

The IECEx Ticket to Global Markets

Extract from the tutorial at PCIC Europe 2008

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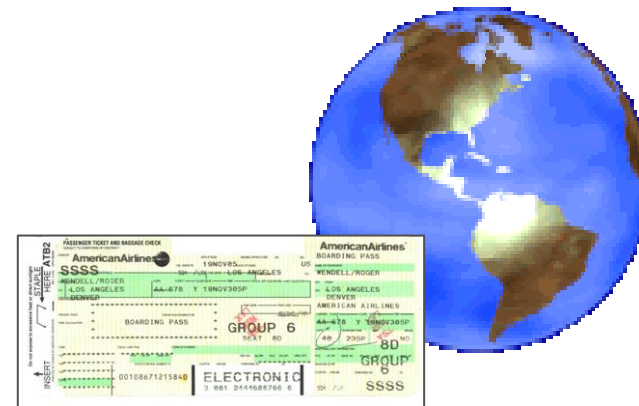
Benefits of the IECEX Scheme

Which manufacturer doesn't want to operate in an open market?

Exactly! None.

What offers the IECEX Scheme?

A ticket to the global market!

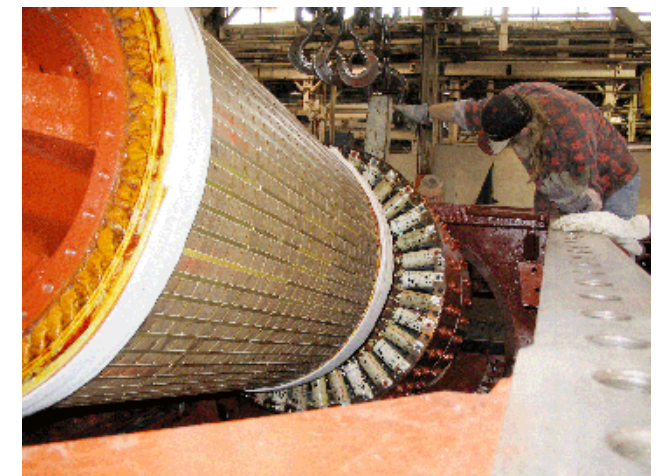


Business through out the world!

International Certification Scheme

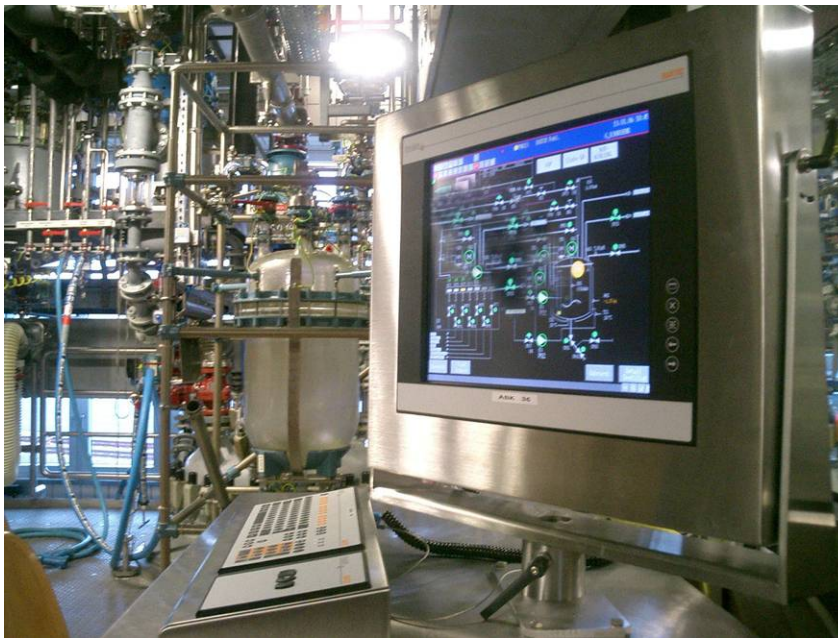
Two global certification programs

- ▶ the IECEx Certified Equipment Program
- ▶ the IECEx Certified Service Facilities Program



When IECEx Scheme?

for certification of electrical equipment in explosive atmospheres



demonstrating compliance with IEC standards prepared by TC31

Why IECEx Scheme?

The objective is to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required safety level.

To reach this objective there's a high demand for CONFIDENCE:

- ▶ by the manufacturer; in the product assessment process
- ▶ by the end user; in equipment covered by IECEx certification

This is a growing and ongoing process...



A growing IECEX Scheme

CONFIDENCE & ACCEPTANCE

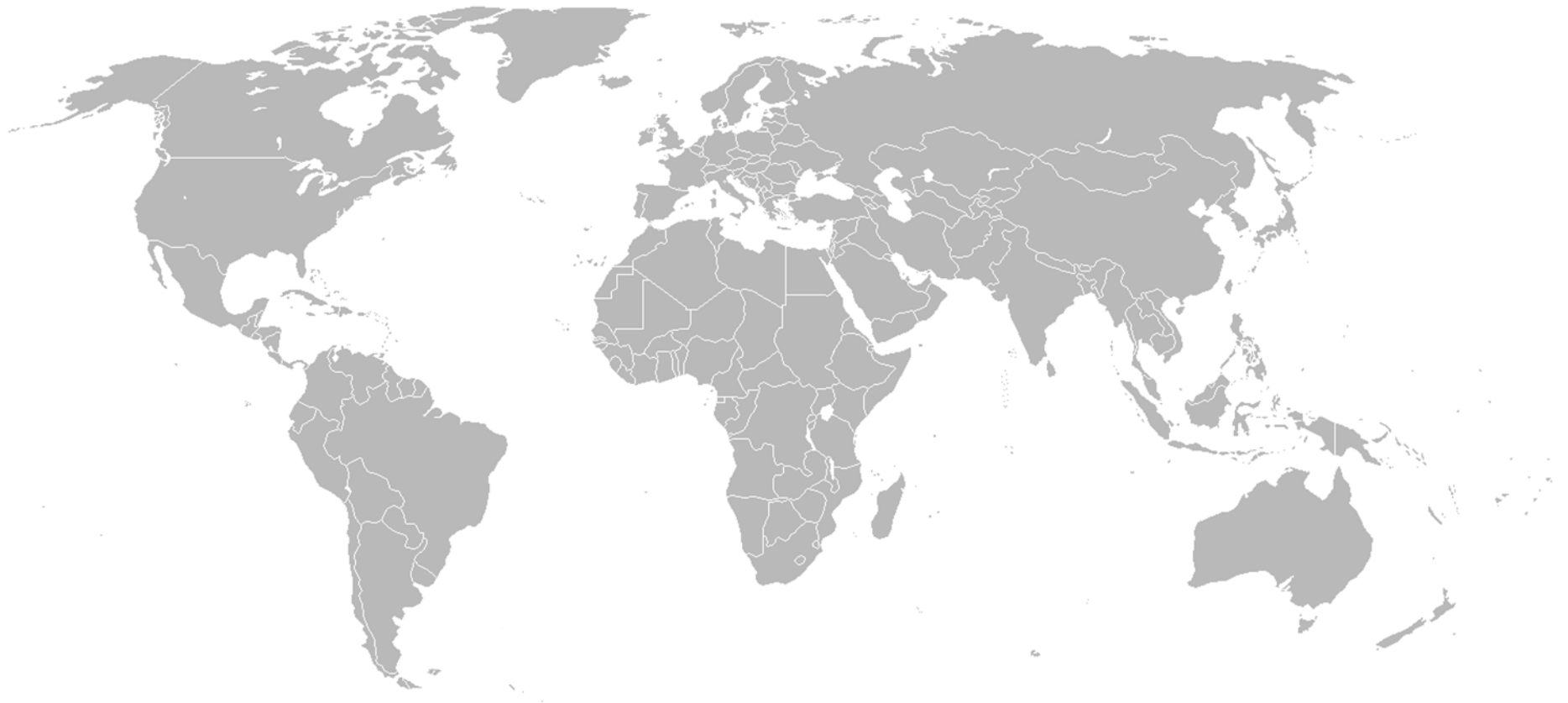
Propagated
by



IECEX
Secretary

What required to reach an open market?

1. Participation and
2. Acceptation by all countries!




What is the status quo?

4 full participating member states of IECEX:

Australia 

India 

Malaysia 

New Zealand 

24 member states in transition phase:

Canada 

China 

Czech Republic 

Denmark 

Finland 

France 

Germany 

Hungary 

Italy 

Japan 

Korea 

Netherlands 

Norway 

Poland 

Republic Serbia 

Romania 

Russia 

Singapore 

Slovenia 

South Africa 

Sweden 

Switzerland 

United Kingdom 

United States of America 

Differences in IECEx member states

Full participating IECEx member states:

directly accept [IECEX Certificates of Conformity](#)



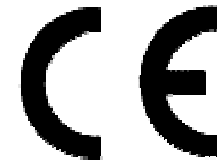
IECEX member states in transition phase:

still require a [national certificate](#) for market access



IECEX in Europe ATEX :: IECEx

- ▶ Manufacturers seeking access to the EU market have to comply with the EHSR's of ATEX directive 94/9/EC.
- ▶ EU Commission publishes "Official Journal": list of harmonized standards which may be used to give a legal presumption of conformity with the directive.
- ▶ This "OJ" contains EN standards published by CENELEC only.
- ▶ CENELEC adopts IEC standards and adds applicable national differences.
- ▶ The requirements for quality assessment of the manufacturer's workshop under ATEX and IECEx are similar.



IECEX CoC directly accepted in Europe?

- ▶ There's a lobby going on to have IECEx Certificates of Conformity directly accepted in the European Community.
- ▶ The European Commission is in the process of finalizing a new ATEX Directive. This new directive will tell if and how IECEx Certificates of Conformity provide access to the EU market.





IECEX in detail

IECEX Scheme is a voluntary scheme based on certification of products according to international (IEC) standards suitable for application in explosive atmospheres

- ▶ Prototype assessment → Test Laboratory performs assessment
→ Certification Body issues an ExTR
- ▶ Production assessment → Certification Body issues a QAR

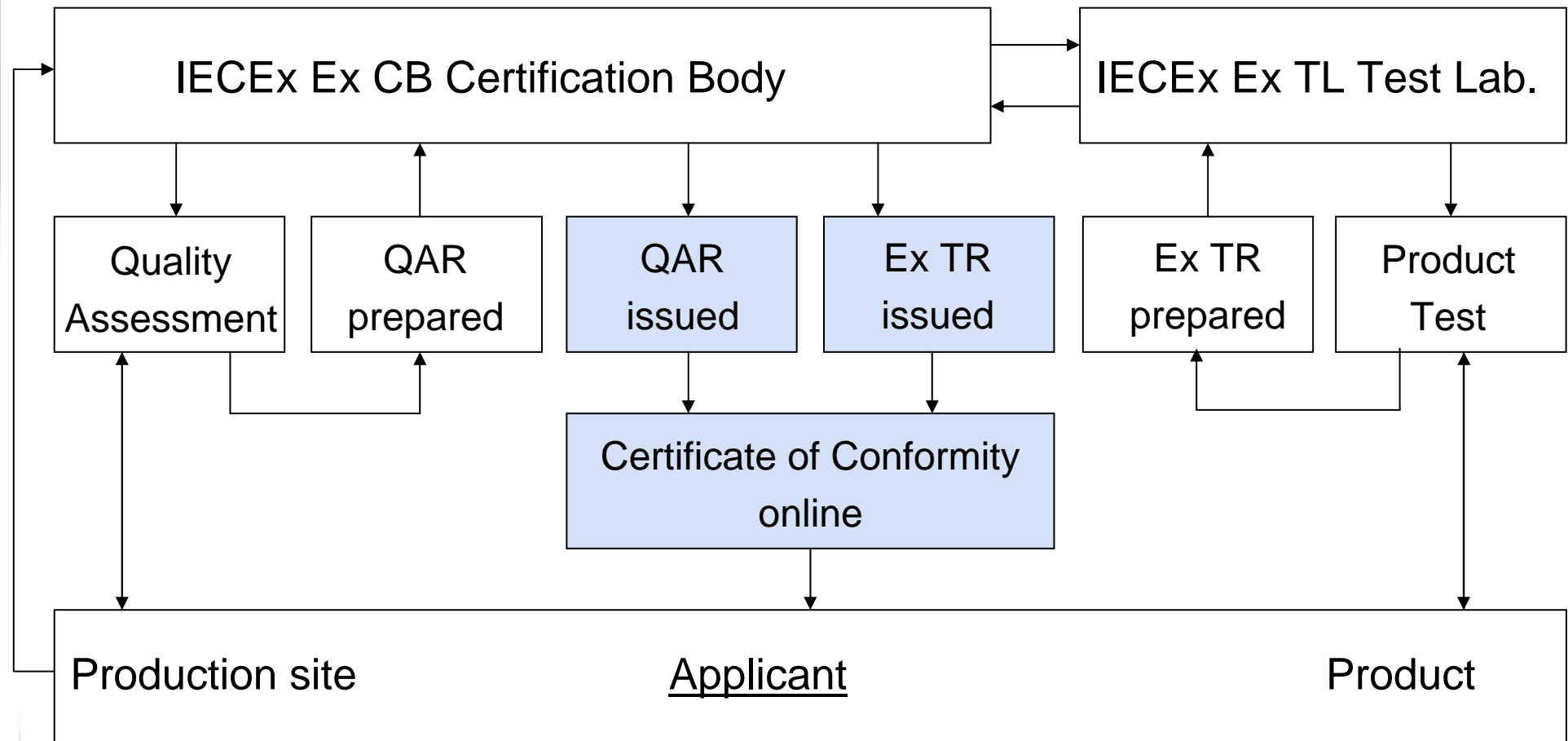
ExTR = Test Report describing detailed assessment of the prototype

QAR = Quality Approval Report describing the audit of the production

IECEX CoC ONLINE

Certificate of Conformity only issued when ExTR and QAR fulfilled

IECEX in detail



IECEX Certification Bodies & Testing Labs

IECEX Scheme is based on certification procedures performed by:

- ▶ Certification Body : ExCB
- ▶ Test Laboratory : ExTL



Often ExCB's operate with an ExTL in one institute.

ExCB's accept each others ExTR for evidence of the performed assessment.

For manufacturers this is an opportunity!

What makes IECEx interesting today?

For the countries in 'transition phase' a "fast-track" process is available

Mandatory National Certification is achieved by acceptance of IECEx Test Reports

- ▶ Ex TR according IEC standards
- ▶ Evaluation of specific national differences according to listing in IECEx Bulletin
- Basis for national certificate



The benefit of having an ExTR

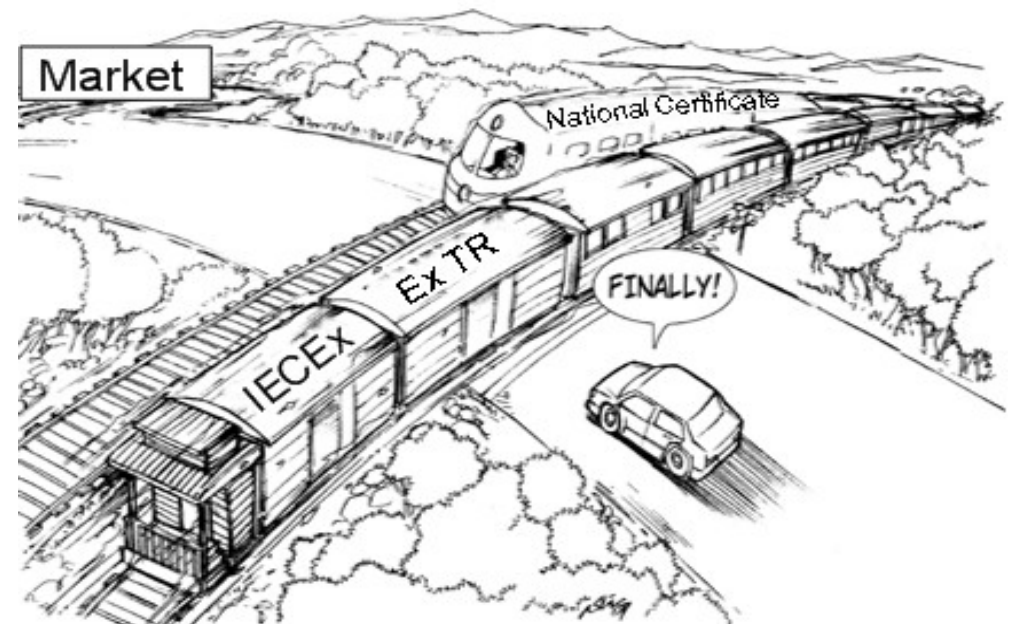
Taking the “fast-track”:

IECEX requires a standardized ExTR.

What is the benefit for the manufacturer having this IECEX ExTR?

Once tested and ExTR obtained →
(inter)national certification possible!

- Reduction of costs
- Faster time to markets
- But, 😊 be aware for the 2nd train!



Differences in national regulations

- ▶ IEC Zones versus North American Divisions
- ▶ Component versus System Certification
- ▶ Self Certification versus Certification Body
- ▶ IECEx National Differences National differences:
www.iecex.com/bulletin.htm
IECEX Bulletin is 339 pages long !!!
 - ▶ Differences in marking
 - ▶ Different requirements in construction
 - ▶ Different testing requirements



Reason for National Differences

When industrialization started

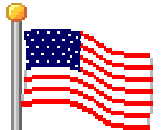
→ Many countries developed national safety regulations based on:

- ▶ The application
- ▶ Environment
- ▶ State of the art of technology at that time

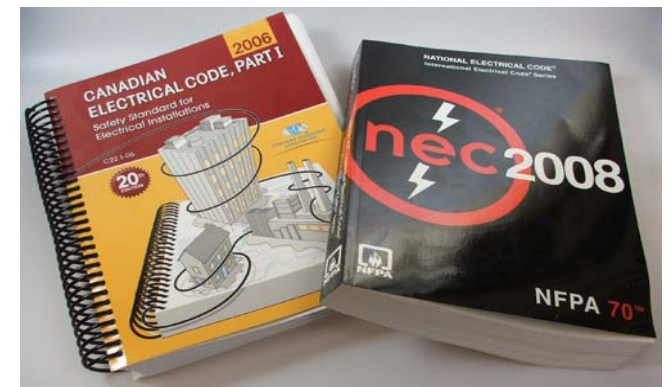
Globalization

- Need for international standards recognized
- IEC standards
- IECEx
- + national differences for those member states in transition phase

IEC Zones vs. North American Divisions



- ▶ New plants in Canada have to be built according to Zone classification. Revamps or minor extensions to existing plants can still be built according to the traditional Division classification.
 - ▶ In the USA may now be built according to Zone classifications.
 - ▶ IEC standards cover requirements for Zones in potentially explosive atmospheres, and so does the list of national differences in the IECEX Bulletin.
- The IECEX scheme and the national differences in the IECEX Bulletin do not apply for products to be certified for Divisions.



Component vs. System Certification

- ▶ Under ATEX, IECEx and in the US certification of individual components is possible when the conditions of use are clearly defined.

Case:

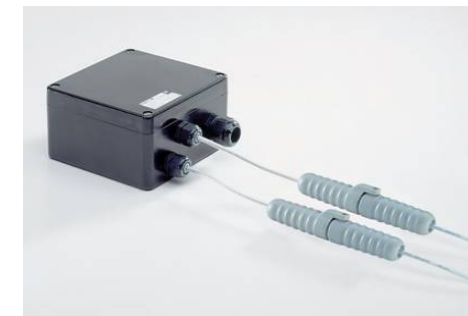
Under ATEX and IECEx it is possible to issue certificates of components on just a trace heater cable without termination accessories.



- ▶ In Canada certification for many applications is only possible for complete systems assemblies.

Case:

The trace heater can only be certified together with accessories needed to completely terminate the trace heater cable, connect it to power and make sure thermal requirements are met.



Self Certification vs. Certification Body

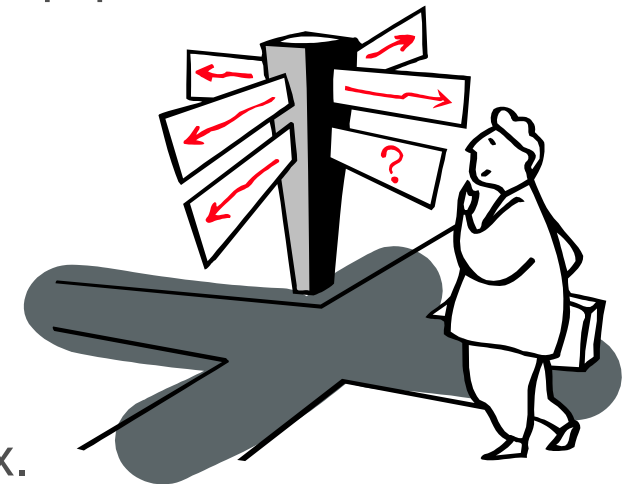
On top of all requirements for explosion safety, the equipment has to comply with other requirements regarding:

- ▶ electrical safety
- ▶ electro magnetic compatibility
- ▶ and possibly other safety requirements

These requirements are beyond the scope of IECEx.

In Europe for many of these requirements self certification / declaration is allowed under the misc. CE Directives

- ▶ In the USA and Canada these requirements have to be assessed and certified by a Certification Body!!



Consequences of National Differences

► Assessment national differences

Additional and/or re-assessment of the product according to the national differences is required by either the ExTL or the testing laboratory of the national certification body



► National Certification

Certification is required by a national certification body

Less differences: Benefits for stakeholders of IEC Scheme



- ▶ Personnel:
- ▶ Plant owners:
- ▶ Installers:
- ▶ Engineering:
- ▶ Manufacturers:
- ▶ Agencies:
- ▶ Governments:
- ▶ Safer working environment
- ▶ Lower costs to meet regulations
- ▶ Comprehensive
- ▶ Lower costs, comprehensive, more choice
- ▶ Access to market, resources for development
- ▶ Less resources for paper work / procedures
- ▶ Proven Ex regulation with less resources

IEC Scheme stimulates innovation

- ▶ Because manufacturer obtains with 1 approval access to the global market, more resources can be allocated to developing **innovative technology**.

- ▶ More available resources is in common interest!



Less differences: Benefits global community

- ▶ **Innovation is required to develop new technologies for:**
- ▶ **Increase of energy efficiency**
- ▶ **Processing of new energy resources**
- ▶ **Reduction of pollution**

- ▶ **LETS GET RID OF NATIONAL DIFFERENCES**
 - ▶ **CONCENTRATE ON GENERATING**
A FUTURE FOR OUR CHILDREN

Practical case of European manufacturer

- ▶ How to overcome the national differences in a practical case of a European manufacturer of self limiting heating cable for use in potentially explosive atmospheres.



BACABI
BARTEC



Why IECEx certification?

- ▶ IECEx CoC, ExTR and QAR globally facilitate Ex-certification in IECEx member states, however regulations still require national Ex certificates or approvals (member states in transition phase).
- ▶ For IECEx full participating member states the IECEx CoC may be used for market access instead of national certificates.
- ▶ To develop further international business, we applied for IECEx certification.



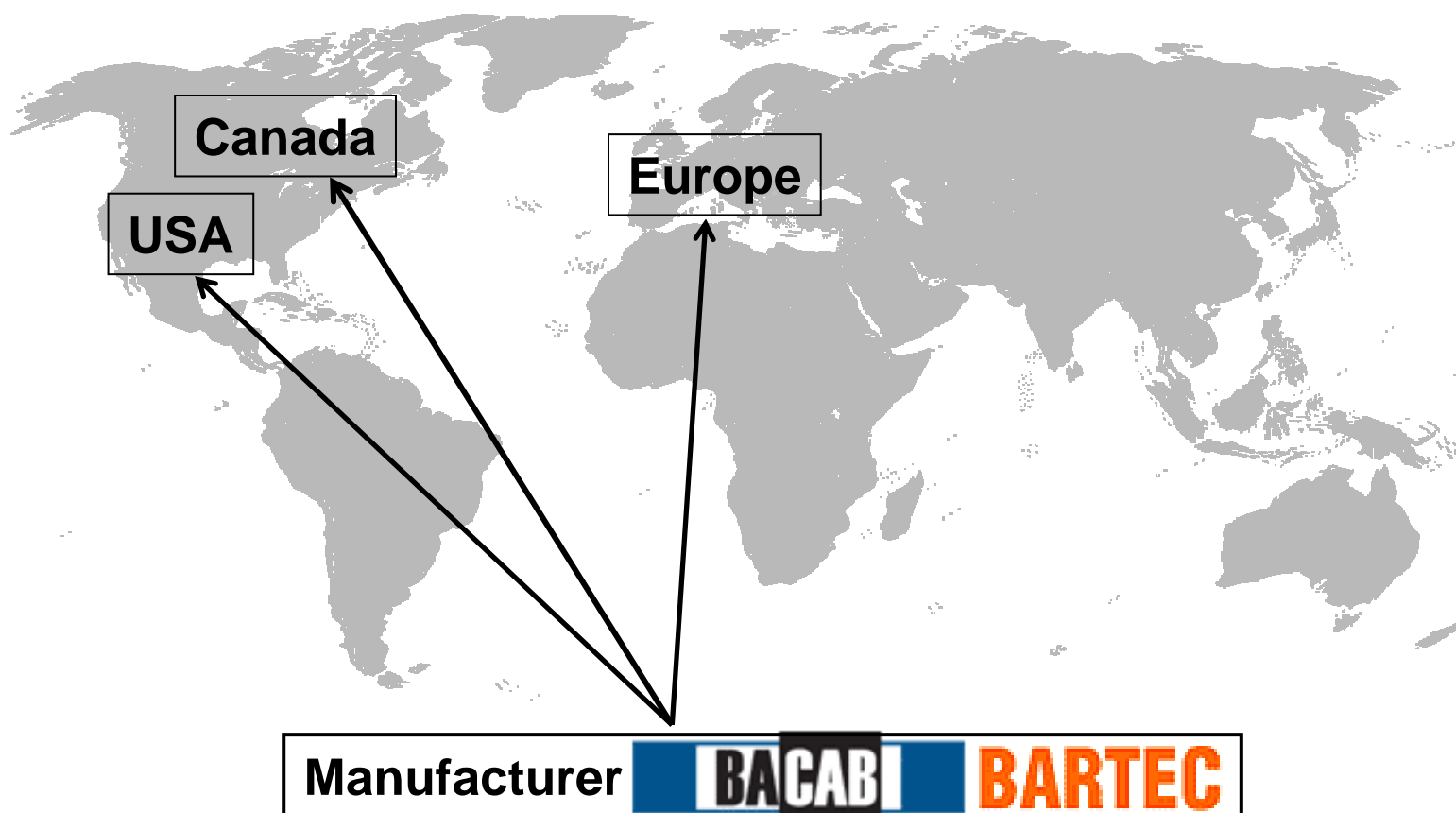
How to simplify: the path to global certification

There is still quite a number of national differences and other hurdles to be overcome to achieve global certification.

The path in 7 steps:

1. Select the countries and markets
2. Study the requirements and identify the national differences
3. Set-up a technical construction file
4. Find the best route to obtain certification
5. Select the right partners
6. Set-up an assessment and test program
7. Maintain sufficient communication between all parties involved

Step 1: Select countries and markets



Step 2: Study national requirements & identify national differences



- ▶ It is the responsibility of the manufacturer to make sure that the equipment complies with the requirements of the markets.
- ▶ Before applying for certification, the manufacturer needs to know the requirements of all directives applicable to the equipment in those countries.



Step 3: Set up a technical construction file

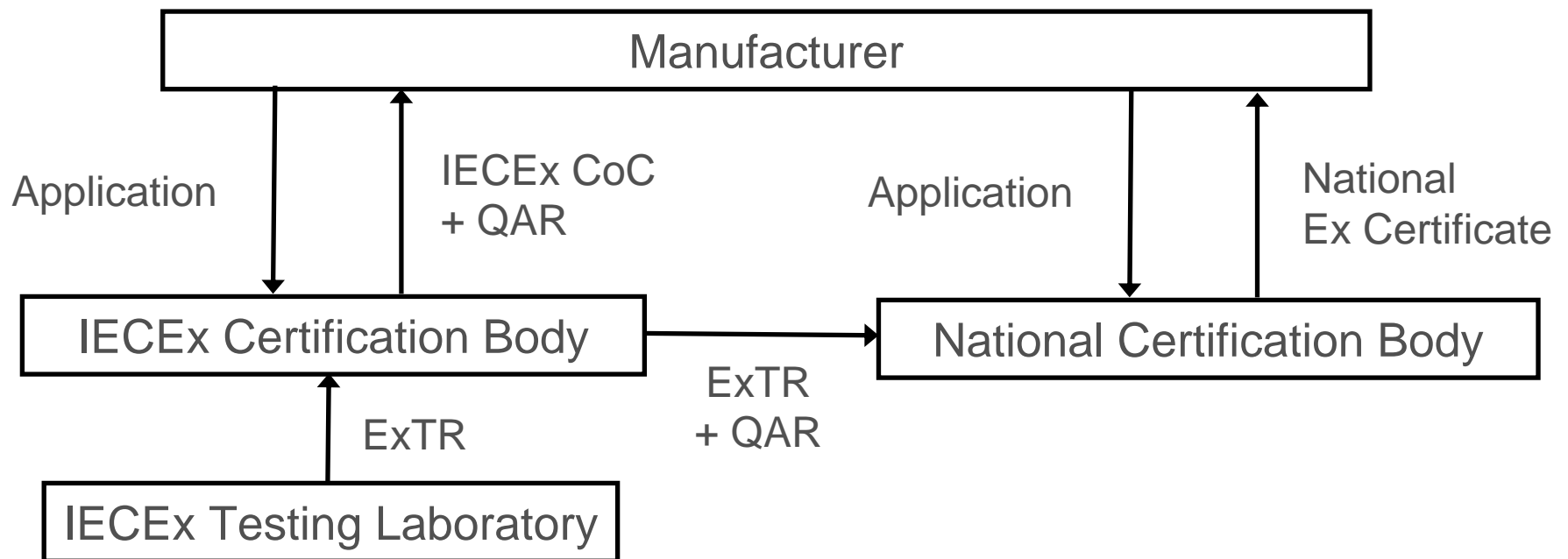
- ▶ The manufacturer has to set up a technical construction file containing all relevant specifications and documentation required for assessment:
 - Installation, use and maintenance instructions
 - Datasheets
 - Drawings
 - Marking
 - Evidence for compliance...
- ▶ The better the manufacturer knows the requirements, the better he will be able to provide the appropriate information and samples for assessment and / or testing.



Step 4:

Find best route to obtain certification

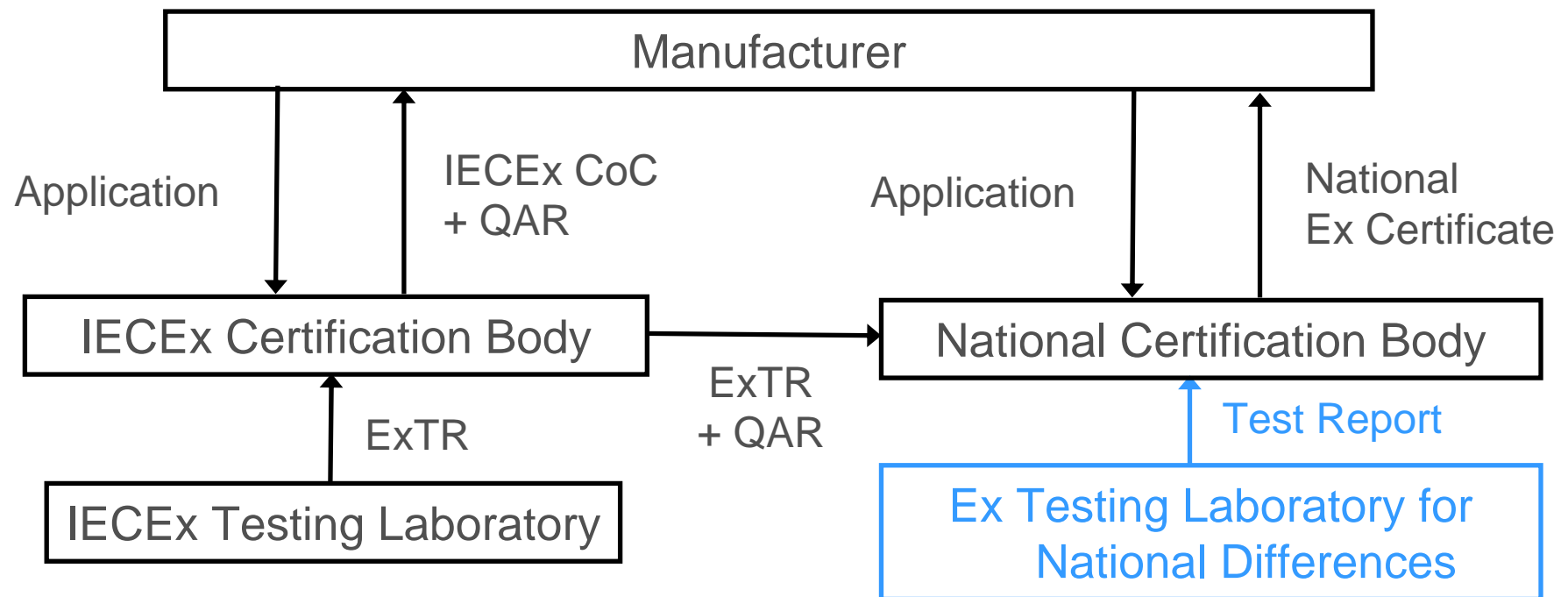
► Route 1 (ideal)



Step 4:

Find best route to obtain certification

► Route 2 (with remaining national differences)



Step 4:

Find best route to obtain certification

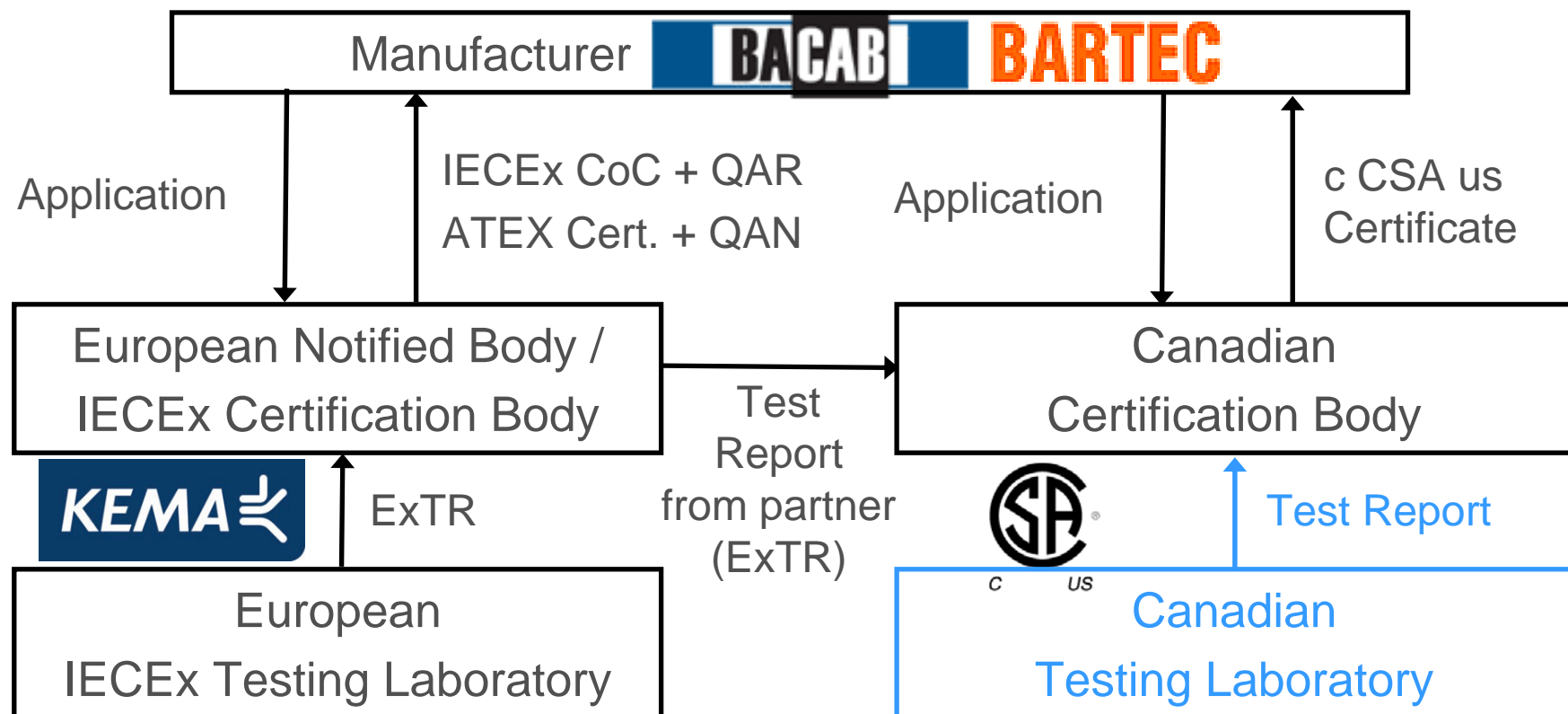
- ▶ Although the USA and Canada are members of the IECEx Scheme, their national standards differ from the IEC standards.
- ▶ Because of the large number of national differences some North American certification bodies decided not to qualify within the IECEx Scheme for the heat tracing standards at this time.

- ▶ **BACABI** **BARTEC** had to follow route 2



Step 5: Select the appropriate partners

► Route 2



Step 6:

Set up an assessment and test program


- ▶ The process must be well planned to avoid as much re-testing as possible → Cost savings and faster time-to-market.
- ▶ For heat tracing products a large amount of testing is required. KEMA, CSA and BACAB agreed on a mutual test plan.

++ Additional asset: KEMA project manager is TC31 member MT 60079-30!



Step 6:

Set up an assessment and test program

- ▶ Testing was done at the Canadian and European laboratories **and** at the manufacturer's laboratory under witness.
- ▶ The location depended on the availability of the necessary test equipment and other resources.
- ▶ This arrangement resulted in:
 - ▶ a reduction of the amount of testing
 - ▶ a significant cost reduction for 

Step 7: Set-up and maintain communication

Communication channels should be set-up and maintained until the end of the certification process.

A clear level of communication must be established:

- ▶ between certification bodies and testing laboratories
- ▶ between the manufacturer and certification bodies / testing laboratories.



Conclusion

- ▶ International certification schemes shorten the way to the global market!
- ▶ There are a lot of benefits for all stakeholders!
- ▶ Even in case of national differences it makes sense to follow IECEx Scheme!



☺ Time for ACTION: let's blockade the Champs Élysées! ☺

- ▶ Common goal should be:
eliminate the national differences & increase quantity of countries that adhere to international certification schemes like IECEx Scheme

We both thank You

We want the IECEX Scheme!

Questions

PCIC 2008 Technical paper will be downloadable at www.iecex.com