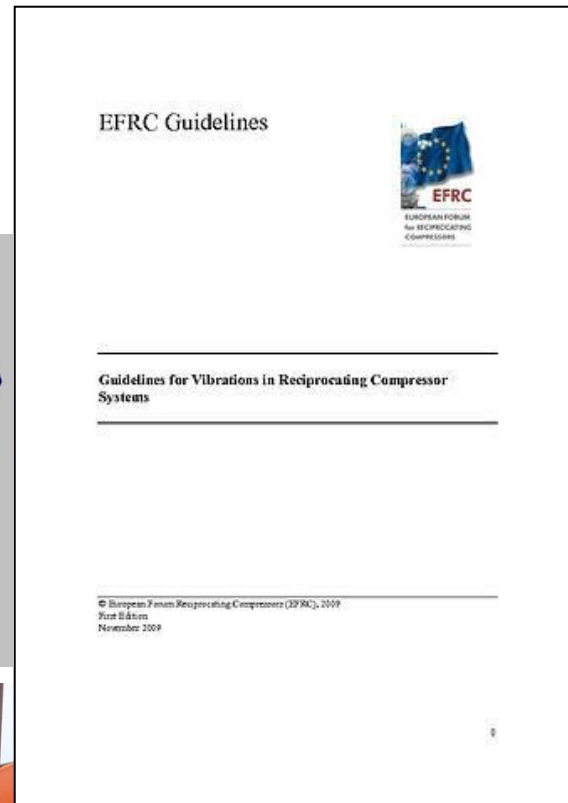
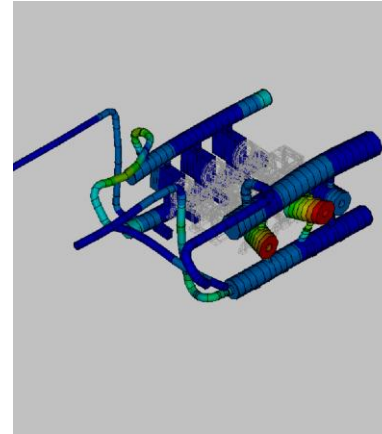
# The EFRC Research Group

- *Open to all EFRC members*
- *Annual budget funded by participating members*
- *Selection of ideas*
- *Approval of projects*
- *Projects are executed by research partners*
- *Project controlling*
- *Results are owned by EFRC*
- *Research results are disclosed to EFRC research group members only*



# Example project: Allowable Vibration levels

- Motivation:
  - Vibrations are an important design criteria for installations
  - Existing standards are considered to be not specific
- Result:
  - EFRC Guideline on vibrations
  - Working towards ISO standard
- Approach:
  - Literature search
  - Interviews with stakeholders
  - International Workshop
  - Report





# EFRC membership

- Membership open for all companies actively connected to the reciprocating compressor (design, research, manufacture, operate)
- Entrance fee: 2500 euro
- Annual fee: 2000 euro
- Not for profit annual fee: 600 euro
- Registration from on [www.recip.org](http://www.recip.org)





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during the session!



# Thank you for your interest

For more information, contact

- Dr. Rene Peters – Chairman of the EFRC *and*
- Director Gas Technology
- TNO Energy
- P.O. Box 155
- 2600 AD Delft
- +31 888 666 340
- +31 6 515 515 66
- [Rene.peters@tno.nl](mailto:Rene.peters@tno.nl)

- Or visit [www.recip.org](http://www.recip.org) for more information about EFRC

