



# **Pengembangan Dan Pemanfaatan Peralatan Produksi Dalam Negeri Untuk Menunjang Keselamatan Penerbangan**

## **Wahana: Program N219**

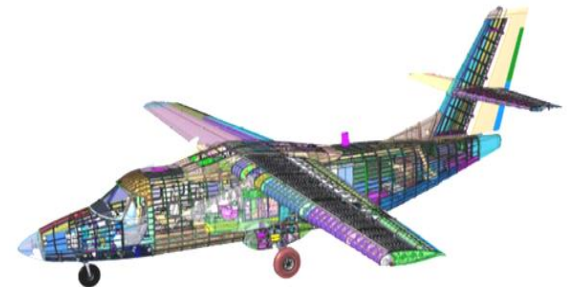
***Focus Group Discussion, KeMenHub***

**Surabaya, 25 September 2019**

**Presented By: M.RIDLO AKBAR**

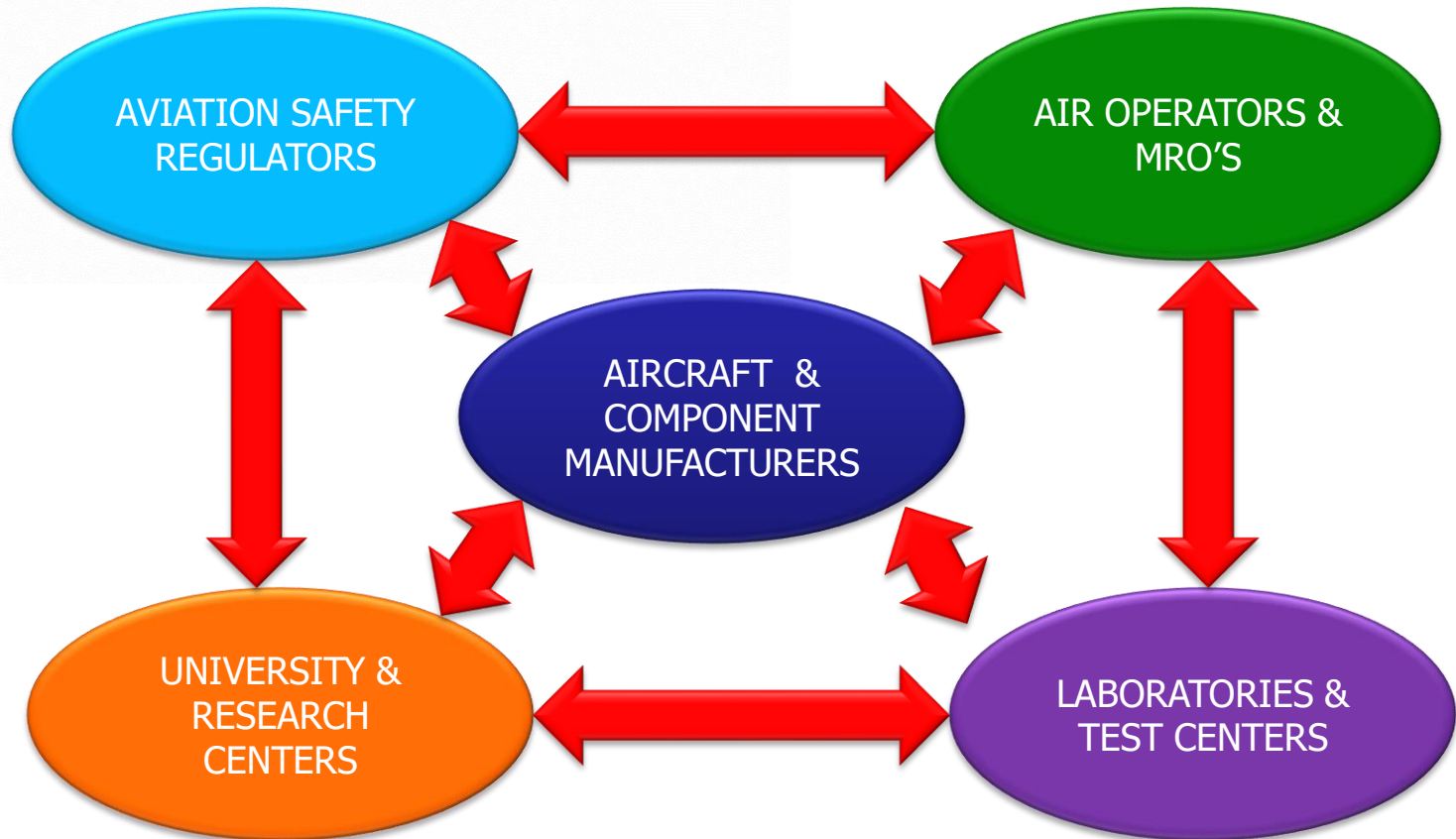
**Director Of Production**

**PT Dirgantara Indonesia (Persero)**





# Stake Holder In The Aircraft Development

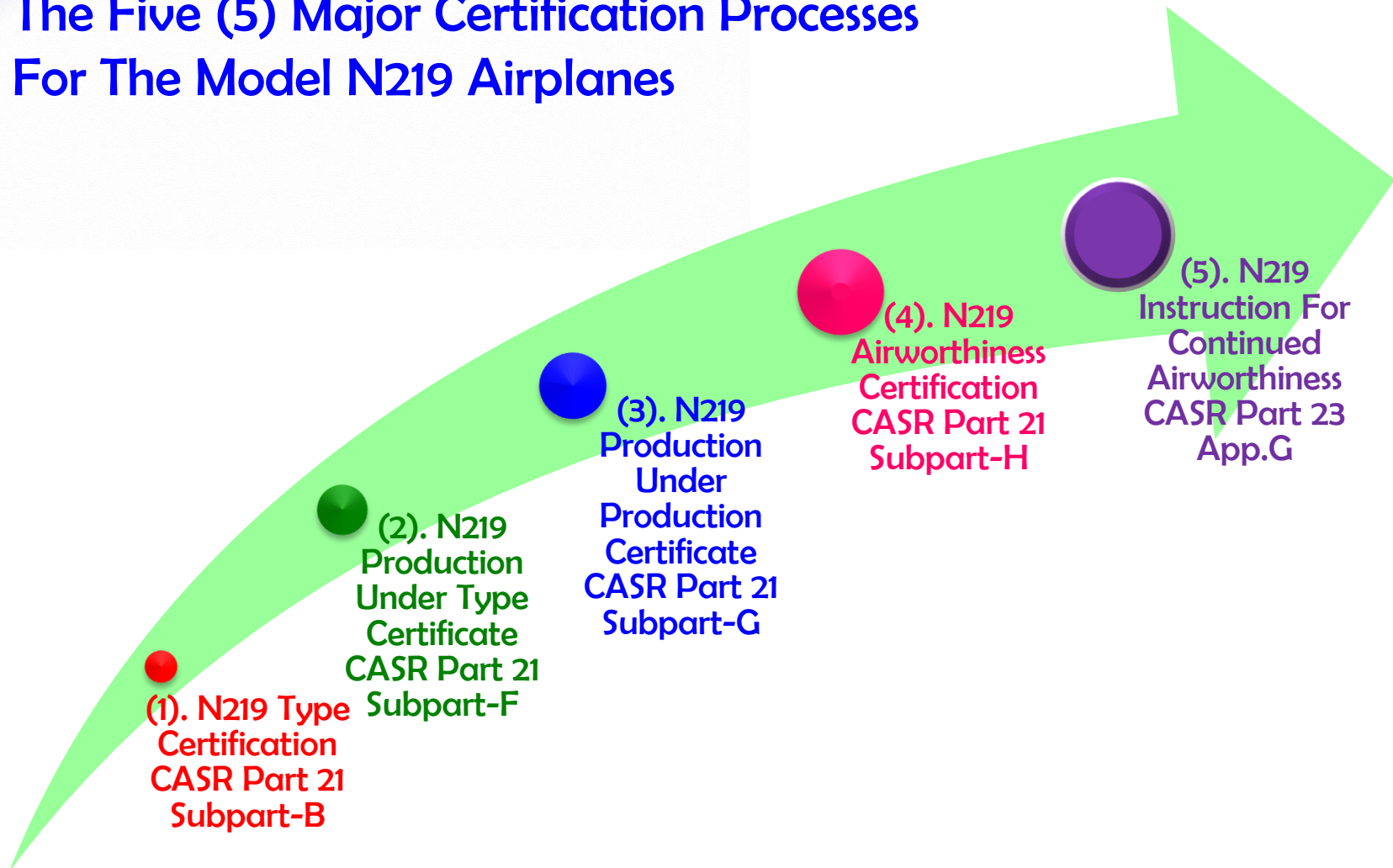


It's Required To Have The Same Strong Commitment, Synergy, Co-Operations And Common Interest Among Stake Holder In Achieving The National Strategic Project



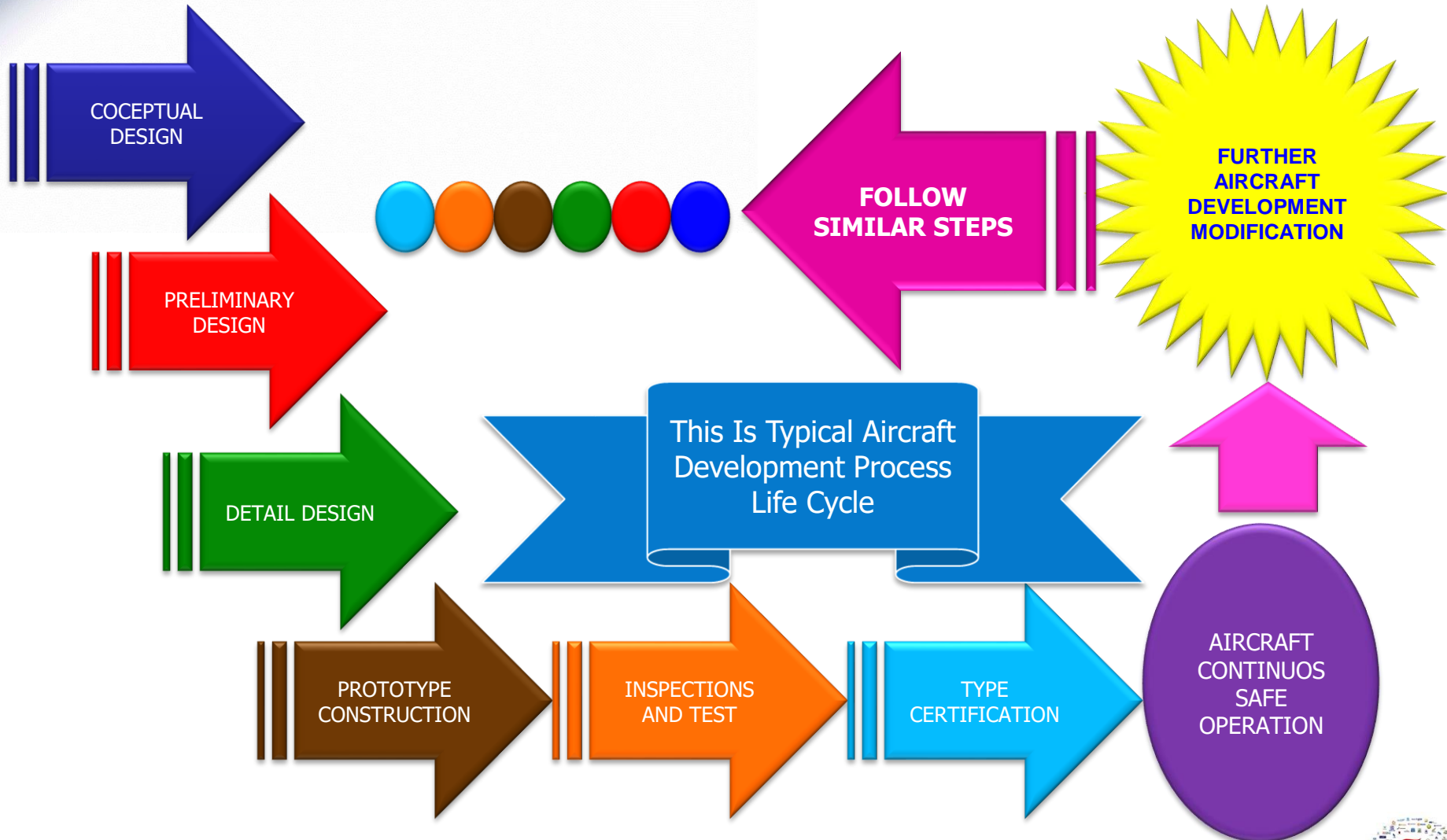


## The Five (5) Major Certification Processes For The Model N219 Airplanes





# Typical Aircraft Development Major Steps





## *N219 Development Lesson Learned (1)*

### **1. Using DGCA Approved Design Organization**

- Qualified Personnel's
  - Design Engineers
  - Certification Verification Engineers
  - Airworthiness Officers
- Approved Design Organization Manual/Handbook
- Approved Design Means, Including Laboratories

### **2. Using DGCA Approved Production Organization**

- Qualified Personnel's
  - Manufacturing/Production Engineers
  - Detail Part Manufacturing Operators
  - Assemblers, Installers, Testers
  - Quality Inspectors
- Approved Quality Management System
- Approved Manufacturing/Production Facilities





## *N219 Development Lesson Learned (2)*

### **3. Using Approved Aeronautical Products**

- Approved Class#1 Products – Engines & Propellers
- Approved Equipments
- Approved Standard Parts & Consumables

### **4. Using Approved Manufacturing & Assy Processes**

- Sheet Metal Forming
- Machining & High-Speed-Machining
- Special Processes
- Bonding Composites
- Structure Component Assemblies
- Assembly Shops – Electrical, Mechanical, Avionics, Powerplant
- Final Assembly Lines
- Flight Line Operations





## *N219 Development Lesson Learned (3)*

### **5. Using Configuration Management Systems**

- Engineering Product Definitions – EBOM
- Manufacturing Bill Of Materials – MBOM
- Built Records
- Design-Change-Controls
- Non-Conforming-Controls

### **6. In-House-Product-Development**

- Wind Shields
- Main & Nose Landing Gears
- Engine Mounts
- Cockpit-Instrument-Lighted-Panels
- Passenger Seats

**NOTE: To Develop These Products, It's Required, Both, Product Qualification And Supplier Qualification Processes**





## *N219 Development Lesson Learned (4)*

### **6. In-House-Product-Development (Cont'd)**

- It's Required Strategizing In Term Of Product Development Cost And Time, Since The Aircraft (Under CASR Part 23) Certification Period Is Only Given For 3 Years While The Development Of Both Products & Suppliers May Take Longer
- The Development Of Both In-House Products & Suppliers May Require Such Of Investment, e.g. Human Resources, Development Concept – Method – Std. Procedures – Quality System, Facilities & Equipment & Inspection/Test Means
- It's Suggested That The Development Of Both In-House Products & Suppliers Has To Be Independently Managed, Not Directly Be Linked To The Aircraft Development





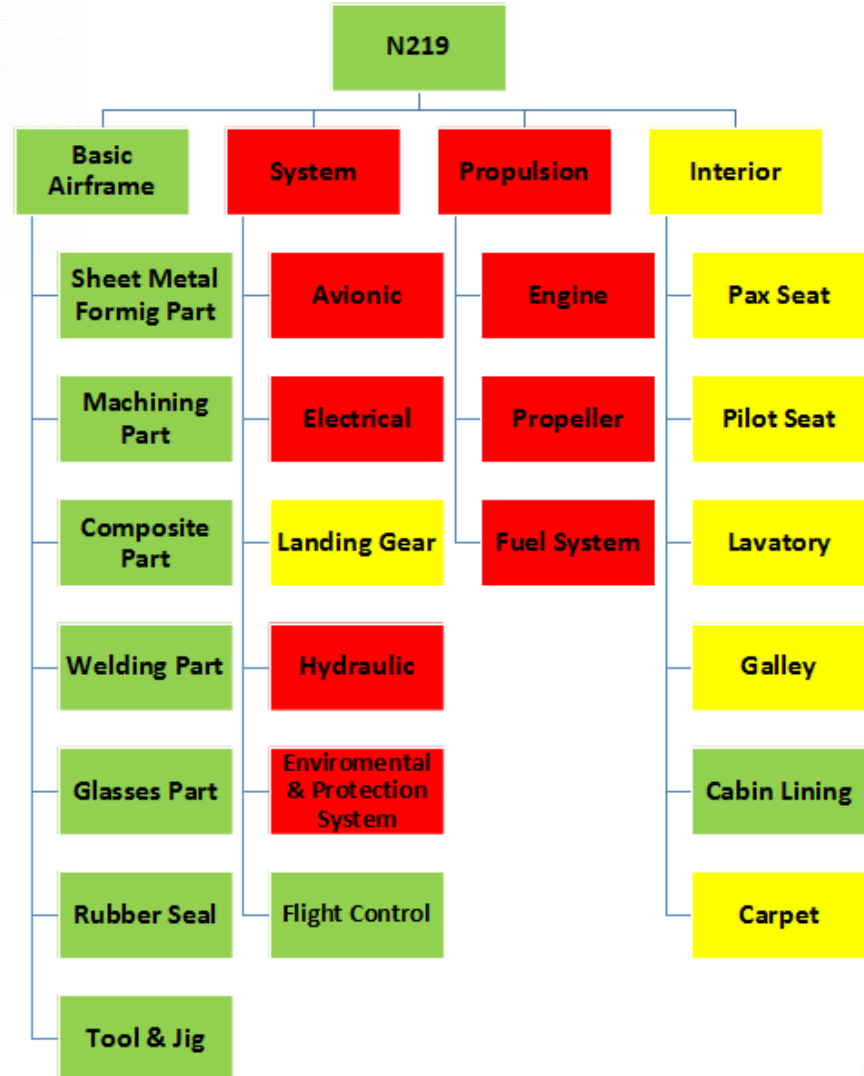


# Development of TKDN from PTDI Product (1)

## 1. N219 Potential

- Component Potential To Be Manufactured Locally With Imported Material.
- Component Potential To Be Manufactured Locally.
- Component Can Not Be Locally Manufactured (*at the moment*).

Based on Survey by PT. Surveyor Indonesia, Aug 16<sup>th</sup>, 2019, Rate Of TKDN For N219 is 44,69%





# Development of TKDN from PTDI Product (2)

## 2. TKDN of Other PTDI Products

No. TKDN - 13 - 0193

**Kementerian Perindustrian**  
REPUBLIK INDONESIA

**TANDA SAH CAPAIAN TINGKAT KOMPONEN DALAM NEGERI**

Sesuai dengan Peraturan Menteri Perindustrian Republik Indonesia Nomor 15/M-IND/PER/2/2011 Tentang Pedoman Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah dan Nomor 16/M-IND/PER/2/2011 Tentang Ketentuan dan Tata Cara Penghitungan Tingkat Komponen Dalam Negeri, hasil verifikasi PT. Surveyor Indonesia (Persero), atas Capaian Tingkat Komponen Dalam Negeri (TKDN) adalah sebagai berikut:

**Jenis Produk** : Helikopter Bell 412  
**Spesifikasi** : Maximum Gross Weight = 5398 Kg  
Capacity = 15 Persons  
Maximum Endurance = 3.7 Hours

**Standar Produk** : -  
**Sertifikat Produk** : CASR 21  
**Merk** : BELL  
**Nilai TKDN** : 17,31 %  
**Terbilang** : Tujuh Belas Koma Tiga Satu Persen  
**No. Laporan** : LPA-1327/PK-0821/PTKDN.IND-INFAS/XII/12

yang telah ditandatangani oleh Kementerian Perindustrian dan berlaku 2 tahun terhitung sejak tanggal tanda sah,

diberikan kepada :

**Nama Perusahaan** : PT. Dirgantara Indonesia  
**Alamat** : Jl. Pajajaran No. 154, Bandung 40174  
**NPWP** : 01.002.132.7-051.000  
**Hasil Produksi** : Industri Perakitan dan Pembuatan (Manufacturing) Pesawat Terbang dan Komponen-komponennya serta Sistem Kesenjataan, Perawatan Berat/ Overhaul Air Frame Engine, Instruments, Accessories, Ground Support Equipment & Testing Equipment  
**No. Tanda Sah** : 193/SJ-IND.7/TKDN/II/2013

18 Februari 2013

**M. PRISMA HARTANA**  
Menteri Koordinator Bidang Industri dan Perdagangan  
Kementerian Perindustrian

**HELICOPTER BELL 412**  
**TKDN 17,31 %**

No. TKDN - 13 - 0147

**Kementerian Perindustrian**  
REPUBLIK INDONESIA

**TANDA SAH CAPAIAN TINGKAT KOMPONEN DALAM NEGERI**

Sesuai dengan Peraturan Menteri Perindustrian Republik Indonesia Nomor 15/M-IND/PER/2/2011 Tentang Pedoman Penggunaan Produk Dalam Negeri Dalam Pengadaan Barang/Jasa Pemerintah dan Nomor 16/M-IND/PER/2/2011 Tentang Ketentuan dan Tata Cara Penghitungan Tingkat Komponen Dalam Negeri, hasil verifikasi PT. Surveyor Indonesia (Persero), atas Capaian Tingkat Komponen Dalam Negeri (TKDN) adalah sebagai berikut:

**Jenis Produk** : Pesawat CN 235-220M  
**Spesifikasi** : TUDM Configuration  
**Standar Produk** : -  
**Sertifikat Produk** : CASR 21  
**Merk** : CN 235  
**Nilai TKDN** : 38,74 %  
**Terbilang** : Tiga Puluh Delapan Koma Tujuh Empat Persen  
**No. Laporan** : LPA-0543/PK-0821/PTKDN.IND-INFAS/XII/12

yang telah ditandatangani oleh Kementerian Perindustrian dan berlaku 2 tahun terhitung sejak tanggal tanda sah,

diberikan kepada :

**Nama Perusahaan** : PT. Dirgantara Indonesia  
**Alamat** : Jl. Pajajaran No. 154, Bandung 40174  
**NPWP** : 01.002.132.7-051.000  
**Hasil Produksi** : Industri Perakitan dan Pembuatan (Manufacturing) Pesawat Terbang dan Komponen-komponennya serta Sistem Kesenjataan, Perawatan Berat/ Overhaul Air Frame Engine, Instruments, Accessories, Ground Support Equipment & Testing Equipment  
**No. Tanda Sah** : 147/SJ-IND.7/TKDN/II/2013

18 Februari 2013

**M. PRISMA HARTANA**  
Menteri Koordinator Bidang Industri dan Perdagangan  
Kementerian Perindustrian

**CN235-220M**  
**TKDN 38,74 %**





# Development of TKDN from PTDI Product (3)

## 3. Involvement of Local Industry



- INACOM (Indonesian Aircraft Component Manufacturer Association) Is Partnering With PTDI On Collaboration Scheme As "Extended-Shop".
- PTDI Is Guiding Manufacturing Process, Provide Training, Performing Inspection and Product Certification.
- Some of PTDI product has been manufactured by INACOM and supported by "Balai Industri" and Research Institutions.



PT. Indonesia Polyurethane Industry

This document and its commercial and technical data attached hereto are proprietary and confidential to PT. Dirgantara Indonesia (Persero) and constitute its trade secrets. No part of this document, its contents, or reproduction of any part of the information supplied is to be made, and no manufacture, sale or use of any invention or discovery disclosed herein shall be made, except by written authorization of PT. Dirgantara Indonesia (Persero).

This notice will not operate to nullify or limit rights granted by contract, COPYRIGHT NOTICE©2015, PT. DIRGANTARA INDONESIA (PERSERO), Unpublished – All Rights Reserved 25 September 2019 7





# **N219 Airplane**

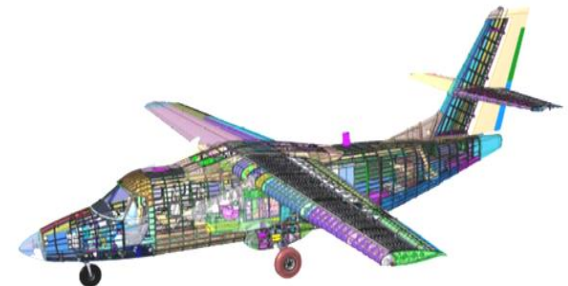
## **5-Major Certification Requirements & Compliances**

**Surabaya, 25 September 2019**

**By M. Ridlo Akbar**

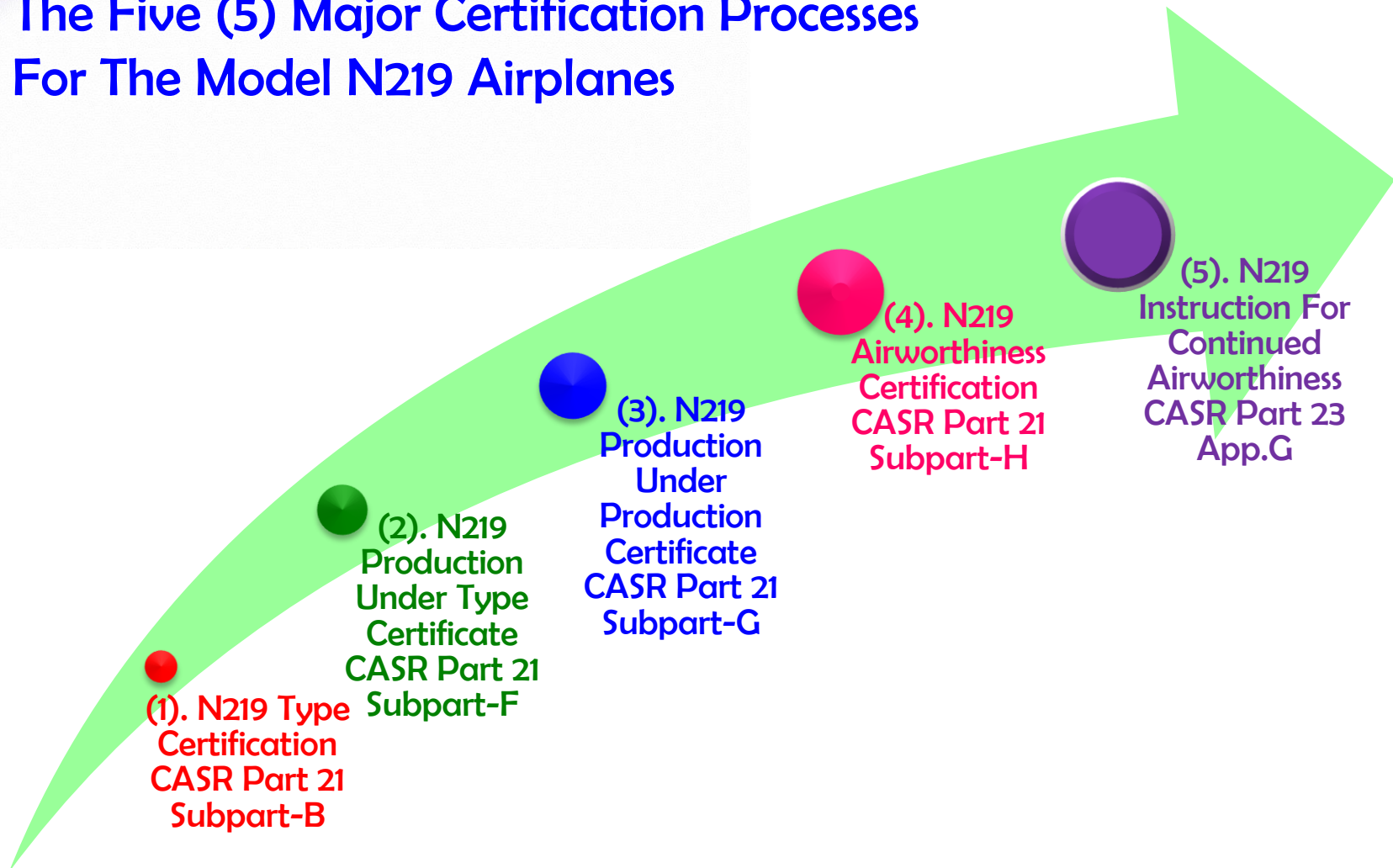
**Director Of Production**

**PT Dirgantara Indonesia (Persero)**





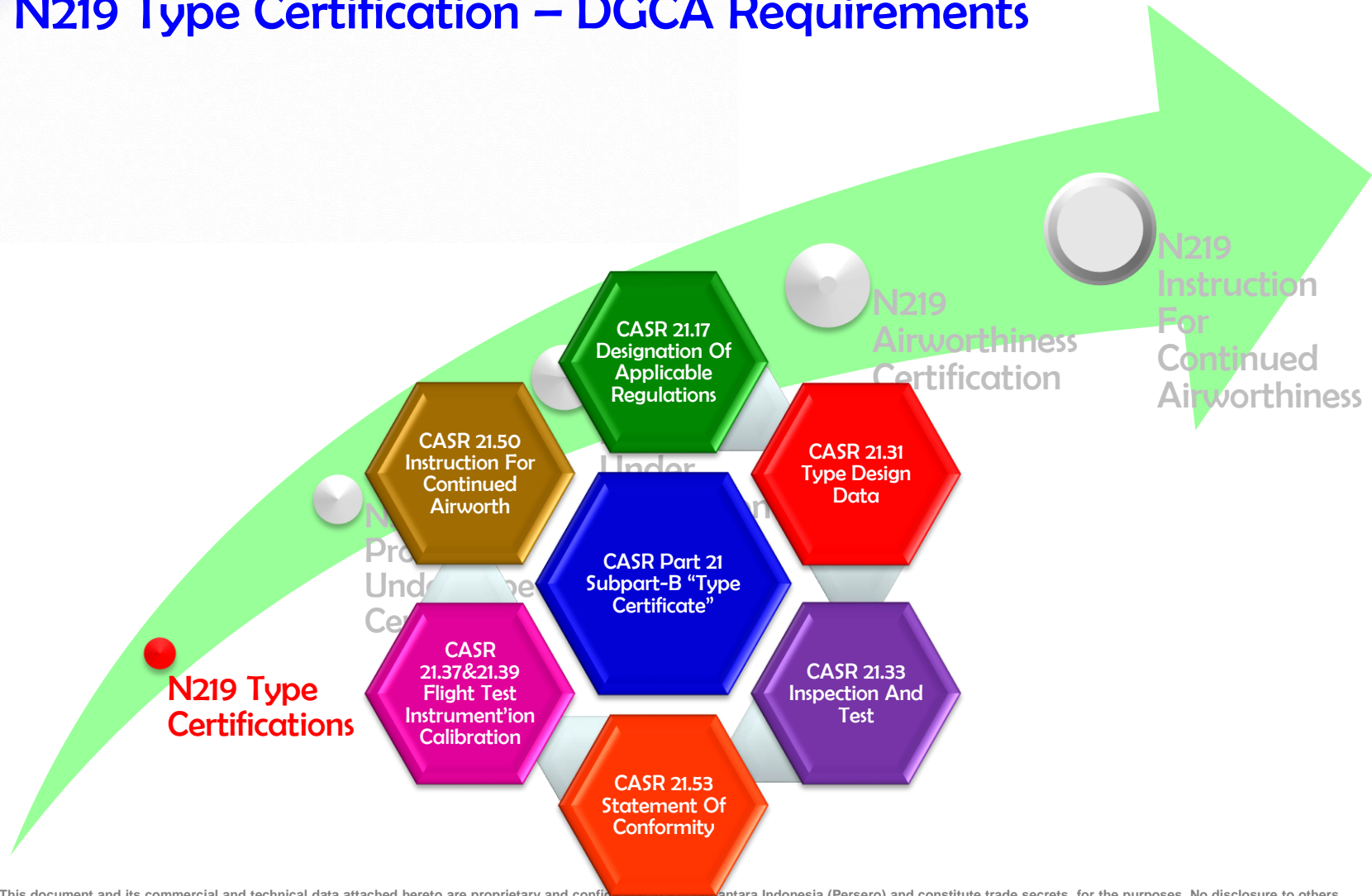
## The Five (5) Major Certification Processes For The Model N219 Airplanes





# 1. N219 Type Certification (#1)

## N219 Type Certification – DGCA Requirements





## 1.N219 Type Certifications (#2)

### N219 Type Certification – PT.DI Compliances

#### Application For Type Certificate

= N219 Application Letters

#### Applicable Regulations

= N219 Certification Basis

= N219 Compliance Check List

#### Statement Of Conformity

= N219 CIP&ARC For Purchased Items

= N219 CIP&SOC For Detail Part Mfg

= N219 CIP&SOC For Component And Assy

= N219 CIP&SOC For FAL & Delivery Center

#### Type Design Data

= N219 Applicable Draw & Spec

= N219 Certification Docs/Substantiations

= N219 Aircraft Limitations

#### Flight Test Pilot & FT.Calibrations

= N219 Flight Test Pilots & Engineers License

= N219 FTIS Installation & Inspection Reports

= N219 FTIS Calibration Test Reports

= N219 FTIS Calibration Verification Reports

#### Inspection And Test

= N219 Laboratory Testing

= N219 Aircraft Ground Testing

= N219 Aircraft Flight Testing

= N219 Simulation

#### Instruction For Continued Airworthiness

= N219 Airworthiness Limitation Items

= N219 Certification Maintenance Rec'ment

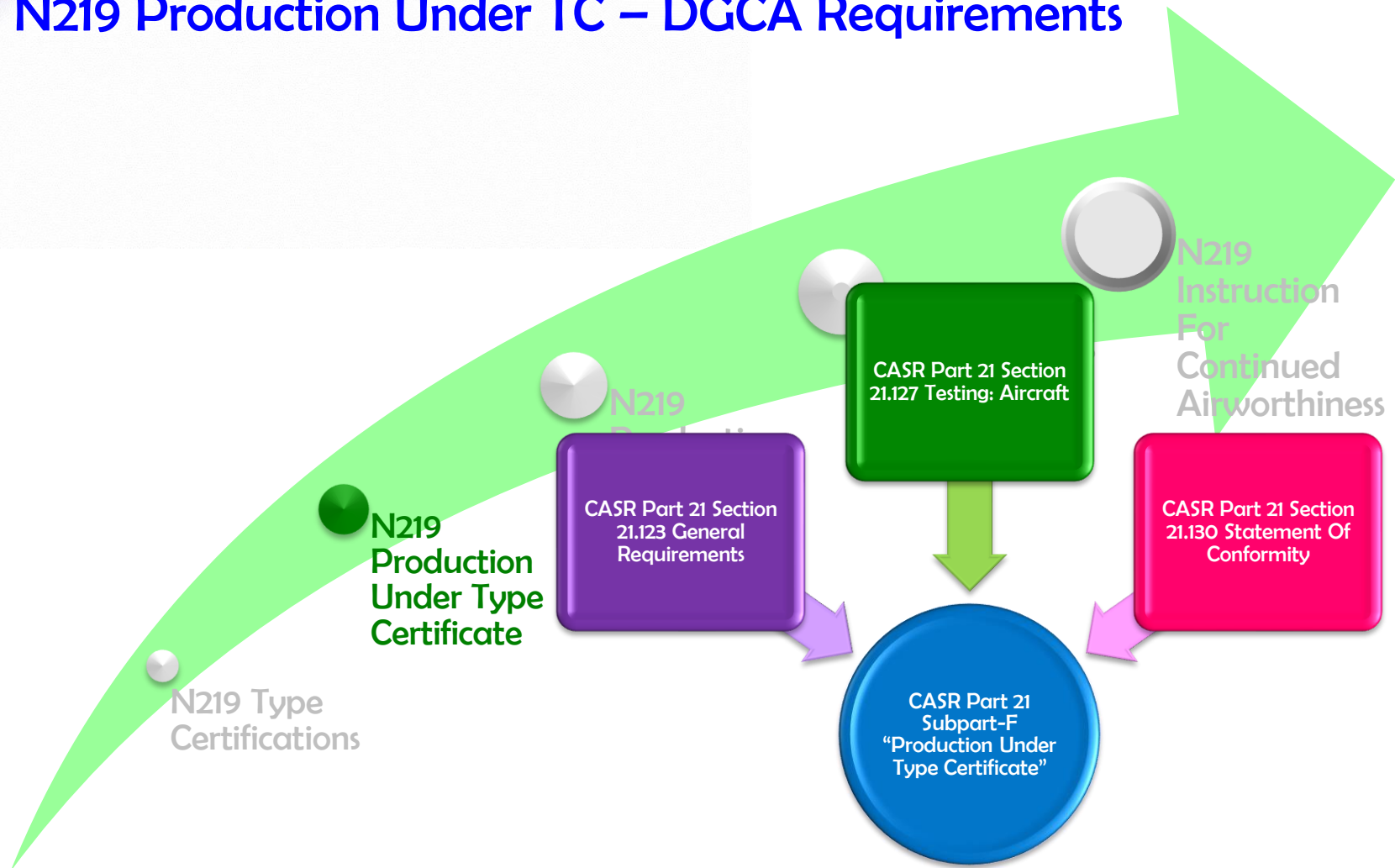
= N219 Airworth Limitation Section/AMM Ch.5





## 2. N219 Production Under TC (#1)

### N219 Production Under TC – DGCA Requirements







## 2. N219 Production Under TC (#2)

### N219 Production Under TC – PT.DI Compliances

#### PT.DI Organizations

- = PT.DI Organization Structures
- = PT.DI Assigned Responsible Key-Persons
- = PT.DI Organization Charters
- = PT.DI Business Processes

#### N219 Statement Of Conformity

- = N219 CIP&ARC For Purchased Items
- = N219 CIP&SOC For Detail Part Mfg
- = N219 CIP&SOC For Component And Assy
- = N219 CIP&SOC For FAL & Delivery Center

#### N219 Series Prod Quality Syst

- =Design Data Control; =Supplier Control;
- =Manufacturing Process Control; =Inspection And Testing; = Nonconforming Product Control; = Corrective/ Preventive Actions;
- =Handling & Storage; =Control Of Quality Records; =Internal Audit; =In-Service-Feedback; = Quality Escape

#### N219 Production Flight Testing

- = N219 Production Flight Test Procedures
- = N219 Production Flight Check-Off-Forms
- = N219 Production Flight Test Reports

#### N219 Quality Manual/Plan

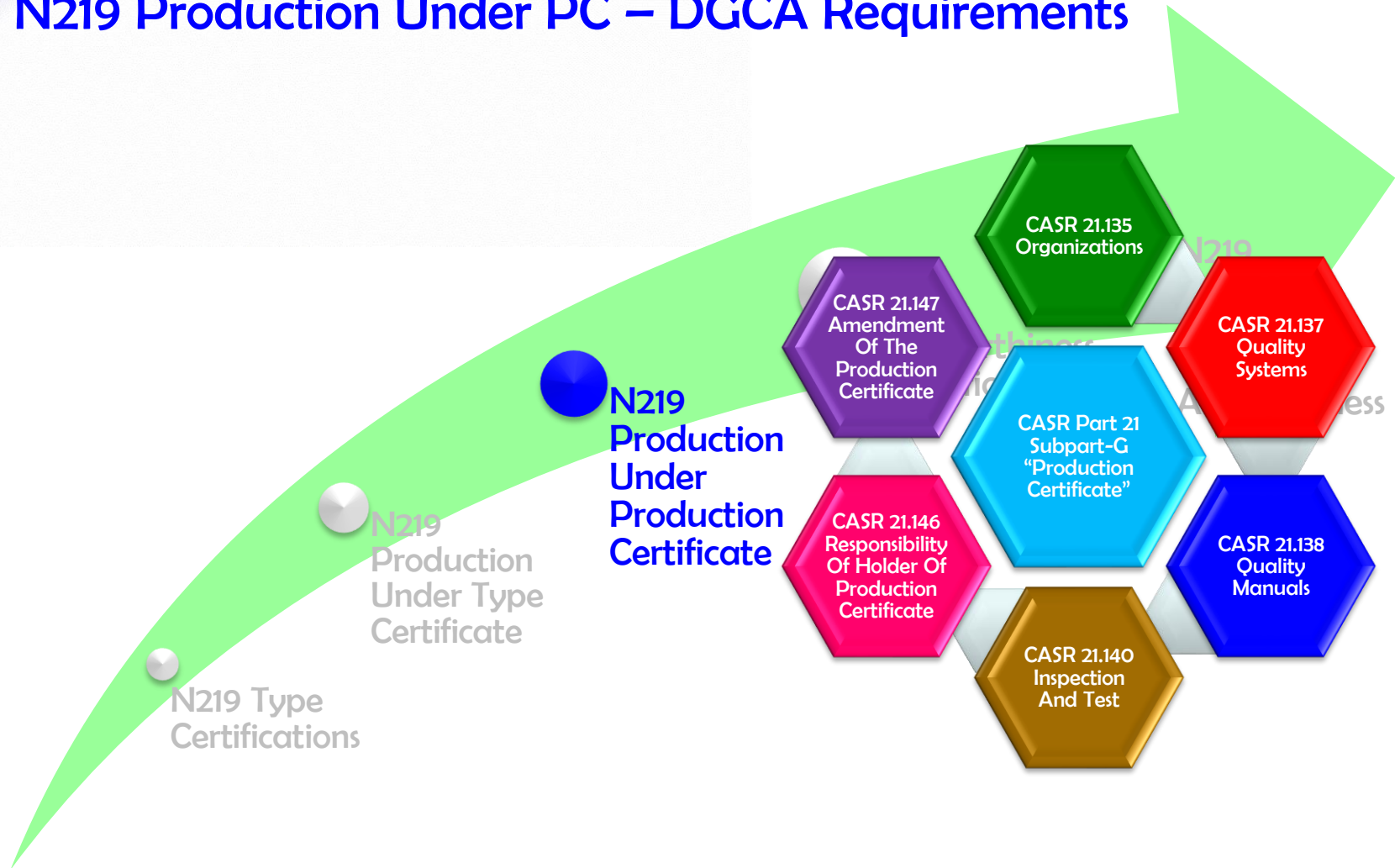
- Manuals Describing Quality System
- = Quality Manuals, In Bhs Indonesia & English
- = Quality Manuals, Accessable By The DGCA





## 3. N219 Production Under PC (#1)

### N219 Production Under PC – DGCA Requirements





## 3.N219 Production Under PC (#2)

### N219 Production Under PC – PT.DI Compliances

#### PT.DI Organizations

- = PT.DI Organization Structures
- = PT.DI Assigned Responsible Key-Persons
- = PT.DI Organization Charters
- = PT.DI Business Processes

#### PT.DI Inspection & Test

- PT.DI Allows The DGCA To Perform Inspection & Witness Test, For-
- =Quality Systems, Facilities, Technical Data, And Product
  - =Access Any Inspection & Test In Supplier Facilities

#### PT.DI Quality System

- =Design Data Control; =Supplier Control;
- =Manufacturing Process Control; =Inspection And Testing; = Nonconforming Product Control; = Corrective/ Preventive Actions;
- =Handling & Storage; =Control Of Quality Records; =Internal Audit; =In-Service-Feedback; = Quality Escape

#### PT.DI Responsibility

- = Maintaining Approved Quality System
- = Ensuring The Manufactured Product Is In Conformity With Approved Type Design And Is In Condition For Safe Operations

#### PT.DI Quality Manual

- Manuals Describing Quality System
- = Quality Manuals, In Bhs Indonesia & English
  - = Quality Manuals, Accessable By The DGCA

#### Amendment Of Production Certificate

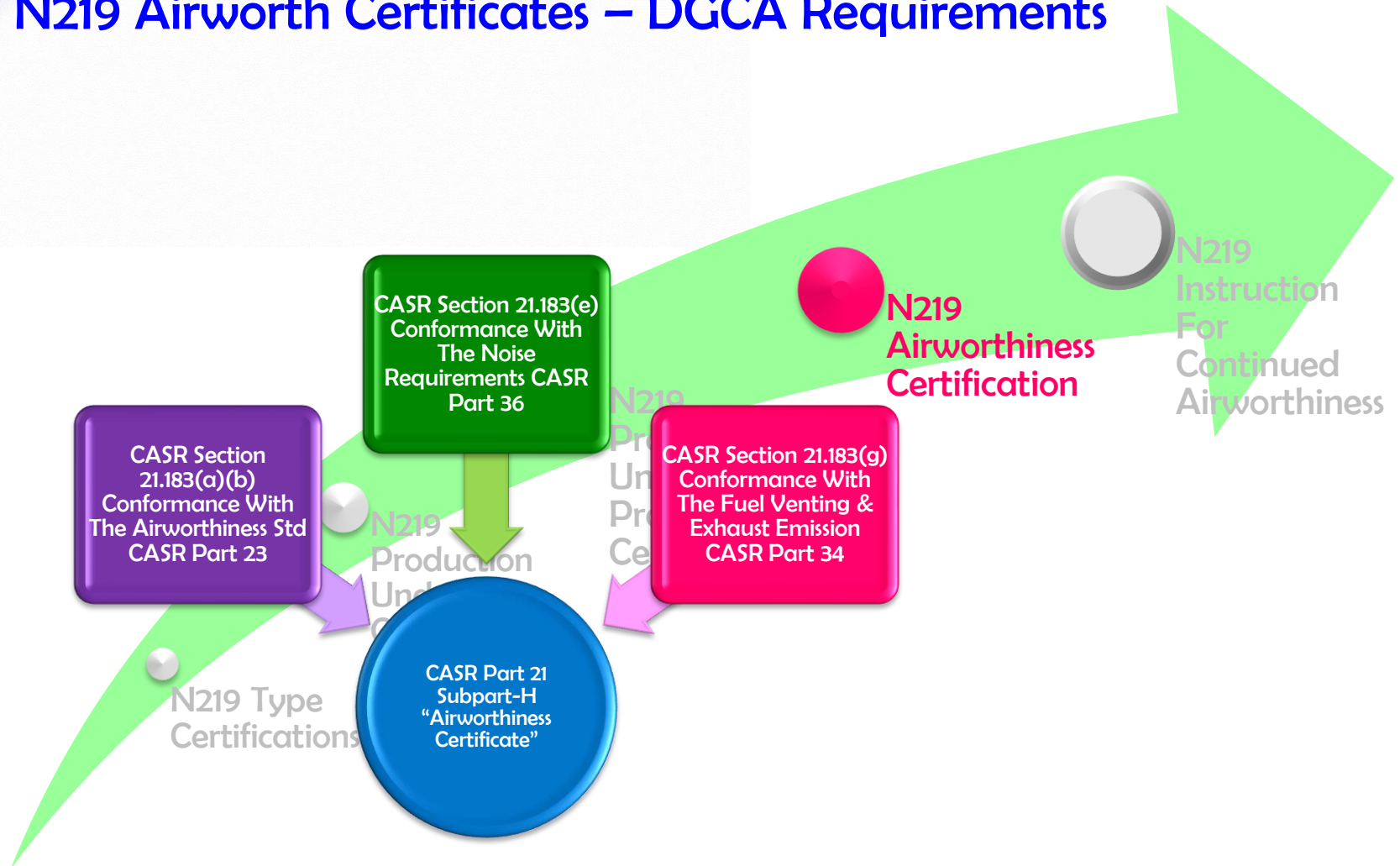
- PT.DI Will Apply For An Amendment Of PC & Its PLR When PT.DI Adds A New Type Of Product(s) To Be Manufactured (e.g. Model N219 Airplanes)





## 4. N219 Airworthiness Certificate (#1)

### N219 Airworth Certificates – DGCA Requirements





## 4. N219 Airworthiness Certificate (#2)

### N219 Airworth Certificates – PT.DI Compliances

#### Conformance With The Airworthiness Standards, CASR Part 23

PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 23

#### Conformance With The Fuel Venting & Smoke Emission, CASR Part 34

PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 34

#### Conformance With The Noise Req'ts, CASR Part 36

PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 36

#### PT.DI Documentations

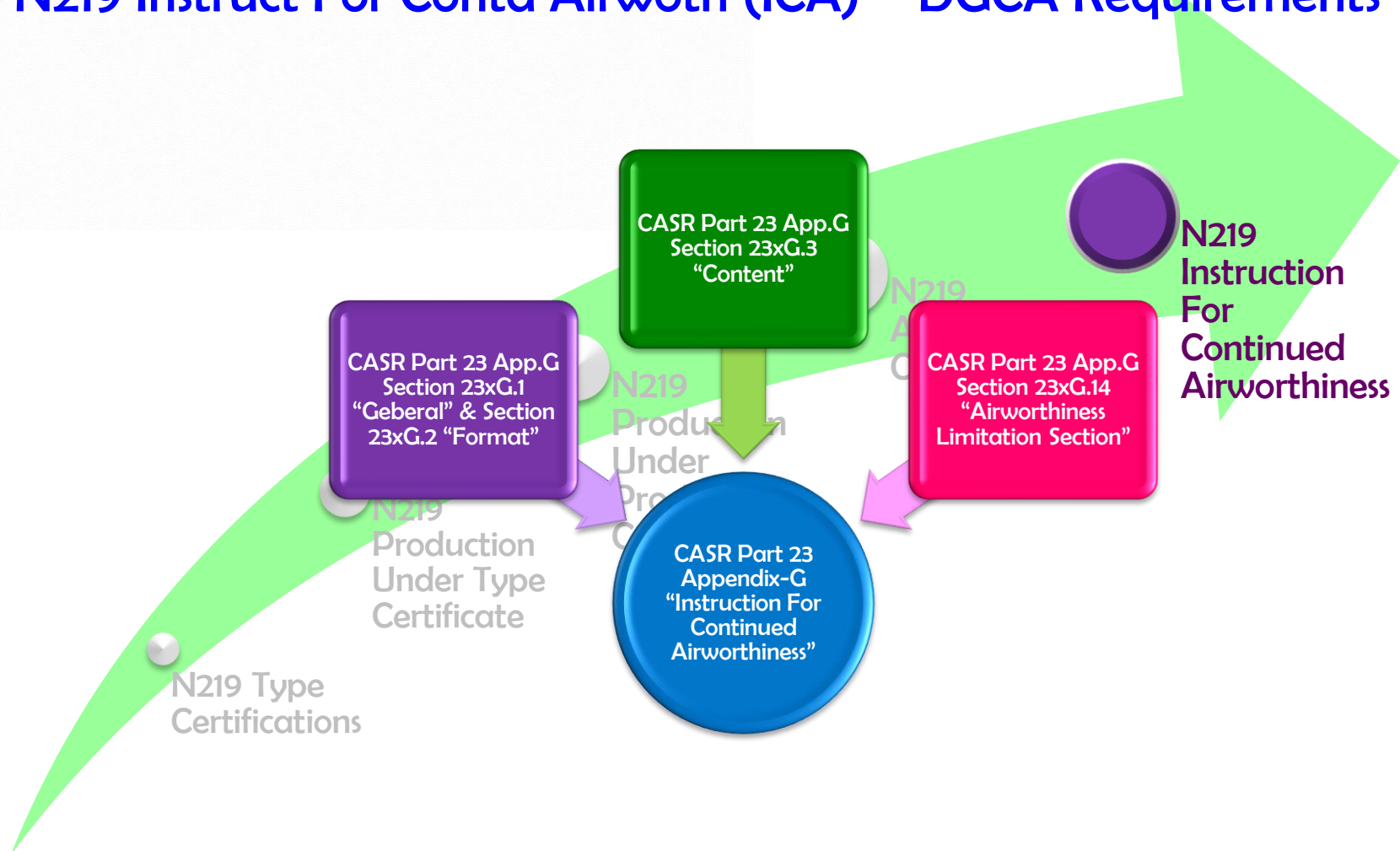
- = Application For Standard. C of A
- = ASN – Aircraft Status Notice (Built Rcd)
- = W&B – Weight & Balance Reports
- = Swing Compass Reports
- = Aircraft Ground Run Reports





## 5. N219 Instruction For Contd Airworth (#1)

### N219 Instruct For Contd Airwoth (ICA) – DGCA Requirements





## 5.N219 Instruction For Contd Airworth (#2)

### N219 Instruct For Contd Airwoth (ICA) – PTDI Compliances

#### General & Format

- = The ICA For Each Airplane Must Include ICA For Engine And Propeller
- = This Must Include The Information Essential For ICA The Airplane
- = The ICA Must Be In The Form Of Manual

#### Airworthiness; Limitation Section

- = A Specific Section Of The Aircraft Maintenance Manual, Titled Airworthiness Limitation Section
- = Mandatory Replacement Time; Structural Inspection Intervals; Inspection Procedures

#### Contents;

- =Airplane Maintenance Manual Or Section;
- =Maintenance Instructions; =Diagram Of Structural Access; =Details For Inspection Techniques; =Informations Needed To Apply Protective Treatment; =Data Related To All Fasteners & Torque Values; =List Of Special Tools; =Electrical Loads; =Methods Of Balancing Flight Controls; =Special Repair

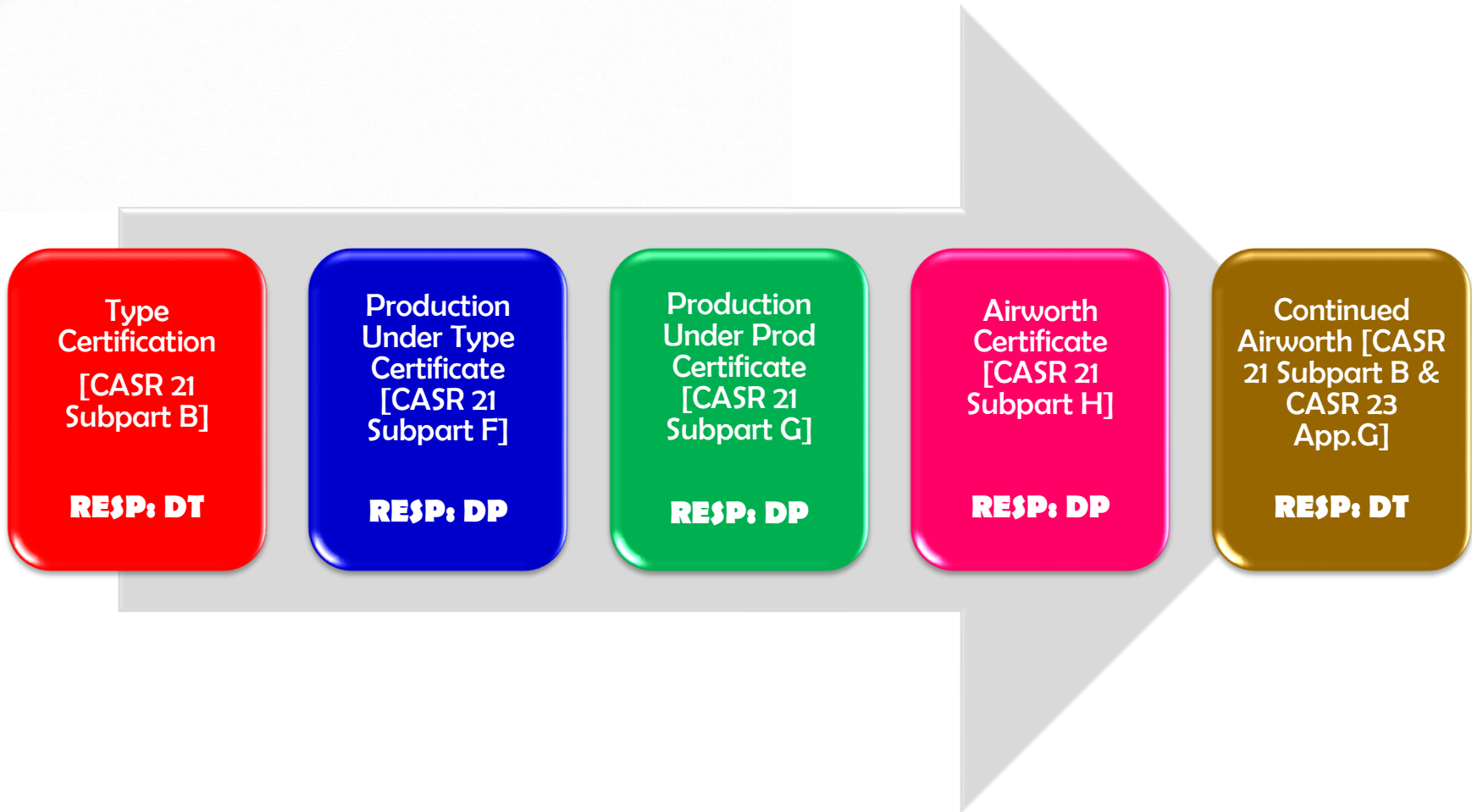
#### PT.DI Documentations;

- = N219 Airworthiness Limitation Items
- = N219 Certification Maintenance Rec'ment
- = N219 Airworth Limitation Section/AMM Ch.5
- = N219 Structural Repair Manual
- = N219 Wiring Diagram Manual



## *Proposed Assigned Responsible Functions*

### N219 Assigned Responsibility Of The 5-Major Certifications







*Terima Kasih*



**M. Ridlo Akbar**

Director Of Production

PT Dirgantara Indonesia (Persero)

GPM 6th Floor, Jl. Pajajaran #154, Bandung-40174

Mobile: +62 812 2395 592

