

2019

# UN Tyres R117 Implementation Challenges in Thailand



Thai Automobile Tyre Manufacturers Association (TATMA)

# EXECUTIVE SUMMARY

## State of play

- Developing and maintain Thailand competitive advantages and leadership in tires manufacturer and exporter sector. Transforming Thai natural rubber production into high value added products. And, providing and protecting local tire consumers with safest and performance tires.
- Thailand ranked World No.5 exporting country in Y2018 and Thailand has become a global hub of tire industry consisting of 17 local and international companies / manufacturers based. Employed approximately 40,000 people across Thailand. From 2014 to 2019, the tire industry has invested THB 92,000 Million which should translate toward capacity increase by 30% within next 5 years.
- The Government intention to protect local consumer by increasing safety and environment measure in same time than bringing better efficiency in our supply chain and road transportation.
- The Government plans to implement TIS2721 by adapting UN R117 to ensure the compliance of Thai automotive players of best-in-class worldwide standard.
- The UN R117 should be able reached this objective.
- Thai Automotive Tire Manufacturer Association (TATMA) as industrial representative, is fully supporting this initiative as this ambition will leverage Thai standards to be aligned with international standards to support growth and environment, including rubber consumption. And fully support our sustainable development strategy in Thailand.

## Experience sharing session from EU and Japan

- **Goal, objectives, and collaboration of related stakeholders**
  - EU is one of the most diverse market. Europe made decision to increase the harmonization of motor vehicle regulation through the united Nation framework in order to enhance trade partnership, and reduce research, development and certification cost.
  - Japan, noise has been addressed as major problem since 2002. It has been declined but the problem remains especially in mega cities. UN R117-02 is selected to strengthen the country's safety regulations and promote international harmonization of vehicle regulations. JATMA plays important role in receiving public hearing and deliver its opinion to the Central Environment council.

## Experience sharing session from EU and Japan (Cont.)

- **Regulatory framework**

- UN R117, the objective is to assure a minimum level of performance for the consumers.
- EC directive 1222/2009, Grading and labeling are initiatives from the EU. It is not the UN requirement. Objective is to provide complementary information to the consumers, to allow them to choose the best performances mix of Noise, Wet grip index and rolling resistance coefficient, and incentive the market to move towards better performances. It is self-declaration and requires laboratory alignment and random control to assure fair competitiveness and correct information to the consumer.

- **UN R117 implementation is relatively technical and potential complicated.**

- Industrial challenges  
Manufacturers need to understand test conditions in Thailand. Different test conditions can deliver different results on the same product. A product passed at one test center may fail at another test center because of poor understanding of alignment.
- Product challenges  
By nature of product itself, need to compromise the performances among rolling resistance, wet grip and noise. Then, Manufacturers need high R&D technology to meet UN R117's requirements.

JATMA recommends that TISI should provide sufficient lead time required for tyre industry to develop necessary technology, design solution and post certification (marking & mold) activities.

- **Step by step implementation is recommended.**

- EU was the first entity implemented UN R117 and took over 10 years to complete implementation of stage 2. S, W, R was implemented separately step by step to allow enough lead time for manufacturers to develop their capability and certification process.
- In Japan, OEM was prioritized to implement UN R117 as mandatory standard and providing enough transition periods for each product class C1, C2, and C3. Meanwhile replacement market is still voluntary standard.

## **Vision and opinion session from key stakeholders in Thailand**

- **Industry support government policy and initiative**
  - The standards are key to enhance manufacturers' ability to development themselves.
  - TATMA support this policy and initiative to align national technical with international one, especially UN R117 which is a huge lever to promote environment and sustainable development.
- **Challenges for tire industry @ initial stage**
  - Require technology and advanced design to meet minimum threshold.
  - Need time for Research, development and certification (RDC) to adapt current model to meet requirement and replace current products.
- **Challenges for automotive industry @ initial stage**
  - Consider exemption of labelling for OE tyre.
- **How to pass the initial stage**
  - Thailand is in Stage 1 of the implementation which aims to prepare for research and development to meet new requirements. Therefore, Stage 1 market implementation should be flexible enough to minimize impact and keep business continuity. Stage 2 will provide real value to the society.
  - Recommend TISI to consider
    1. Acceptance of E certificate and test report from international testing facility.
    2. Method to implement performance mark (SWR) and declare performance value at this initial stage will create big difficulty to industry. It needs to be discussed.
- **Long term vision**
  - To transform its technical regulation from domestic market control measure to become international trade facilitation measure and enhance the country's export capability by:
    1. Notify, announce & recognize UN R117 and TIS2721 regulation
    2. Upgrade approval procedure for issuing both TIS2721 and UNR117 certificate (E53 certificate).

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# Introduction

## Objective

Seminar “UN Tyres R117 Implementation Challenges” proposes all stakeholders in Thailand to discover and well-understand about UN R117 knowledges & experiences sharing from European Union (EU) and Japan. We also invited Partners from other organizations to share their Vision & Opinion on the opportunity, benefit and possible model to implement UN R117 in Thailand.

TATMA wishes that participants from several sectors will bring the knowledge, experience, good vision and strategy from this seminar to ensure the smooth further implementation of TIS 2721-2560 which adapted from UN R117 to maximize benefit to consumers, environment and economy.

## About TATMA

Thai Automobile Tyre Manufacturers Association (TATMA) is a non-profit association which aims to promote the automobile tyre industry by formulating and implementing policy measures on research and study to improve safety, environmental and economic effectiveness of the tyres for automobile industry in order to contribute to the sound development of Thailand’s industry and economy and the improvement of consumer’s welfare. TATMA will proceed with the following objectives:

- (1) Promote business operation relating to automobile tyres manufacturing;
- (2) Formulate and implement the positive relationship among members;
- (3) Formulate and implement policy measures on the safety of automobile tyres;
- (4) Formulate and implement policy measures on environmental conservation relating to automobile tyres;
- (5) Promote the effectiveness of production and consumption of automobile tyres to help members to compete more effectively both within Thailand and internationally for the utmost benefit of the consumers;
- (6) Promote effective communication and cooperation with governments, domestic and overseas organizations and other relevant stakeholders concerning automobile tyres industry;
- (7) Conduct seminars or publish articles on the topics related to automobile tyre industry;
- (8) Giving advices or comments concerning the automobile tyres industry to public organizations, members and other organization, but shall not involve in politics.

## **THAI TIRE INDUSTRY TODAY**

***By Mr. Segsarn Trai-Ukos, Chairman of Thai Automobile Tire Manufacturers Association (TATMA)***

“As for the harmonization of the global tire industrial standards, Thailand adopts this internationalized principle of UN R117 regarding the technical prescription of type approval of tires regarding rolling sound emissions, adhesion to wet surfaces and rolling resistance to become a stronger hub of the tire industry wherein 7 key manufacturers contribute to upgrading manufacturing process and the entire supply chain to protect the environmental safety. The implementation of this global regulation will be favorable for making progress on sustainable development and market competitiveness in the world market to ultimately elevate the living standards of consumers in support of the Thai government and the international tire organizations.”

## **THAI TYRE STANDARD POLICY**

***By Mr. Thana Alapach, Deputy Secretary- General of Thai Industry Standard Institute (TISI)***

Thai Industrial Standard Institute (TISI) is the national standards organization for Thailand, established under the Ministry of Industry by virtue of the Industrial Product Standards Act B.E. 2511. According to the Act, TISI has, as its governing body, the INDUSTRIAL PRODUCT COUNCIL which controls its policy, sets the priority of standards to be prepared, recommends qualified persons for the Minister to appoint to TISI technical committees, arbitrates and awards licenses under certification scheme.

TISI aims to protect consumer, preserve environment and national resources, develop capability of Thai industry to compete in global market and remove trade obstacle.

Reference of MoU between TISI and TATMA, we shared efforts to collaborate on the nation’s standardization activities in compliance with international guidelines so as to treat consumers with fairness, protect lives and property, conserve energy, and save the environment.

TISI launched new 4 Tyre Regulations in the form of Royal Decree with a mission to protect consumer’s safety including set out post surveillance and control to ensure compliance as follows:

1. TIS 2718-2560 Pneumatic tyres for motor vehicles and their trailers
2. TIS 2719-2560 Pneumatic tyres for commercial vehicles and their trailers
3. TIS 2720-2560 Pneumatic tyres for motor cycles and mopeds

The above 3 Royal Decrees focus on product’s safety which become mandatory standard since 21 January 2019.

4. TIS 2721-2560 Tyre rolling sound emissions, wet surfaces adhesion and rolling resistance.



TIS2721-2560 which is additional mandatory standard and take effect from 24 September 2019. This standard will provide information on tyre performance to customer which help them to correctly select tyre fitted to their need.

To this extent, Automotive and Tyre Testing, Research and Innovation Center (ATTRIC) is established to enhance automotive industry into Super Cluster for next vehicle industry. It is a learning center that will pass on technology to relevant sectors. TISI has operated this project to provide testing and certification services of automotive products, UN R117 Tyre standard.

Phase 1 ATTRIC will serve the testing for UN R117's Noise and Wet Grip. In February, 2019 ATTRIC received the Certification for Wet Track from Applus+IDIADA, Kingdom of Spain.

ATTRIC is located at Lat Krathing, Sanam Chai Khet, Chachoengsao, it saves time and expense of operator who previously need to ship their product for test and certification from abroad. It also attracts foreign investor from processed rubber industry and it will be the 1st automotive and tyre testing center in Asia.

## **What is UN R117?**

The United Nation Economic Commission of Europe (UN ECE) is tasked with creating a uniform system of UN regulations including UN Regulation 117.

UN R117 was introduced in Y2005 and amended to version 117.02 in 2011. This regulation sets tyre type approval limits for rolling resistance, sound and wet grip. Europe is the first community implemented Regulation R117 and came into force on 1st November, 2012. It affects passenger car, commercial light truck and truck tyre. Its basic purpose is to increase the safety and environmental and economic efficiency of road transport.

The World Forum for Harmonization of Vehicle Regulations is a working party 29 (WP.29) of the Sustainable Transport Division of the UN ECE. WP.29 has been established as the working party of experts on technical requirements of vehicles. The forum works on regulations vehicle safety, environmental protection, energy efficiency and theft-resistance.

# EU and Japan Experience Sharing Session

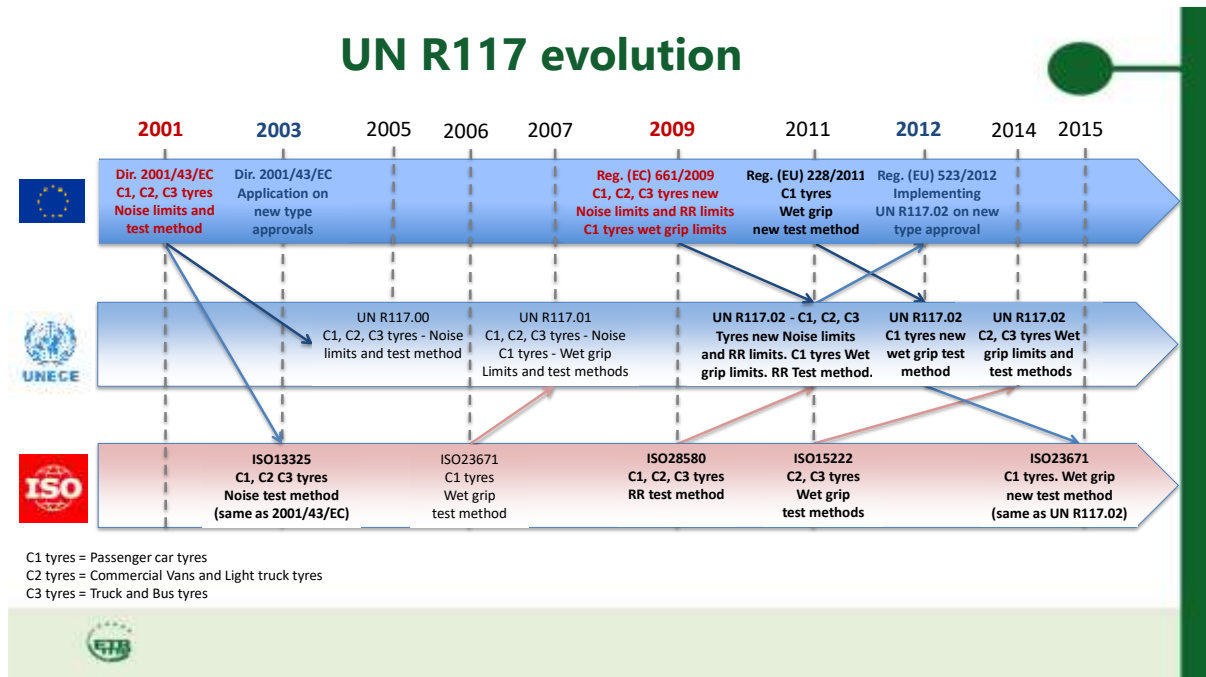
## UN R117 Implementation Experience Sharing from EU

By Ms. Fazilet Cinaralp, Secretary General of the European Tire & Rubber Manufacturers' Association (ETRMA)

### Policy, target & collaboration with key stakeholders

In the European tire industry, there are 14 leading tire manufacturers that operate a total of 86 plants across Europe with new investments e.g. Nexen in the Czech Republic and Linglong in Serbia. More than 200,000 people are employed in this industry.

300 million Passenger Cars (PC) Tires and 18 million Truck & Bus (TB) Tires are produced in European plants. European PC & TB replacement market has expanded by 3.9% in PC and by 7.6% in TB while the growth has mainly covered by imports. ETRMA activities emphasizes on acting as a voice of tire and rubber goods producers to various European institutions through representation, co-ordination, communication, promotion, and technical liaison.



### EU brings valued added for the environment and the economy from the implementation of UN R117

UN R117 was first introduced in 2005, which introduced requirements on the maximum rolling sound emissions of tires. In 2006, the 01 series amendments to UN R117 added requirements on the minimum wet grip performance of passenger car tires (C1 tires). In 2011, the 02 series amendments to UN R117 added requirements on the maximum

rolling resistance (RR) of tires and increased the stringency of the maximum rolling sound emissions requirements. As per series amendments, the maximum allowable rolling resistance (rolling resistance) value for C1 tires was 12 N/kN from November, 2012 (stage 1). Since November, 2016, the maximum allowable rolling resistance value for C1 tire is 10.5N/kN (stage2).

The regulation UN R117 has also set minimum standards for wet grip that must be met by all tires that come under the scope of the regulation. In considering the EU tire labelling program, Regulation 1222/2009 establishes a mandatory labelling scheme for tires sold in the EU. The label is based upon three parameters: rolling sound resistance, wet grip index and noise. However, UN R117 and tyre labeling program are entirely different regulation.

For the EU tire labelling regulation, fuel efficiency rating of a tire is defined using its aligned rolling resistance value. The aligned rolling resistance value is calculated by applying a correction formula to the unaligned rolling resistance value obtained through RR testing. In addition, the EU tire labelling regulation has defined a grading scheme for wet grip index for C1 (passenger car types), C2 (light commercial vehicle tires) and C3 (truck and bus tires).

#### **Benefits to promote the implementation of UN R117**

For tire manufacturers, the implementation of UN R117 in Thailand will enhance trade partnership with the EU and third parties. Further, it will help reducing the development costs and administrative burden in terms of approval, certification and application of technical standards for reducing the proliferation of testing and marking.

For the end-consumers, it ensures a minimum safety level and to compliance with the regulations require compliance both of tire performance and of manufacturing process along with regularly updated technical progress. It fosters harmonized state of the art regulations between the countries.

For the authorities, it is an efficient safety net thanks to traceability of authority that grants type approval. It is a unique international standard marking on tires to prove conformity. Moreover, in case of safety concerns due to non-conformity in a given market, easy access to the authority which granted the type approval for clarification is available. It is also possible to prohibit the sale and use in case of non-conformity following threat to road safety. And test prescriptions in line with ISO standards are clearly defined inside regulations.

ETRMA trusts that Thailand, being a contracting party to UN 1958 Agreement, is key to contribution to the international harmonization of UN R117. In addition, it is recommended that Thailand execute the staged implementation of this regulation by the Thai Industrial Standard Institute (TISI) in cooperation with ETRMA to share information on UN/EU regulations and share best practices/training on testing centers and processes.

Entire investment of testing and certification system should be considered properly with taking time before regulation implementation.

## Key Technical Challenge behind UN R117

By *Mr. Motohiro Asai, Michelin Japan*

### Measurement concept

- **Wet Grip Index (WGI)**

The calculation of the wet grip index of a candidate tire is based on comparison between the wet grip performance of the candidate tire and the reference tire American Society of Testing and Materials (ASTM)'s Standard Reference Tyre Test (SRTT) 16" at 5-35°C for a normal tire and 2-20°C for a snow tyre. Therefore, it is a comparison test. The influential parameters include external temperature, speed, tire load and pressure, water height, and road roughness and adhesion controlled by Sand Depth + "British Pendulum Number (BPN) or  $\mu$  of SRTT 14".

Mathematical correlations are applied to align the results when the tests are performed in different conditions i.e. different test locations (tracks) or different weather conditions (temperatures).

The WGI is obtained through the following formula:

$$G(T) = \frac{\mu_{\text{candidate tyre}}}{\mu_{\text{SRTT16}}} 1,25 + A \cdot (\text{Temp} - T_0) + B \cdot (\mu_{\text{SRTT16}} - \mu_0)$$

This ratio is a **raw index** of the measured friction of the candidate tyre vs the SRTT16" at the tests conditions (Temp,  $\mu_{\text{SRTT16}}$ )

**Linear correction in temperature** to estimate the value of the index at the reference temperature  $T_0$

**Linear correction in friction** to estimate the value of the index at the reference friction (track)  $\mu_0$

- **Rolling Resistance (RR)**

Rolling resistance is the force resisting the motion when a tire rolls on a surface. It measures loss of energy (ore energy consumed) per unit of distance traveled. 4 methods (Force, Torque, Deceleration, Power) are accepted.

ISO 28580 is the reference rolling resistance method in UN R117 (also in EU regulations e.g. R692\_2008, motor vehicle emission Euro 5/6). Key factors for this new test are composed of load and inflation pressure, speed, warm-up duration and temperature.

For labelling, the reference laboratory could be every organization operating rolling resistance test machine. The Lab alignment method of ISO 28580 is designed in such a way that the workload can be handled by one single global reference laboratory. It is mandatory that the reference laboratory complies with all requirements of ISO 28580.

- **Exterior noise**

ISO 10844 applies to test tracks used for measuring exterior vehicle and tire noise. The objective of ISO 10844 is to control the reproducibility of noise measurements on test tracks. To conduct a test, a vehicle enters in a specific measurement area on ISO 10844 track at a given speed and maximum noise is recorded by 2 microphones.

Basically, ISO 10844 noise test track consists of a drive lane with propagation areas on each side, the configuration, size and free space radius required by the standard. Other properties covered by the standard include **geometry**: step between drive land and propagation area, gradient (longitudinal slope) and cross fall (transverse slope), irregularity (texture at wavelengths longer than 0.5 m); and **surface properties**: surface texture (MPD), sound absorption coefficient, sieving curve.

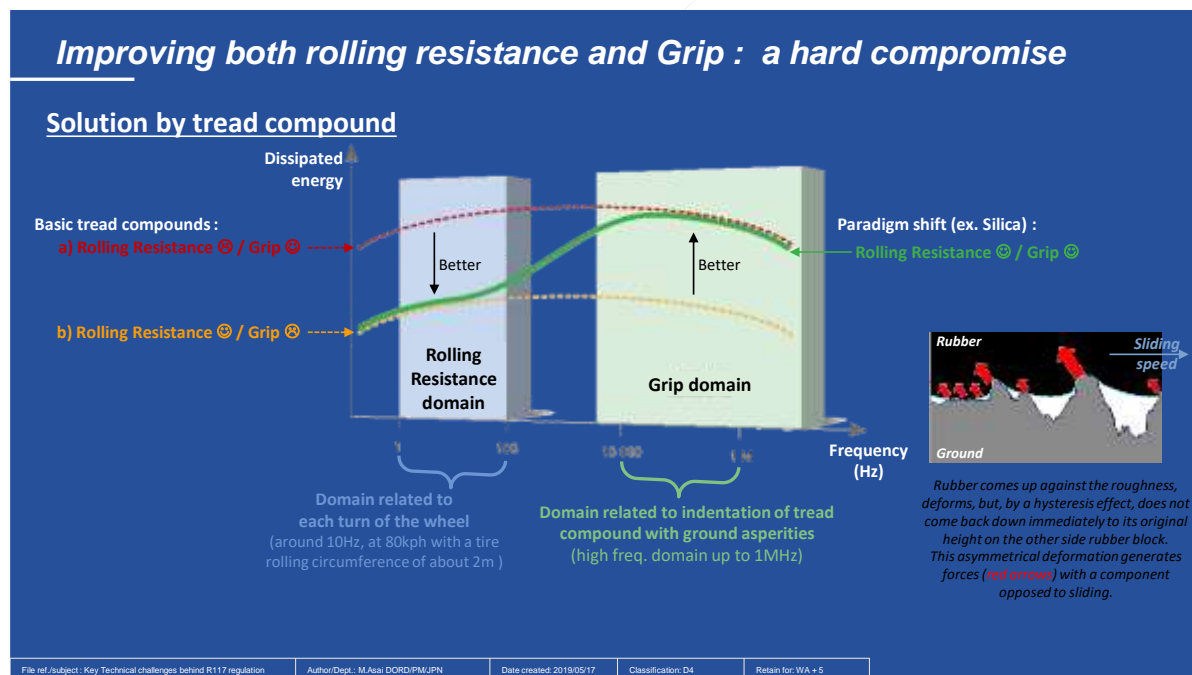
Industrial challenge: Tyre performance can be change due to environment. Learning from Wet Grip as an example the Test Dispersion is possible to be Big because of Road Surface and Temperature. On the current method standard deviation ~ 6.5%, the result can vary up to 3 Grading Levels.

**Product challenge: Improving tire efficiency through manufacturing**

The major product challenge is currently how to improve tire energy efficiency with decreased rolling resistance as well as improved wet grip and reduced rolling noise.

This challenge is to investigate if the replacement of tread compound and the number of processing steps on mechanical properties can contribute to compromise between rolling resistance and wet grip for tread pattern optimization with less contact ratio and contact pressure on hydro and grip.

In conclusion, UN R117 is complicated, Manufacturers need to research & develop Product to meet the requirements.



## **What are the Qualification Criteria of Inspection Bodies and Testing Facilities under UN R117?**

### **Testing facility alignment system in EU.**

***By Mr. Manfred Lottig, Vice-President Mobility of Southeast Asia & Director of TÜV Rheinland Malaysia Sdn. Bhd.***

ISO 17025/2017 General requirements for the competence of testing and calibration laboratories is the main ISO standard used by testing and calibration laboratories for which most labs must hold accreditation to be deemed technically competent for the operations of test facilities.

The European Approval Authorities requires full scope of compliance of each test facility, responsibility of compliance is with Technical Service (TS) who performs the approval tests. Compliance checks by Approval Authorities (AA) are usually within COP audits. Test facilities can be optionally accredited according to ISO 17025/2017. They must be scope related and specified in each regulation consisting of 147 regulations with often more than one test item. In addition, they must have calibrated equipment and need to include documentation requirements and availability of trained and qualified engineers and staff with skills that must be impartial and independent.

According to UN R117, 4 different specification requirements of testing facilities for 1. rolling resistance 2. adhesion on wet surfaces, 3. rolling sound emission and 4. snow performance are specified and require compliance.

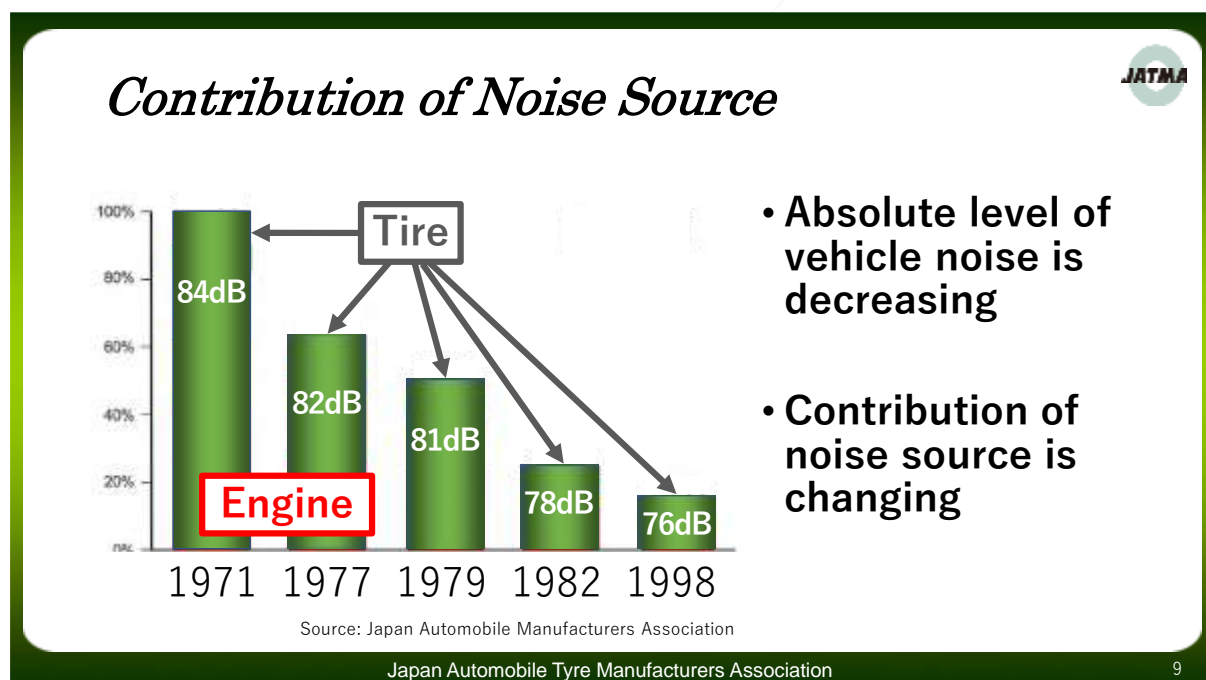
## Sharing Experience from Japan

### Why and how R117-02 be in Japan – Decision making process

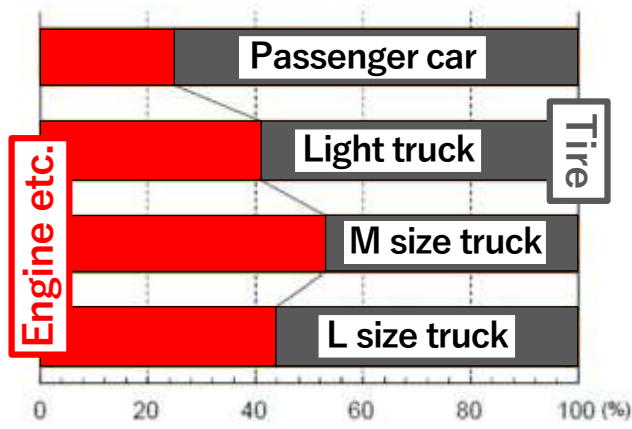
*By Dr. Kenji Kurata, Executive Director, the Japan Automobile Tire Manufacturers Association Inc. (JATMA)*

In Japan, regulation on vehicle noise had been introduced since 1952 and the value had been tightened many times and final agreement has been set during 1998-2001, It was reported that actual volume of vehicle noise had been declined, but the problem still remained especially in mega cities, so more regulation such as Environment Standard was needed. Contribution of noise source had been changed until tyre became the major sources of noise.

While the regulation on tyre noise (UN R117) has been introduced, starting with R117-01 in 2005 then R117-02 in 2010. There was no impact in implementation of R117-01 but the certain impact could happen in implementation of R117-02. A discussion between the related governments i.e. Ministry of Environment (MOE), Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and Industry Associations (Tyre and Vehicle) was made for a suitable implementation schedule by taking international harmonization based on WP29 into consideration of MLIT policy.



## Contribution of Tire as Noise Source



Source: Japan Automobile Manufacturers Association

- Steady running state under final regulation value
- Power unit noise get small under this condition
- Tire becomes major source of noise



## **Implementation Scheme in Japan and the differences to Europe, Key Challenges and Solutions**

***By Mr. Jun Makino, Chairman of Tire Standards Verification  
Sub-Committee of JATMA***

In Japan, discussion for R117-02 implementation took long time among MOE, MLIT, experts and Industry Associations (Vehicle Industry and Tyre Industry) before implementation. Discussion was separated into 4 steps:

- (1) noise limit suitable for Japan (about 3 years)
- (2) enforcement schedule (1 year).  
UN R117-02 Stage 2 for C1/C2/C3 tyres was selected for implementation. Enough lead time was proposed by tyre manufacturers, with explanation of (a) complication of Tyre development and Industrialization process and (b) capacity problem resulting each tyre manufacturer cannot do everything in same time, for  
(a) Performance (RRC/WGI/PBN) improvement to meet R117-02 requirement  
(b) Mold modification to put E mark and SWR mark (by re-cutting the mold to engrave the mark)  
As the result, the different implementation timeline for each tyre class (C1/C2/C3) and for new vehicle and existing one is determined, with tyres for replacement market is excluded, for smooth implementation.
- (3) review the first proposal schedule (about 1 year). Implementation schedule for C2 and C3 was reviewed due to their complexity and Industry difficulty.
- (4) draft regulation based on R117 (about 1 year).

The regulation took 2 months for public hearing and enforced in November 2015.

Based on the experience of Japan, below key points are noted:

1. Set up the boundary condition for coming new regulation;
2. Deep discussion between Government and Industry; and
3. Set up enough lead time and transition period based on the discussion as 2 above.

# APPENDIX : EU schedule vs Japan schedule



THE JAPAN AUTOMOBILE TYRE MANUFACTURERS ASSOCIATION

Lead Time	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Transition Period	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	



Japan Automobile Tyre Manufacturers Association

Appendix-3

## Vision & Opinion Session

### **Visions and opinions of key stakeholders in Thailand on what will be the opportunity, benefit, and possible model to implement UN R117**

***By Mr. Adisak Lohitasune, President of Thailand Automotive Institute (TAI)***

“With over 50 years of my experiences in automotive industry, I think that the industry will become more and more innovative e.g. electrical mobility, connectivity, sharing economy in automobile and technological disruption, new components and supply chain and logistics development.

Thailand is a leading ASEAN country in this industry thanks to skilled manpower. However, threat is robot automation. As a result, technology development and implementation will give more competitive advantages to tire manufacturers in our country.

Thailand’s first tire testing and R&D facilities will operate in Sanam Chai Khet in Chachoengsao province to support the implementation of TIS 2721-2560 in the country. They will be available for tire testing and R&D services this year in 2019.”

### **Visions and opinions of key stakeholders in Thailand on what will be the opportunity, benefit, and possible model to implement UN R117**

***By Mr. Ong-arj Ponkjiworasin, President of Thai Automotive Industry Association (T.A.I.A.)***

“The implementation TIS 2721-2560 adapted from UN R117 will come into force in September, 2019.

The tire standard is a close collaboration between the industry and the government for many years. This is the country’s policy to comply with. In-country automotive production and sales revenue are positively progressing with +2% export in Q1 this year.

Now, I think there is no big obstacle to implement this regulation. However, we might foresee some hassle for adaptation and compliance in the beginning. We will discuss tire labeling issue with TISI, and propose to exempt labelling for OE in further course according to EC Directive 1222/2009. I advise you to study the Particular Rules concerned, the Industrial Standard Act, and we can organize further discussion further.”

## **Visions and opinions of key stakeholders in Thailand on what will be the opportunity, benefit, and possible model to implement UN R117**

***By Mr. Ekachai Limpichotipong, Chairman of Rubber-Based Industry Club (RBIC), Federation of Thai Industry (F.T.I.)***

“RBIC believes that the manufacturing standards are key to enhance manufacturers’ ability to development themselves.

This year, TIS 2718-2560, TIS 2719-2560 and TIS 2720-2560 in relation to safety are now in effect for tire manufacturers’ tire test conducted by themselves with their own test equipment. In addition, TIS 2721-2560, which adopts the implementation of UN R117 and will be enforceable very soon, will regulate tire manufacturers to reply on impartial and independent tire testing facilities and testing equipment.

However, we anticipate some difficulties from the implementation in September 2019 while our tire testing facilities may not be ready for services yet for all type tires including C3, bias tires which are still produced in Thailand by many manufacturers. Therefore, we submitted a letter to TISI to this regard for 4-year exception on C3 testing. But, we look forward to acknowledging receipt of TISI’s response to this regard.

## **Visions and opinions of key stakeholders in Thailand on what will be the opportunity, benefit, and possible model to implement UN R117**

***By Mr. Masaharu Ono, First Vice Chairman of Thai Automobile Tyre Manufacturers Association (TATMA)***

“Ranked No. 5 in new tire rubber export worth USD 4.8 billion, Thailand is a global of tire manufacturing industry with more than 50,000 employees. The Thai government always support the tire industry and enforces MOI and TISI regulations for the benefits of better safety from tire performances and sustainable development.

The implementation of UN R117 in Thailand sets new industrial standards and requirements for tires in terms of design and industrialization of new models in cooperation and consultation with EU and Japan.

Now, Thailand is in Stage 1 of the implementation which aims to prepare for research and development to meet new requirements. Therefore, Stage 1 market implementation should be flexible enough to minimize impact and keep business continuity.

Considerations are taken on acceptance of E-certificates and test reports from international testing facilities for allocation of resources with priority to develop

existing products to meet Stage 2 requirements rather than implement a Stage 1's certification, and on method to implement performance marking (SWR) and sacrifice to discussion on performance values as well as acceleration of testing facility certification, alignment and recognition with international standards and laboratories for Thailand to be able to support R&D and reduce costs to test in international labs.

In my opinion on long-term development, Thailand is supposed to transform its technical regulation from domestic market control measure to become international trade facilitation measure and enhance the country's export capability. Safety Regulation R30, R54 and UN R117 regarding tire performance are therefore mandatory requirements."

## Q&A

- 1. EU has higher competitive advantage on technology when compared to other countries. Why do manufacturers in Europe still take time like 4 years for stage 1 and another 4 for stage 2?**

*Mr. Fazilet Cinaralp:* Normally with the presentation from Manfred also with explanation by Asai-san, tire is a complex product. 4 years is normal period because performance improvement, testing from technical services, administrative and organizational procedures and qualified engineer requirements etc. are involved. In Europe, we have 60,000 different products, they need to be grouped to apply compliance with different requirements. All steps need to be performed before tires are put in production. This is crucial because before the production starts, everything should be in place, including the marking, the numbering, and type approval from authority. New lines of tire will arrive in the market. First we need to think about new tyres, second is the new vehicle with new tyres and the third is whole market. 4 years is not enough. We must thank the tire industry for efficiency.

- 2. You repeat for many times about the alignment. We would like you to explain once again why the alignment recognized between testing facilities is very important to be compliant with UN R117.**

*Mr. Motohiro Asai:* We are concerned about product dispersion. It is difficult to have alignment for different facilities. To respect the UN regulation in European countries, we are thinking it is very important to confirm the gap between facilities of tire manufacturers and facilities of reference laboratories in different countries. So, we can manage the gap for risk management.

- 3. You mentioned 4 testing methods on rolling resistance. Which one is the most recommended? And why?**

*Mr. Manfred Lottig:* It depends on financial aspect and how much you would like to invest in test equipment. 4 different testing methods require 4 different test equipment. I do not go which is the best method, but I think it is a choice of the operator of test facility and their preference to work with.

- 4. 28 European countries with more than 14 leading tire manufacturers, please explain the collaboration between the governments, the industry, the stakeholders making contribution to plan so the implementation becomes smooth and effective.**

*Ms. Fazilet Cinaralp:* The European Commission takes the initiative for proposing legislation. But the decision is made by the member governments. There is a very good consultation between the industry and the European institutions and the EC is working with the industry bodies rather than working with individual bodies. Not only in Brussels, we work with the capitals of different countries because when it comes to decision-making, the government of each country instruct all the decisions. The EC gets support from the industry.

- 5. Wet grip seems to be the most challenging testing with high potential dispersion which can impact capacity. What is the main cause of this version? What is your recommendation to solve this problem?**

*Mr. Motohiro Asai: The first main cause is the difference of external temperature. And the second is tire load and pressure. We have some range of different load surface characters, but each facility cannot have related points. We have some gap between tire manufacturers and test facilities. We need some solutions about this parity. We need reference facilities for load surface characters and we need to estimate reference facilities for different load surfaces between tire maker facilities and reference facilities. For the temperature, we can have precise range for each country. We need to identify the suitable temperature for testing in Thailand.*

*Finally, we need to have the same reference range as in the regulations in Europe for Thailand to understand the test facility conditions in Thailand.*

- 6. What do you recommend for Thailand's test facilities to be recognized at the international level?**

*Mr. Manfred Lottig: Everywhere is different. Thailand's test facilities need to meet requirements to get approval. To get international recognition, Thailand's laboratory needs ISO/IEC17025 accreditation and operates in standards and requirements of the regulation. On the other hand, you need to have technical services available to be able to run test facilities.*

- 7. EU has implemented UN R117 and labeling regulation. What is the difference between UN R117 and labeling regulation? What is suitable condition prior to implementing grading and labeling?**

*Ms. Fazilet Cinaralp: UN R117 regulation provides minimum performance requirement of tires. This is minimum condition of tires allowed in the European market. And the third-party type approval is needed in administrative process. Grading/labeling are initiatives from the EU. It is not the UN requirement. It is consumer information which deals above the minimum requirements. Levels of marking differentiate the markets for products for the same performance. There are 3 performances for tires including rolling resistance, wet grip and noise which must be advanced to create enough incentives in the market. Certification by manufacturers themselves means manufacturers are responsible for testing tires according to the defined criteria to inform consumers of the performances.*

- 8. While the trend of the market moves towards to electrical vehicles for energy saving and environmental emission reduction, how would UN R117 be relevant?**

*Mr. Motohiro Asai: one unit of Rolling resistance for electrical vehicles would give impact on energy consumption by 5% while one unit of Rolling resistance for traditional vehicles would give impact on energy consumption by 2-3% Then, UN R117 will be more important than now thanks to electrical vehicles.*

**9. What is the difference between lab candidate and reference lab for rolling resistance measurement?**

*Ms. Fazilet Cinaralp:* Because of the need in higher performance and machine, and twisting of machine is easy, the number of laboratories is identified for comparison for labelling regulation. It is a process to align laboratories to be under control over the data. Reference labs need to be aligned all over the world.

**10. There are 2 versions of ISO10844 for noise road surface. What is the difference between 2 versions?**

*Mr. Motohiro Asai:* We have 2 technical criteria for noise testing: roughness and deformation to define road surfaces to reduce dispersion of the test. That is difference between 2 ISOs for noise and tire testing track. The roughness of road surface and sound absorption coefficient are the difference between 2 versions. Version 2014 has smaller dispersion than version 1994.

**11. UN R117 WGI specifies testing temperature between 5-35°C for the normal tyre. In case temperature is beyond this, can we perform the test and correct the end-result?**

*Mr. Manfred Lottig:* The formula for temperature correction is that if the temperature is beyond, you cannot use that temperature for testing. Solution is you can test in the morning when the temperature is lower (in the range).

*Ms. Fazilet Cinaralp:* This is one of the main challenges of testing tire, not only for noise testing. Testing tire outdoor is a challenge because climate has impact to the outdoor test.

**12. The co-relations between temperature and noise, temperature and grip, and temperature and rolling resistance?**

*Mr. Motohiro Asai:* Different temperatures depend on different tires because each material has different character on temperature. It is difficult to explain easily what the co-relation between the temperature and tires is. For rolling resistance, we should now test at 25°. It depends tires and materials.

**13. In Thailand, are there bias tire producers? When UN R117 implemented, what is the management of bias tires?**

*Ms. Fazilet Cinaralp:* In European market, we do not have bias tires. We have bias tires in agricultural segment. But, it is a different regulation. UN R117 does not apply anyway.

*Mr. Manfred Lottig:* Regulations 30, 54 and 75 have some criteria on bias tires regarding dynamic growth and dimensional performance over the time. But, UN R117 does not investigate the criteria if it is a bias tire or not. It must fulfill the criteria, in his opinion.



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