DRABPOL® NEWS

www.drabpol.pl

Quarterly Newsletter no 4(81) October - November - December 2018

MEDAL OF KIELCE TRADE FAIR

for TM 4 powertrain system dedicated to electric city buses

In this issue you can find:

3 EVENTS

3 Nomination of President Paweł Drabczyński for the AEA Member of the Year 2018
3 Review of Trainings – 4th Quarter 2018
4 Success at TRANSEXPO
9 Debut at CZECHBUS
9 LATESTS NEWS – 4th Quarter 2018
10 Focus on tram transport
11 All about AGB II Road Speer Limiter

12 AUTOMOTIVE

12 URSUS electric buses with our solutions
14 TPMS_ WIFI TRAILER – our new in-house developed wireless solution for tire protection in trailers
17 SOB-POL company opts for CPC
18 Technical support for users of ATG systems

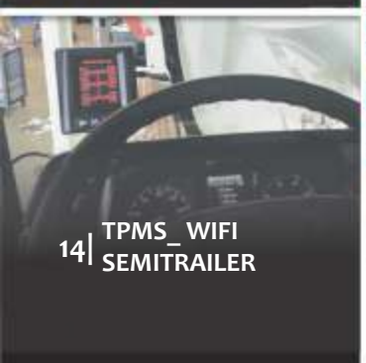
20 AVIONICS

20 For the first time at „AVIASVIT–XXI"
21 We modernize avionics in Cessna 177RG Cardinal RG
22 The first moderization of this kind in Poland
23 Connectivity solutions for smaller aircraft cabins
27 Is a glass panel upgrade right for you?
30 News – avionics: GARMIN
32 UNIVERSAL AVIONICS – the latest news

34 TECHNICAL AND SERVICE NEWS
35 THEY WROTE ABOUT US

12| URSUS electric buses with our solutions

21| We modernize avionics in Cessna 177RG Cardinal RG



14| TPMS_ WIFI SEMITRAILER

22| The first moderization of this kind in Poland

FROM THE EDITOR

FROM THE EDITOR

Ladies and Gentlemen! Dear Readers!

The end of 2018 was quite intense for us, but this is usually the case when closing the previous period.

There were lots of reasons to be satisfied and proud. Our participation in the Transexpo trade fairs in Kielce has been a success. Once again, we received a trade fair medal (Medal Targów Kielce), this time for the TM 4 powertrain system for electric city buses.

A day before trade fair we were pleased to celebrate, with representatives of bus market, our „small" jubilee of the 35th anniversary of activity on the Automotive market. Certainly, the next one – 40th anniversary – will be held with great fanfare.
Finally, we want to inform that from this issue we are starting publications of articles selected from the „Avionic News" magazine. This is a monthly magazine, published by the AEA Association, of which we are a member. We hope that the presented articles will be the source of useful information, as well as many trivia from the aviation world.

For the new year we wish everyone a lot of optimism, health and lots of success at every field of activity.

Alicja Drabczyńska

DRABPOL NEWS

Published by DRABPOL
Editor:
Drabpol sp. jawna P. Drabczyński i Wspólnik
42-233 Mykanów, ul. Akacjowa 24/26
tel.0-34 366 00 22, fax 0-34 366 01 02
centrala@drabpol.pl, www.drabpol.pl

Nomination of President Paweł Drabczyński for the AEA Member of the Year 2018

We are pleased to inform that the Aircraft Electronics Association (AEA) has nominated President Paweł Drabczyński for the „AEA Member of the Year 2018" award.

Founded in 1957, the Aircraft Electronics Association represents nearly 1,300 member companies in more than 40 countries, including manufacturers of avionics equipment, dealers and certified repair stations all over the world.

Our company become a member of AEA in 2009 – as the first company from Poland.

In just a few years, we have become a dealer of global avionics manufacturers such as Rockwell Collins, Universal Avionics, Bendix King, Garmin, Aspen Avionics, Avidyne, Mid Continent, Sandel.

We were the first in Poland to set up PART 21 and PART 145 organizations, only for the needs of services related to avionics.

President Paweł Drabczyński as a permanent member of AEA regularly attends the AEA International Convention in the US and Europe. The annual convention is not only a meeting in the avionics circle and an opportunity to establish mutual cooperation, but above all trainings, presentation of avionics novelties, as well as rewarding the most meritorious people for the Association.

It is a tradition of AEA that awarding prizes to all winners takes place during opening ceremony of AEA Convention.

This year AEA awards for people and organizations will be held at the Palm Springs Convention Center - Palm Springs, California, during opening ceremony of AEA Convention, on 25 March. In addition to President Paweł Drabczyński, three more people associated with the aviation environment have been nominated.

Review of Trainings – 4th Quarter 2018

3rd October

Training on ContiPressureCheck system for MOTO BUDREX, carried out at customer's headquarters.

5th October

Training on ContiPressureCheck system for DEMARKO. The training was carried out at customer's headquarters.

19th November

Training on KONVEKTA air conditioning system for MPK Kraków, carried out at the customer's premises.

27th and 28th November

„AGB - Road Speed Limiter", a training for Mercedes-Benz service centers carried out for two groups at Drabpol headquarters in Mykanów.

14th International Fair of Public Transport -TRANSEXPO

23-25 October

SUCCESS at TRANSEXPO

This year's TRANSEXPO trade fair was very important and intense for our company.

It was also a lucky one because at the end of the first day we could celebrate granting us a Medal of Kielce Trade Fair for TM 4 powertrain system dedicated to electric city buses.

The day before TRANSEXPO we participated in a technical conference that was organized by the Chamber of Commerce Urban Transport (IGKM).

The main subject of this year's Conference was „Electromobility and IT systems in urban communication". This topic is also close to us because of our "Electromobility with Drabpol" programme.
The meeting was divided into four topics, in which participants discussed the current situation, as well as perspectives concerning implementation of alternative fuel in urban transport. One of the topics was related to the latest technological implementations in the field of electro- and gas-mobility, and IT systems. We had a pleasure to give a lecture on different types of electric powertrain systems that are used in buses and other commercial vehicles. We presented classification of electric powertrain systems depending on motor location and typology.

As far as the first point is concerned, it is central motor that is the most developed powertrain technology used nowadays in vehicles. It is estimated that this type of powertrain represents 90% of electric vehicle market. Whereas, as far as the typology is concerned, motors can be divided into synchronous (the newest generation reaches efficiency range up to 96%) and asynchronous (efficiency range up to 90%). Synchronous electric motors are available in various shapes and sizes, allowing their parameters to be adjusted to a specific vehicle. On the other hand, asynchronous motors are a well known solution on the Polish market, as they have been widely used in trams and trolleybuses.

At the pre-trade fair conference devoted to electromobility and IT systems in public transport, we gave a presentation on various types of electric powertrain systems that occur industrially in buses and other commercial vehicles.

It is obvious that end users are highly interested in operating conditions of a given powertrain system. In case of asynchronous motors, we need periodic service and necessary maintenance works. As these kind of motors are usually air-cooled, there is no need to inspect the cooling system. In the case of synchronous motors, they are designed as maintenance-free, with a predicted mileage of 1 million km. As for the cooling systems in these motors, they are based on a mixture of water and glycol. The majority of new generation synchronous motors are maintenance free.

JUBILEE EVENING

In the evening, after the IGKM conference, we invited our guests for a gala dinner with unusual setting. Representatives of IGKM authorities, public transport companies, bus manufacturers, and other invited guests celebrated with us the 35th anniversary of our activity on the Automotive market. It was the producers and bus users that were our first customers with whom we established cooperation, hence we decided to celebrate our anniversary in the bus environment. Especially for this occasion, in the main hall there was placed a commemorative board, on which participants of the jubilee evening could sign themselves or write their dedications.

The board, which was presented at our stand, can be seen now in our Warsaw headquarters. It is a remarkable memorial of our jubilee.

Commemorative plaque –the guests of our jubilee evening could leave their signatures and dedications on it.

Our foreign partners from Continental, Konvekta and TM 4 also came to our special evening. We have prepared quite a few attractions for all our guests. Thanks to a special GREENBOX, they could take a souvenir picture in a really unusual scenery. All eager for the new experience behind the wheel could take the opportunity to use a bus driving simulator. As it turned out, bus manoeuvres were not that easy.

Especially for all guests we prepared a casino zone, where everyone could feel the thrill of adrenaline and experience the taste of winning or (unfortunately) defeat.

President Paweł Drabczyński receives congratulations from our partners from Continental who came especially to our anniversary - from left: Michael Glunk, Dirk Parthenschlager and Virgilio Pico.

The high point of the evening was our jubilee cake, of course in our corporate colors. DJ PIRÓG swept us along to the party!

We would like to thank all our guests for kind words about our company, jubilee speeches, congratulation letters and - above all - for having fun together.

Our special thanks goes to Ms. Dorota Kacprzyk, the President of Chamber of Commerce Urban Transport (IGKM), for special congratulations and wishes on the occasion of our jubilee.

Of course, there was also a jubilee cake.

A special congratulatory letter was read by Mr. Reiner Boland from Konvekta.

Medal of TRANSEXPO 2018

The party was great, but the next day in the morning our entire team turned up at the stand. Transexpo trade fair was officially opened. Our stand was impressive this year. For the first time at Transexpo, we presented TM4 powertrain systems, being a part of our in-house programme „Electromobility with Drabpol".

The programme includes comprehensive solutions integrating electric powertrain systems of vehicles with the internal architecture of on-board electronics.

Our product debut was successful and we were awarded a MEDAL of Kielce Trade Fair for TM 4 powertrain system dedicated to electric city buses.

This prize was awarded in the „Bus Parts and Equipment" category.

A common success of our companies – from the left: - Grzegorz Stawicki - Product Manager for electromobility, responsible in our company for the awarded product and Olivier Bernatchez – Channel Manager in TM 4.

A decision concerning the medal was made by a commission under the chairmanship of Ms. Elżbieta Śreniawska – the Chairwoman of the IGKM Management Board (the Economic Chamber of Urban Transport) and, at the same time, the President of MPK Kielce (Kielce transit company)

The awarded Sumo HD system has been designed for heavy-duty applications – 8,5 m - 18 m long buses and 18-tonne or bigger trucks.
At present, the Sumo HD family offers 11 powertrain options, each optimized to provide the best performance for different vehicle platforms and work cycles.
The main recipients of TM4 system in Poland are electric bus manufacturers, and the main users are public communication operators. There are used 102 SUMO HD systems in Poland at the moment. Vehicles equipped with this powertrain system support public transport fleets in Warsaw, Środa Śląska, Szczecinek, Zielona Góra and Częstochowa.

On the occasion of TM 4 systems' promotion, we stressed that we comprehensively integrate powertrain system on the basis of TM4 components, such as: motor, inverter, driver and managing software. Such services are provided by our Development and Support Department.

The main features of the SUMO HD system

- Synchronous motor cooled with high power and efficiency liquid.
- Motor designed as a 4-quadrant machine with an external rotor.
- 9-phase motor topology providing optimalization of system operation.
- The designed mileage of 1 million kilometers without any maintenance.
- One manufacturer of the motor, inverter and a driver ensures optimization of system parameters.
- Manufacturer's in-house developed software (ODIN) that provides service and parameterization of the system.
- Manufacturer's in-house developed driver managing the entire powertrain system compliant with the newest ISO 26262 standard.
- The motor provided with connecting elements facilitating system installation.

Thanks to the full range of products that can be used in commercial vehicles of different size, we can meet the expectations of even the most demanding customers, offering them dedicated solutions and ensuring the most effective return on investment.
All complementary or missing elements are selected by our D&S department from the offer of well known and proven suppliers.
The award ceremony traditionally took place during the Evening Gala that was the culmination of the first trade fair day. The Gala was full of awards but also emotions. In addition to the MEDAL of Kielce Trade Fair, President Paweł Drabczyński received a special diploma on the occasion of company's 35th anniversary.

Laureates of trade fair medals and special prizes.

Among companies celebrating their anniversaries were EvoBus (20th anniversary), Ster Poznań (25th anniversary), Polski Traker (25th anniversary) and Trapeze (50th anniversary).

We would like to take this opportunity and congratulate all jubilarians and award winners!

OUR OFFER AT TRANSEXPO

In addition to TM4 powertrain systems, at our stand there was also a premiere of complete articulations and gangway systems for buses – especially electric ones. A two-ton demo version of articulation system made a great impression on our visitors. Thus, the customers could get acquainted with operation of the entire system. In this place, we would like to remind that the complete system, apart from articulation itself, consists of folding bellow systems, hoops, turntables and guides with complementary elements.

A premiere of complete ATG articulation systems for buses - especially electric ones - what met with interest of, among others, media.

Traditionally, an important and permanent element of our exhibition was Continental driver's workplace – mFAP – for which, in the last edition in 2016, we were also awarded a Medal of Trade Fair in the „Bus Parts and Equipment" category. One could say „what goes around comes around".

The mFAP driver's workplace presented at our stand consists of a cab with an intelligent steering wheel, two configurable switch panels and a wide range of functions. Two additional display panels enable graphical presentation of selected parameters, connection with optional systems, and thus dynamic interaction between the driver and the vehicle.

Transexpo is a great occasion to present our comprehensive offer dedicated to the bus market. In addition to the above mentioned solutions, our customers could get familiar with operation of the tire pressure and temperature monitoring system (CPC), ProViu 360 camera system, anti-collision radars for trams and buses, multifunctional fleet management systems and ALCOLOCK alcohol interlocks. The offer was supplemented by multimedia systems, Internet Box (mobile Internet), sensors, clusters and USB ports for charging mobile devices.

We were pleased to host Mr. Alvin Gajadhur - Chief Inspector of ITD at our stand.

Moreover, great interest aroused on presented at our stand KL46T air conditioning unit dedicated to urban, inter-urban and tourist buses.

We also promoted our system integration services (for all types of vehicles) and services in the field of visualization. We prepare information visualization for displays that is essential to drivers of buses and other vehicles. Such presentations were very popular among the trade fir visitors.

This year's trade fair was very successful with no doubt. We would like to say thank you to our partners from Continental, Konvekta, TM4 and Molpir for their participation in the trade fair. We would like to also thank our Customers for visiting our stand, constructive talks and having a good time together.

Trade fair presentations regarding our solutions in the field of intersystemic integration enjoyed great popularity.

VIII Central European Bus and Public Transport Fair

20-22nd November

Debut at CZECHBUS

In accordance with the assumed strategy, we are beginning to enter new European markets, with our selected products. Thus, for the first time we decided to participate as an exhibitor in CZECHBUS trade fair in Prague.

The event was accompanied by numerous conferences and presentations. The conferences were largely devoted to electric city buses. And, the electromobility itself was also the subject of our exhibition.

At the stand, we presented solely TM4 electric drive system for city electric buses composing our in-house „Electromobility with Drabpol" programme.

We also promoted services of our Design and Support Department in the field of electromobility, such as: integration of a high-voltage system with onboard electronics, advisory in a powertrain selection, parameterization of the system and creation of control program for powertrain system management. We provide assistance in selecting of all system components, as well as technical and service support. We also conduct trainings in the field of software development.

Our trade fair debut allowed us to orient ourselves better in the Czech market and establish contacts with Czech manufacturers and bus operators.

LATESTS NEWS – 4th Quarter 2018

- Another ten TEMSA buses were provided to MZK Skierniewice (*Skierniewice transit company*) by PeterBus company. All of them have been equipped with ContiPressureCheck system, V3 alcohol interlocks and USB chargers (4 units per bus).
- MPK Inowrocław (*Inowrocław transit company*) fleet has been extended with sixteen Volvo buses (hybrid and electric ones), equipped with CPC systems and USB chargers (2 per bus).
- Forty-two USB chargers have been installed in twenty-one Solaris buses for MZK Toruń (*Toruń transit company*).
- Twenty Solaris trolleybuses with Konvekta air conditioning units and USB chargers (112 items) have supported the fleet of Przedsiębiorstwo Trolejbusowe w Gdyni (*trolleybus communication company in Gdynia*).
- Four MAN buses for MPK Włocławek (*Włocławek transit company*) have been equipped with sixteen USB chargers.
- Fifteen Autosan buses with FAP driver's workplaces and USB chargers (75 items) went to MPK Przemyśl (*Przemyśl transit company*).
- Twenty eight Ursus buses for MPK Zielona Góra (*Zielona Góra transit company*) have been equipped with FAP driver's workplaces, CPC systems and USB chargers (4 per bus).
- Twenty-two USB chargers has been installed in eleven VOLVO hybrid buses for Urząd Miejski w Krośnie (*Krosno town office*).
- Three Solaris buses for MPK Oświęcim (*Oświęcim transit company*) have been equipped with CPC systems and twelve USB chargers (4 per bus).
- CPC systems have been installed in ten Solaris electric buses that went to MPK Rzeszów (*Rzeszów transit company*).
- MZK Nowy Sącz (*Nowy Sącz transit company*) has extended its fleet with ten MAN buses, for which we provided USB chargers (70 items).
- In five MAN buses of MPK Jelenia Góra (*Jelenia Góra transit company*) there have been installed fifteen USB chargers.

LATESTS NEWS – 4th Quarter 2018

- Urząd Miejski w Szczecinie *(town office in Szczecin)* has bought sixteen Solaris hybrid buses with thirty-two USB ports (2 per bus).
- Ten Solaris buses with FAP driver's workplaces (with MVP), CPC systems and USB chargers (4 per bus) went to Komunikacja Miejska w Szczecinku *(Szczecinek transit company)*.
- Three Solaris trolleybuses for TLT Tychy (*trolleybus lines in Tychy)* have been equipped with CPC systems and USB chargers.
- Thirty USB chargers have been installed in ten Solaris buses bought by Urząd Miasta w Wieliczce *(Wieliczka town office)*.
- Fleet of PKM Katowice *(Katowice transit company)* has been extended by five, 18-metre long, Solaris electric buses equipped with twenty-five USB ports.
- Ten Solaris hybrid buses for MZK Pabianice *(Pabianice transit company)* have been equipped with CPC systems and USB chargers (3 per bus).
- Forty-two USB chargers have been installed in six MAN buses of MZK Nowy Sącz *(Nowy Sącz transit company)*.
- Twelve MAN buses for MPK Częstochowa *(Częstochowa transit company)* have been equipped with USB ports (84 items).
- MPK Kraków *(Kraków transit company)* has bought ten Autosan buses equipped with FAP driver's workplaces, CPC systems and USB chargers (3 per bus).
- Twenty-three MAN buses for Urząd Miasta w Opolu *(Opole town office)* have been equipped with USB ports (138 items) and CPC systems (23 items).
- Gmina Tarnowo Podgórne *(Municipal Office of Tarnowo Podgórne)* has extended its fleet with four MAN buses with USB chargers (4 per vehicle).
- In three MAN buses for MZK Ostrów Wielkopolski *(Ostrów Wielkopolski transit company)* there have been installed CPC systems and eighteen USB chargers (6 per vehicle).
- Sixteen USB ports have been installed in four Volvo buses for Jarocińskie Linie Autobusowe *(Jarocin bus lines)*.

Meeting of the Committee of the tram IGKM

Łódź, 6-7 December

Focus on tram transport

In December, at the invitation of IGKM (Chamber of Urban Transport) we took part in the Meeting of the Tram Committee (Komisja Tabory Tramwajowego).
The Meeting was co-organized with MPK Łódź Sp. z o.o. (Lodz public transit company).

The meeting was attended by approx. 250 people, including many of our customers and business partners, e.g. Evobus, Solaris, Ster, Enika, Pesa, Siemens and public transit companies from all over the country.

At the conference, we mainly promoted Konvekta air conditioning units that are strictly dedicated to the tram market. Our comprehensive offer directed to rail vehicles involves air conditioning units for motorman's workplace and passengers compartment, as well as heaters (front, under seat and door ones) and convectors. The offer includes a really wide range of products. We offer several HVAC devices for the passenger compartment on electric trains, trams and wagons - series 54, 64, 74, 84 and 94.

Many of these devices are successfully used in trams of Polish manufacturers and operators. Konvekta air conditioners have been used in vehicles of Solaris (Solaris Tramino), Pesa (Pesa Gamma locomotive or DART electric multiple unit), Modertrans from Poznań (Moderus Gamma tram) or Newag (Dragon locomotive).

The Meeting of the Committee was connected with three jubilees: 120th anniversary of the operation of public transport in Łódź, the 70th anniversary of launching bus transit and 25th anniversary of the MPK-Łódź company. Congratulations to all the jubilarians on round anniversaries. We wish them every success!

AGB II training for Mercedes Benz service stations

27-28 November

All about AGB II Road Speer Limiter

At the end of November, at Drabpol headquarters in Mykanów, we conducted an unusual training on the AGB II road speed limiter. Participants of the training were representatives of Mercedes-Benz service centers from all over Poland.

The need for such training was dictated by the application of AGB road speed limiters in Mercedes Benz vehicles.

The training was divided into theoretical and practical part. The first part included law regulations applicable in the field of road speed limiters, device construction, as well as principles of AGB operating and testing. According to current EU legislation, all trucks over 3.5 tones and buses above 8 passenger seats should be equipped with a road speed limiter

This applies both to the new and retrofitted vehicles.

In order to bring AGB operation principles to the representatives of Mercedes Benz service centers, the practical part of the training took place on Mercedes Actros.

After participants got familiar with the current legislation and the device itself, they took part in the practical training. In order to precisely get to know the principles of the AGB operation, it was held on a Mercedes Actros vehicle. This part of the training was carried out by Mr. Rafał Sztompka, a trainer from Mercedes Benz Polska Sp. z o.o.

Road speed limiter is a device that has a lot of benefits. The most important are: reduction of fuel consumption of 3-15% and smaller wear of tires and brakes.

Due to the large number of participants (25 people), the training was carried out in two groups.

FAP+ with MVP and CPC systems in ten URSUS CS2 12LFE electric buses for KM Szczecinek *(Szczecinek transit company)*

URSUS electric buses with our solutions

In December, the fleet of Komunikacja Miejska w Szczecinku (Szczecinek transit company) has been extended with ten URSUS CS2 12LFE electric buses. For the first time in these vehicles, there were used modern driver's workplaces with the latest MVP multifunction displays – a result of Drabpol and Ursus joint project.

Ursus buses officially joined the traffic in KM Szczecinek city lines on 19th December . The delivery of vehicles was a big deal for Szczecinek. The event was attended not only by the representatives of KM Szczecinek management board and the producer, but also self-government authorities - Major of Szczecinek - Mr. Daniel Rak, former Mayor and the father of the project at the same time - Mr. Jerzy Hardie, Szczecinek Poviat Staroste – Mr. Krzysztof Lis, Szczecinek Commune Head- Mr. Ryszard Jasionas and other representatives of local authorities.

The President of KM Szczcinek Management Board - Mr. Tomasz Merk couldn't hide the satisfaction of supplying the fleet with new electric buses, which currently constitute almost a half of the entire bus fleet.

"Because of 100% electric powertrain, vehicles are environmental friendly, silent and comfortable for the passengers and drivers. The new dashboard with a perfectly legible LED display is another advantage that improves both safety and driving comfort" **– said Mr. Tomasz Merk, President of KM Szczecinek during the ceremony.**

The new bus is a result of the cooperation of specialized external companies, including Drabpol. Enika company by supplying TM4 Sumo HD electric motors has enabled the integration of electricity flow, while Ekoenergetyka – Polska has provided dedicated chargers, that comply with the requirements for batteries production..

We implemented our solutions to Ursus electric buses for the first time.

All vehicles has been equipped with the ergonomic Continental FAP + driver's workplace with a 12-inch MVP display. An in-house software solution, created jointly by Ursus and our D&S Department constructors, controls the information coming from the vehicle and enables its visualization on the MVP display.
In addition, each vehicle has been equipped with a CPC system that enables continuous monitoring of tire pressure and temperature, also integrated with this display.

It is safe to say that through intelligent control using the CAN bus (with KIBES software), Ursus and our constructors created a very user-friendly vehicle.

The driver receives a complete set of necessary data in a clear, well thought out and very readable form, on the MVP available in the FAP + dashboard.

Our main goal while creating MVP display software was to ensure the maximum safety of the driver and vehicle by providing such data visualization, so that the information was simple, legible and presented in a way that does not disturb the driver's attention.

Information on the current state of battery charge, flow and energy recuperation, and thus current and forecasted vehicle autonomy is extremely important during ongoing operation. Collecting data by means of built-in and telemetry systems enables correct and statistically significant data analysis that is the basis for creating optimal and, above all, real timetables, frequency planning or route selection due to the particular line load.

The modern design of buses as well as electric powertrain guarantee longer trouble-free operation of the bus fleet. Control, diagnosis, alarming are carried out by means of fast electronic devices that will serve to prevent rather than repair any failures. Within the warranty period, KM Management Board plans to train its personnel in the field of vehicle servicing and maintenance, and gain certificates that will enable its qualified personnel to take over the full service of the bus fleet within three years.

In the opinion of the President Tomasz Merka and the Chef of Technology – Mr. Mariusz Motyl- the buses are very well made, well-equipped and perfectly match the concept of multimodal, ecological and, above all, efficient public transport in Szczecinek. In the course of the meeting, Mr. Tomasz Merk promised that he would share his opinion on the vehicles and the multimodal transport with the interested people in the near future. And we, for our side, would like to show undecided what buses can be created thanks to the effective cooperation of the manufacturer with the subcontractor.

New electric bus, and the resulting powertrain change is undoubtedly a challenge for drivers due to the fact that the driving technique has been changing. And just as with every modern solution, it takes some time for drivers to no longer imagine working with traditional solutions.

While the ongoing bus operation, it is very important to know:

1. **Information on the current battery's state of charge,**
2. **Information on flow and power recuperation,**
3. **Information on the current and forecasted autonomy of the vehicle.**

TPMS_WIFI SEMITRAILER – our new in-house developed wireless solution for tire protection in semitrailers

A sudden loss of pressure in the tires of the multi-axle semitrailer can be a problem for the driver. What may prove useful in this case is TPMS_WIFI NACZEPA (TPMS_WIFI SEMITRAILER) intended for the semitrailers that are often exchanged with a tractor unit. This is our third in-house developed solution for tire protection.

The independent operation tests show that the vast majority of problems concern tire failures. The main reason is too low tire pressure. Moreover, too high temperature can lead tire tread separation or even cause tire ignition. Such accidents usually originate from too low tire pressure, but also from blocking a disc brake or bearing seizure of a wheel hub. While it is possible for the driver to quickly notice the rapid loss of air in the tires of the front wheels, it is almost impossible in case of the wheels of a semitrailer with a load.

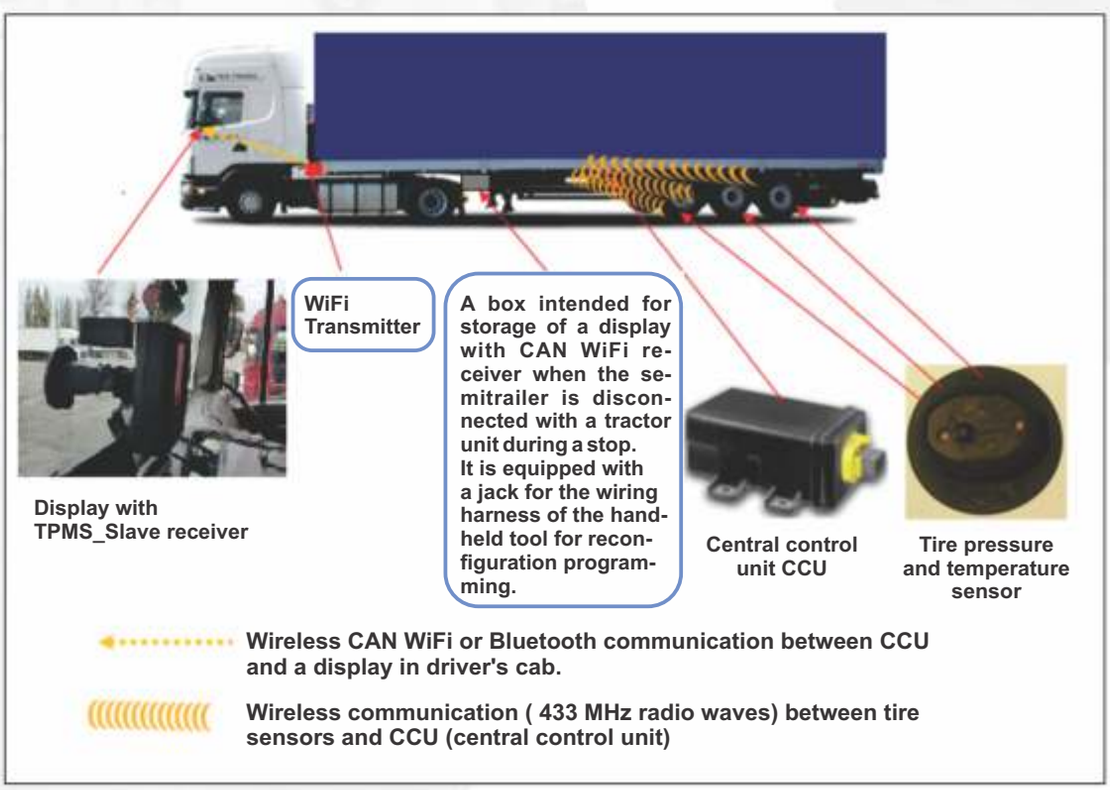
Where do the problems with pressure and temperature in semitrailers come from?

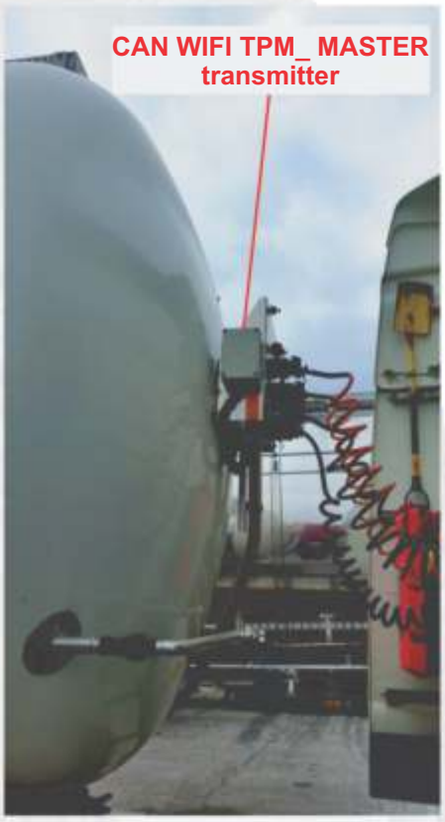
They mainly result from the way they are used. In many cases, semitrailers perform the role of packaging in transport. Care comparable to that of tractor units is rarely seen in case of semitrailers. The most problems occur in companies, in which semitrailers are often exchanged with a tractor unit, companies ordering towing of semitrailers or rental companies.

Strained logistic chains often do not give the drivers time to control the tire pressure and temperature in the trailers. But the consequences of such negligence are deplorable. Therefore, constant monitoring of tire pressure and temperature is so important, both for safety and reduction of the operating costs of trailers.

In previous editions, we have repeatedly described the ContiPressureCheck tire pressure and temperature monitoring system and its application in a variety of vehicles, working vehicles and semitrailers. We have just implemented to the market a solution called TPMS_WIFI NACZEPA (TPMS_WIFI SEMITRAILER) intended for semitrailers that are often exchanged with a tractor unit.

CPC-WIFI_SEMITRAILERS - components





Information on current tire pressure and temperature and alerts are sent via CAN BUS wiring harness to the CAN WIFI transmitter, installed in the front part of the trailer. Then it is wirelessly sent to the CAN WIFI receiver, installed next to the display on the windshield.

Tire pressure monitoring systems for composite vehicles are usually programmed for the configuration of a tractor unit only with a specific semitrailer. Exchange of a semitrailer required settings modification for the sensors in the new semitrailer tires. This is uncomfortable if you frequently exchange semitrailers in different places and at different times. In addition, it would require having a proper programmer and trained employees. This inconvenience has been solved in the case of TPMS_WIFI NACZEPA (TPMS_WIFI SEMITRAILER). In addition to the pressure, also the temperature of the tires is under control -regardless of the configuration of the tractor unit and a semitrailer.

There is a pressure and temperature sensor installed on the inner surface of the tire of each wheel of the semitrailer that sends information via 433 MHz radio waves to the control unit.

After being processed, information on the current pressure, temperature of tires and alerts is sent via CAN BUS (J1939 protocol) to the CAN WIFI transmitter installed on the front of the semitrailer.

Wireless information is sent to the CAN WIFI receiver installed next to the display that is attached to the windshield. The power supply is taken from the cigarette lighter socket.

The display is pre-programmed for a specific semitrailer, so it is assigned to only one trailer. Therefore, it is planned to install a special locker in the semitrailer for depositing the display, after disconnecting it from the tractor unit.

Display in the driver's cab informs users about the pressure status and tire condition on an ongoing basis.

As it was mentioned before TPMS_WIFI NACZEPA system (TPMS_WIFI SEMITRAILER) is dedicated to trailers that are frequently exchanged in different places and at different times 7/24. It is especially recommended for companies renting semitrailers.

TPMS _WIFI NACZEPA system (TPMS_WIFI SEMITRAILER) can be applied in different types of trailers with maximum 24 wheels and 6 axes. Now we are working on increasing the maximum range (second half of 2019). Currently, the TPMS_WIFI NACZEPA system is used in a tank semitrailer for the transport of hazardous materials that belongs to Benski Sp. z o.o. company from Lubliniec.

The company specializes in transport of liquid chemicals and explosives, weapons, ammunition, both for the civilian industry, as well as for the army and police. We have already written about Benski company twice in our newsletter. In 2017, Benski company decided to monitor the pressure and, in particular, temperature of the tires in three semitrailers intended for transport of very dangerous materials.

ContiPressureCheck is cerified for installation in vehicles intended for the transport of hazardous materials (ADR).

Constant monitoring on tire pressure and temperature display.

The decision to implement the CPC system was also significantly influenced by three cases of bearings seizure in the axle hubs of the semitrailer, which could lead to the tire ignition and, consequently, a fire of over 30 tones of flammable liquid or semitrailer filled with explosives.

Thanks to the use of the new TPMS_WIFI NACZEPA solution by the Benski company, it is now possible to quickly change the semitrailer without having to reprogram the set of sensors in the tires. We would like to emphasize, once again, that in the case of ADR transport it is very important to monitor the temperature of the tires in order to prevent tire ignition.

Benski company from Lubliniec was the first to use the TPMS_WIFI NACZEPA system in its tank semitrailer for the transport of hazardous materials.

Control of tire pressure and temperature in multi-axis vehicles

SOB-POL company opts for CPC

SOB-POL – Przedsiębiorstwo Wielobranżowe Włodzimierz Sobieraj from Siemianowice Śląskie, providing heavy equipment services, equipped its Mercedes Actros tractor unit and the NNR65 semitrailer, produced by PP EMTECH Sp. z o.o, with the Conti Pressure Check system.

There is a good reason why SOB-POL decided to take this step. Even experienced drivers have a problem to notice a quick loss of pressure in the tires of twin wheels in the rear axles of the truck, and it is even more difficult in case of the tires of a multi-axle semitrailer.

SOB-POL company that has a fleet of work vehicles and means for transporting them, provides services with such heavy equipment as technological dumpers, dozers, loaders and excavators. Thus, the company representatives perfectly realize what it means to have a tire failure in this type of vehicles. SOB-POL company, as one of the first, joined a network of our authorized service centers performing compre-hensive service of the ContPressureCheck system. So there was no problem with the system assembly on the tractor unit and the semitrailer.

Pressure and temperature are controlled in the tires of the two rear axles of the tractor unit and four axles of the semitrailer - in total in 24 wheels. The tires are equipped with sensors that transmit (via radio) information to the central control unit (CCU), located in the tractor unit and to the additional receiver installed in the semitrailer.

An additional receiver with a central control unit is connected by electric wire harness supplying power and information about the tire pressure and temperature in the CAN format.

An additional receiver with a central control unit is connected by electric wire harness, supplying power and information about the tire pressure and temperature in the CAN format.

The connection between the tractor unit and the semitrailer takes place through the standard connectors provided on the vehicle. There is a display in the driver's cab that is electrically connected to the CCU.

Pressure and temperature are controlled in the tires of the two rear axles of the tractor unit and four axles of the semitrailer - in total in 24 wheels.

The driver can monitor, on an ongoing basis, the tire pressure and temperature in all 24 wheels of the tractor unit and the semitrailer. He is also immediately alerted about low (fall by more than 10% of required value) or very low tire pressure (fall over 20%) or too high temperature which limit value is set to 90°C.

Tire pressure and temperature monitoring can cover only the multi-axle tractor unit. It is possible when applying a new TPMS_WIFI_NACZEPA solution (TPMS_WIFI SEMITRAILER) with wireless communication between the central control unit (CCU) installed in the semitrailer and a display in driver's cab. This solution has been widely described in this issue, in the article on page 14.

ATG articulations on buses of IREX TRANS from Bydgoszcz

Technical support for users of ATG systems

In November, a year has passed since we established cooperation with the German company ATG Autotechnik GmbH, designing and manufacturing articulations and complete gangway systems, platforms and cable guides for buses, light rail vehicles (trams) and other special vehicles.

ATG AUTOTECHNIK GMBH

Drop in operating pressure in the hydraulic system to 12 bar was quickly recovered to the correct level of 20.7 bar by a service pump.

As a part of the established cooperation, we not only supply articulation and gangway systems for the bus market - both for low floor and low entry buses, as well as for the pusher and trailer version, but we also provide our customers with technical support and any services related to reviews or servicing of these systems.

One of the users of ATG articulations is Irex Trans company from Bydgoszcz.
In Irex-Trans, ATG articulations have been applied in 23 Solbus buses (a brand that unfortunately ceased to exist). Therefore, after establishing cooperation with the German manufacturer, we directed our first steps to this company. Anyway, the owner of ATG, Mr. Denis Browne, also wanted to check how the components that he supplied work in the above mentioned Solbus buses. For us, as a representative of ATG, it was particularly important to provide support for products used by the Polish customers who after the bankruptcy of the vehicle manufacturer were virtually left unattended. The owner and president of ATG company, Mr. Denis Browne, evaluated the state of the articulated system and instructed the Irex Trans service technicians about operational procedures concerning ATG articulated systems. It is worth noting that Mr. Denis Browne was working as a constructor in the company that was the first to develop an articulation system for city buses. Therefore, he knows the comprehensive procedure concerning technical reviews.

The bus that was reviewed has the mileage of 265 504 km. In this particular vehicle the articulation system had not been reviewed or serviced from the beginning. This was due to the lack of documentation that the user should have received from the vehicle manufacturer. However, despite almost two years without any maintenance, the articulation system was quite good and there were no visible damage or system failures. One could only notice a deficit of hydraulic oil used in the system to supply hydraulic pistons, controlling the bending force of the articulation when the vehicle is driving on a curve. The working pressure in the hydraulic system has dropped to 12 BAR. Using our service pump, we managed to top up the oil level and restore the proper working pressure of 20.7 Bar.

All safety functions that articulated system in such vehicle has to face worked flawlessly.

For more information about inspections and servicing of ATG articulation systems please see our TECHNICAL AND SERVICE NEWS (pages 34-35).

XI International Aviation and Space Salon „Aviasvit – XXI" in Kiev

20-22nd November

For the first time at „AVIASVIT–XXI"

„Aviasvit – XXI" in Kiev is the next – after Prague „Czechbus" – international trade fair event that we participated as an exhibitor. The Ukrainian debut is associated with expanding the market of our recipients – from our neighboring countries in the first place.

„AVIASVIT-XXI" is the leading Ukrainian exhibition event in the field of aviation industry and space technologies. It is accompanied by the international specialized exhibitions „Arms and Security-2018" and „Protection Technologies / FireTech-2018".

Our company, as the representative of many global corporations, actively works for defense, providing its own solutions and equipment for the army and equipment dedicated to military aviation, police and border guard.
Thanks to appropriate certificates and authorizations, we take part in tenders and execute long-term contracts for the supply of products and services.

At our own stand in Kiev, we presented L3 Wescam airborne surveillance systems – models of MX-10 and MX-15 systems and the latest in our offer – MX-8.
It is the smallest and at the same time the lightest image enhancement system from all Wescam L3 turrets, ideal for manned or unmanned airborne platforms requiring high-performing imaging at a low weight.

In Kiev, we promoted these solutions together with Mr. Mike Rogers, our partner from L3 Wescam.

Supplemental Type Certificate for Cessna 177RG Cardinal RG

We modernize avionics in Cessna 177RG Cardinal RG

In October, the Part 21 Designing Organization obtained a Supplemental Type Certificate (STC) for Cessna 177RG Cardinal RG aircraft in the field of modification of the avionics equipment of the aircraft.

Following this, we started works related to the modernization of avionics in this aircraft. The original equipment from the 1970s has been replaced with a modern set including: NAV / COM Garmin GTN650 NAV/COM, Garmin GNS430W GPS receiver, Garmin GMA 340 audio panel, Garmin GTX 330 transponder, Bendix King KR 87 ADF system with KI 227 indicator, DME Bendix King KN 62A system, Bendix King KCS 55A compass system and Bendix King KI209 VOR / LOC indicator. The system has been completed with the Insight G4 engine monitoring system.

The entire certification procedure as well as ground and flight tests has been supervised by the international team of EASA inspectors. For our Part 21 office it meant additional calculations and analyses. Our constructors have carried out, among others, the reliability analysis of the installed equipment, or the strength analysis proving that the equipment does not pose a threat to the crew and passengers in the event of a „hard" landing of the aircraft.

At the end of the certification process, ground tests and comprehensive flight tests were performed. These were aimed at checking the operation of avionics equipment in various flight conditions of the aircraft, e.g. approach according to instrument flight rules (IFR) or long distance flights. Successful completion of the tests confirmed the correctness of the design and installation of the devices. As a result, EASA issued the Supplemental Type Certificate.

This is the first such approval for Polish company that is not a „big" avionics manufacturer, like PZL Mielec or PZL Świdnik, what is even more worth to stress.

Below you will find Cessna's cockpit interior after modernisation of avionics system.

Obtaining a Supplemental Type Certificate to Cessna 177RG Cardinal RG aircraft in the field of modification of the avionics equipment is the first such approval issued by EASA for a Polish company that is not a „big" aviation manufacturer.

The first moderization of this kind in Poland

At the end of December, the Part-21 Design Organization of our company obtained the approval of amendment conditions to W-3 Sokół helicopter being at the Police Aviation disposal. The change involved replacement of two previously installed VHF Briz radios (of USSR production) with a modern Bendix King KY-196B radio .

The change was dictated by the fact that starting from 2019 on aircraft flying in the EU airspace instead of the current 25 kHz there should be used VHF radio with 8,33 kHz channel separation.

This seemingly simple modification, turned out to be simple by name only. The main reason for this was the fact that this particular W-3 helicopter was manufactured in the early 90s of the last century and did not have a Type Certificate, recognized by the European aviation authority EASA, but only a Polish and Soviet certificate. As a result, our Part 21 Organization and inspectors from the Civil Aviation Office were establishing the applicable certification base for this modernization for a long time (i.e. specific points of airworthiness requirements for aircraft that had to be met). In addition, the Office has requested very detailed analyzes and calculations regarding the entire spectrum of issues related to the design and installation of new radios.

Modernization of W-3 Police helicopter was the first in Poland modernization of a large aircraft that did not have a Type Certificate, conducted by an external company – in this case ours, not the manufacturer of this helicopter.

Fortunately, the constructors of our company met the requirements of ULC (Civil Aviation Authority). As a result, the radio units were installed in the helicopter by technicians from our Part-145 office. In addition, we replaced the antenna installation in the mentioned helicopter. The correctness of the installation has been confirmed by a comprehensive program of ground and flight tests, carried out by the police pilots.

It was the first modernization of a large aircraft in Poland (W-3 helicopter belongs to this category) that did not have a Type Certificate, conducted by an external company - in this case ours, not the manufacturer of this helicopter.

BEFORE MODERNIZATION

AFTER MODERNIZATION

"THE NEW INFORMATION TECHNOLOGY... INTERNET AND EMAIL... HAVE PRACTICALLY ELIMINATED THE PHYSICAL COSTS OF COMMUNICATIONS."

Peter Druckner,
American entrepreneur

CONNECTIVITY SOLUTIONS FOR SMALLER AIRCRAFT CABINS

STORY BY DALE SMITH

Source: Avionics News, July 2018

Back in the late 1980s, I would often fly the owner of a small business in the company's King Air C90. I remember him getting a huge kick out of making calls on the sky phone. He would begin every conversation with, „I'm calling from my airplane..."

While I can't remember what we were paying per minute for those calls, I'm sure it was close to what we were spending for a gallon of Jet-A. Back then, airborne connectivity was a novelty. Today, it's mandatory.

Even though the typical flight in a smaller cabin turboprop or light jet is south of two hours, passengers, and many pilots, can't imagine being disconnected for that long.

„I think what's happened is we've become such a connected society that there's an expectation for connectivity everywhere you are," explained Jeff Kauffman, senior product manager for BendixKing. „About the only place you don't have total connectivity today is while flying."

And that's changing in a big way. In-flight Wi-Fi and near broadband-speed satellite internet connectivity have nearly earned their way onto the master minimum equipment list on the majority of large-cabin corporate aircraft. High-speed connectivity: Don't leave home without it.

„Today, we're making inroads into the cabins of large corporate aircraft and airliners," Kauffman said. "But the place that's been left out is the lower end of the business and GA market. Up until now, the equipment has been too big, too heavy and too expensive. But that's all changed."

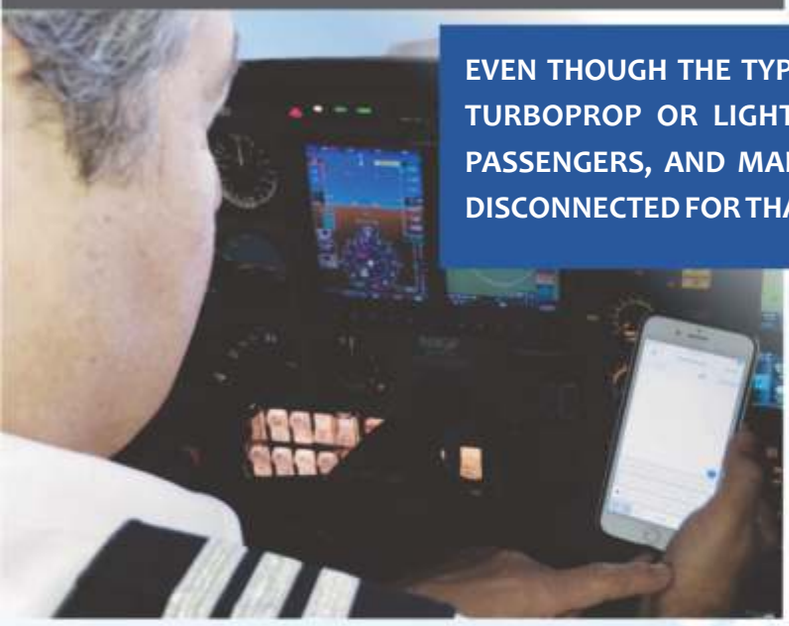
In fact, there is a growing selection of connectivity options available now for all types of small-cabin aircraft - even piston

singles. While that may seem a bit like overkill, even basic SMS texting connectivity can deliver a host of benefits to a single pilot.

„Connectivity and entertainment have always been at a price geared toward the people sitting in the back of the airplane," stated Sergio Aguirre, president of Gogo Business Aviation. "What we're doing now is to introduce equipment in smaller form factors and at prices that deliver enough flexibility so the owner/pilot can get as much value out of the system as anyone on the airplane. It's a totally different use. But it delivers some big benefits."

To better understand what options are available for smaller-cabin connectivity, Avionics News contacted three market leaders to see what solutions they offer today.

Air Text



EVEN THOUGH THE TYPICAL FLIGHT IN A SMALLER CABIN TURBOPROP OR LIGHT JET IS SOUTH OF TWO-HOURS, PASSENGERS, AND MANY PILOTS, CAN'T IMAGINE BEING DISCONNECTED FOR THAT LONG.

„Our approach is not full-blown internet connectivity, but rather a messaging app that can send and receive text messages at the speeds found with terrestrial messaging," explained David Gray, company president. „The advantage is that our antenna and hardware are small and can even be used as a portable solution or can be hardwired into the aircraft."

Grey explained that the AirText box is about the same size as a paperback book and is certified by the Federal Aviation Administration to be Velcro-mounted in the cabin. The Iridium antenna can either be placed on the cockpit glare shield, or you can mount a GPS-receiver-sized antenna on top of the aircraft.

„Because of this flexibility, owners of older aircraft can enjoy SMS texting capabilities in-flight without spending a lot of money on installation," he said. „Another benefit is that the delivered experience is the same as they have with normal texting, while an airborne internet experience can be much slower than what they are used to on the ground."

Gray explained that once the AirText unit is „installed in the aircraft, the pilot and/or passengers could easily connect their smartphone or tablet to the AirText system via the unit's Bluetooth.

„Passengers are able to use the system just as they would on the ground," he said.

„The in-flight experience is seamless. Along with texting, pilots enjoy other benefits that will help make flying easier. For example, we are now providing METARS, TAFS, digital ATIS and ASOS to the pilot."

Gray also said a popular use for AirText is to enable fleet pilots to stay in touch through texting one another like they do on the ground.

Regarding cost, Gray said the AirText system pricing starts at $9,750 and a service contract is $300 per year, which includes the first 1,000 SMS messages. Subsequent messages are billed at a nickel per text.

The AirText system can also be upgraded to the AirText Plus, which provides satellite phone call capabilities.

The cost for AirText Plus is $14,973, and the SMS plan is the same $300 per year. All phone calls are priced at $1.60 per minute.

BendixKing AeroWave 100 and Text & Track

Kauffman explained that while the AeroWave 100 was originally developed to be a connectivity solution for turboprops and light jets, it's catching on with owner/operators of larger piston singles, as well.

„We have an AML/STC that currently covers Part 23 aircraft that includes Wi-Fi for models ranging from the large piston

airframes up to light jets," he said. „We've also recently added some larger, legacy airframes including the Hawker 800/900, Citation 650, Gulfstream G200 and the Falcon 50.
"These additions are part of our allowed airframes for the 104 Kbps AeroWave data plan. This plan is intended for smaller airframes, but we have managed to get some larger legacy jets added for those owner/operators looking to connect a minimal number of users."

He also stressed the point that BendixKing does not have Part 25 supplemental type certificate approvals for the AeroWave, but it does have a group of select „partners" that hold STCs for installing the system on these larger aircraft.

As Kauffman sees it, the recent trend for owner/ operators of these larger cabin aircraft to want AeroWave Wi-Fi connectivity is based on a simple value equation:
Owner/operators want good Inmarsat/satellite connectivity at a value price. Speaking of price, the typical uninstalled AeroWave 100 system, including the Wi-Fi router, comes in at $25,000.

„The basic AeroWave system is ideal for sending emails and SMS texting," Kauffman said. Those connectivity services start at $1,999 for a prepaid plan that gives the user 50 hours of use at 104 Kbps speeds, which is great for texting and email.

"We also offer a pay-per-megabyte option that ups the speed to a 200 Kbps, non-throttled service on the same AeroWave hardware. This is a popular upgrade option for operators who need to either connect more people in the cabin or have to download larger files."

Kauffman explained that for an Apple iOS user, the messaging is handled through the standard package built into the system, so it's just a connect-and-message-away solution. If you're operating an Android-type PED, then you'll need to install one of a variety of third-party messaging apps. No big deal, just one more step.

If you're looking for voice capabilities also, the AeroWave 100 can do that, but you'll need to upgrade to the dedicated voice channel, which operates over the Inmarsat/AMBE network. Again, that's a prepaid service that comes in 20-minute blocks. Once you're hooked up, calls are billed at $1.47 per minute, so it's obviously not meant for long conversations.

Speaking of use, one thing Kauffman gets asked about all the time is the „experience" that AeroWave delivers.

„If you're definition of a great online experience is what you enjoy at home over your high-speed broadband network, this is not going to be the most satisfying solution," he said.
„It's not designed to download large, graphically-intensive files. It's designed for quick messaging, email and some internet browsing if the site is formatted properly."

Obviously, streaming Netflix is a no-no. „Streaming content eats up too much time on the system," Kauffman said. „Again, this is base-level connectivity, but it's good base-level connectivity for an airborne system."

If you're looking for a less-expensive messaging solution, Kauffman said BendixKing recently introduced AeroWave Text & Track, which connects via Bluetooth to your PED to give users remote SMS text capabilities.

„Along with SMS messaging, AeroWave Text & Track also gives you the ability to have personal tracking capabilities through the built-in GPS receiver," he said. „You can use it in your airplane, car, boat or out hiking, or wherever. It's an amazingly capable unit at an affordable price."

With regards to price, Kauffman said the handheld unit sells for $449.95 with a monthly access fee of $11.99 for the „security" service package.

Gogo Business Aviation AVANCE L3

„What's unique about the Avance L3 product is that it's a lot more than just a connectivity solution – it's an in-flight information and entertainment system, as well," Aguirre explained. „While those features have existed for large cabin aircraft, the L3 now puts them in a smaller form factor that is ideal for turboprops and light jet applications."

Aguirre said the smaller, 3MCU LRU is configurable to the customer's needs, with services ranging from the CORE personality that delivers email and voice capabilities, then moving up to the top-end, MAX package with full 3G connectivity and the ability to handle up to 25 PED connections at a time. Not that many CJs would need that, but...

Another feature that Aguirre noted is the Avance L3's unique programming flexibility, which gives the customer total control of their connectivity and infotainment offerings.

„If the customer decides they want to add any capabilities like movies or other programming, all they have to do is call us and we can add them in minutes," he said. "The hardware doesn't change. They can also easily remove capabilities if they find they're not using them. This level of flexibility has never been available before in general aviation."

While that may not seem like that much of a benefit, in instances where a company or individual may want to put their aircraft on a Part 135 charter certificate, the cability to upgrade the in-cabin experience may pay off big in added revenue.

„That wasn't our original intention, but we'll see how the market responds," Aguirre said. „We think this high level of functionality and flexibility is going to help owners finally make the commitment to connectivity that they may have been holding off on."

Aguirre explained that while the flexibility is unique, what customers want are the Avance L3's array of in-cabin features that allow passengers to simply and reliably use all available data, voice, map, entertainment and cabin management systems on the aircraft.

„For example, the basic CORE personality offers you the ability to use the hourly connectivity rate of just $99, so you don't have to commit to a more-expensive monthly plan," he said. „What we're finding is that the hourly plan is a great way for people to experience the value of connectivity and get a feel for what it can do for them, both in the cabin and in the cockpit."

Aguirre said that today, with all that connectivity offers, it's not just about checking email or watching a movie; pilots are finding great value in all the capabilities it brings to their in-flight experience.

„It's flying smarter and more effective with more awareness," he said. „Now the value proposition of connectivity has a whole different purpose."
Of course, with a list price ranging from the high $30s to the low $70s - as in thousands - for the hardware, which includes the advanced 802.11 wireless access Wi-Fi point - as capable as it is, the L3 is one serious bit of connectivity kit.

But again, you're getting a high-end solution that runs the spectrum from simple SMS texting and emailing up through a 3G browsing experience and watching the latest in Hollywood blockbusters.

If you're worried that your passengers will eat up all the allotted bandwidth streaming video content, Gogo has a better solution.
„The L3's LRU has a terabyte of storage space so you can host the latest movies and TV programs on the aircraft," Aguirre said. "We have a subscription service called Gogo Vision that is similar to Netflix. We download the content directly onto the unit's server over the Gogo Cloud so passengers can enjoy the programming they want without having to use the off-aircraft connection."

Another capability that will help both the owner/operator and the aircraft's maintainer is the system's „call home" diagnostics capabilities.
„If anything goes wrong with the LRU, it will automatically send a fault code to our technical support organization, which will then open an 'event' in our CMS software - just like if a customer had called with an issue," Aguirre said. „Once tech support gets those notices, they will respond proactively to the customer or their DOM.
We're also in the process of setting up the notifications so they will go directly to the owner's designated maintainer. Once that's operational, the DOM will know about the issue before the aircraft even lands. The maintenance guys are going to love this."

IS A GLASS PANEL UPGRADE RIGHT FOR YOU?

STORY BY DALE SMITH

Source: Avionics News, December 2018

Most pilots and aircraft owners like me suffer from what can only be described as „shiny object syndrome." If it's new, shiny and state of the art, we must be the first on our airport to have it.

The most recent example is, of course, glass panel upgrades. No matter if you are flying with unlimited visibility or hard-IFR, every pilot wants glass in their panel. And the bigger the better.

Believe me, I am the last person to say there's anything wrong with that. Today's glass displays add a huge amount of capabilities and situational awareness into an aircraft. If you need what they deliver, then they're worth every dollar they cost.

But the real problem is that the majority of aircraft owners must deal with real-life budgets. If they spend $70,000 for a complete glass upgrade, there may be little left for anything else.

TODAY'S GLASS DISPLAYS ADD A HUGE AMOUNT OF CAPABILITIES AND SITUATIONAL AWARENESS INTO AN AIRCRAFT. IF YOU NEED WHAT THEY DELIVER, THEN THEY'RE WORTH EVERY DOLLAR THEY COST.

The $70,000 question

Congratulations: As an aircraft owner, you just won the lottery jackpot! After what the IRS and your significant other take off the top, you are left with $70,000 guilt free. Let's look at what your panel upgrade options are.

First off, your 1990-era Wichita whatever is in good shape. The annual is fresh and the engine and prop are low- to mid-time, so no major expenses here. The panel has the original analog instruments and avionics. They all work fine. But you find yourself making a lot more IFR cross-country trips, and it would be great to have more-advanced avionics and a more-capable autopilot. Plus, there's that pesky ADS-B mandate to comply with.

And that guy in the T-hangar across from yours just put in a sweet glass panel, and he only flies on Sunday mornings.

OK, decision made. Rip out the old stuff and spend the whole bankroll on a full panel of modern glass technology. Call the avionics shop now!

But wait. On second thought – chronic second-guessing is the No. 2 syndrome that pilots suffer. After the best part of three decades baking in the sun, the paint and interior are both looking sad. And you never truly liked the original upholstery and paint scheme. But what does a makeover like that cost today?

Numbers to paint

An airplane's paint scheme and interior are two personal things to most owners, and the good news is that an investment here can do a lot more than boost your ego.

„Talk to any aircraft broker, and they'll tell you that new paint and interiors sell airplanes," stated Steve Purello, president of First Class Aerospace in Leesburg, Florida. „If you want to stand out, ramp appeal is important. Like in real estate, if you're thinking of selling soon, don't go too far off neutral with the paint scheme or interior colors. Of course, if you're planning to keep it for a long time, go with the sports-car look and diamond-stitched, color-inlayed upholstery."

As for what to look for in a paint/interior shop, Purello said rule No. 1 is to definitely do your homework.

Avionics modernization on a plane Socata TB 9

BEFORE MODERNIZATION

AFTER MODERNIZATION

„A shop's reputation is the No. 1 thing to research," he said. „Check Google reviews and the owner/type association chat boards. They are good sources for information. There are plenty of horror stories out there, especially on the interior upgrade side of the business. Too many owners have gone with an automotive interior shop trying to save money only to have the job drag on for five or six months. Remember, there are no loaner cars in aviation. Once it's out of your airplane and in the shop, you're stuck." He added that when owners narrow their search, the next step is to ask the shop for the following information:

1. What was the actual turnaround time on the last three aircraft completed. Not what they quoted, but the real return-to-service times. With regards to good project turn times, Purello said that six to eight weeks is typical, depending on the scope of the work. Right now, his facility is turning them in an average of four weeks.

2. What was the difference between the out-the-door price and the originally quoted price and the reasons for any differences? "Shops can be vague in their estimates as to what's covered and what's not," Purello said.

3. Ask for contact information for a couple of recent project references. If possible, try and get ones that are local in case you want to go look at the airplane yourself."If you're looking to do paint and interior, it's advantageous to get it all done at the same time," Purello said. "Doing them separately literally doubles the downtime and adds cost to the project because the shops have to duplicate some of their work. Also, some shops will offer a discount if you do the whole package at one time."

As for what a "typical" paint/interior makeover may cost, Purello said that his ballpark estimate for a four-place single would be $8,000 to $10,000 for the interior and another $10,000 for the paint. A six-place interior ups the cost another $3,000. If you're flying a light twin, figure on a base of $14,000 for the paint.

„Another good idea, when you're in for paint, is to go ahead and change the windshield," he said. "It's probably scratched and crazed from weather. Figure on that costing another $3,000 or so depending on the aircraft model."

Back to the panel

OK, the airplane is looking factory-fresh inside and out, and you still have less than $50,000 to bring the panel into the 21st century. (Please note, while there are a lot of options as you piece together the panel, there can be integration problems, especially when trying to connect legacy units with new digital boxes. Starting the process with the guidance of an experienced avionics shop will save time, effort and money.)

The obvious first step is to comply with the ADS-B mandate - after that, everything else is an option - and there are several ways to do it.
You can go with a portable unit like the Stratus 2 ADS-B Out for $900 or a top-of-the-line panel-mounted L3 Lynx ADS-B Out/In with full-color touchscreen for about $5,000. With all the different options, aircraft owners can't put a price on this piece of the puzzle until you know what you want.

Getting the big picture

„When you start looking at putting glass in the panel, you can go several directions at a number of price points," explained Matt Schloss, sales manager for Gulf Coast Avionics. „The new Garmin G500/600 touchscreen displays are popular, but you need to have a GNS 430/530 WAAS unit at least. If you don't have the Garmin GNS, then you can go with the Aspen EFD glass. It works with most legacy comm/nav/GPS units."

Schloss said that pricing on those solutions ranges from around $13,000 for a single-display Aspen upwards of $30,000 for the G600 touchscreen installed. He also said that the new Dynon glass is a popular mid-price option, but the list of approved aircraft is currently limited to the Cessna 172. But there are more approvals in the works.

Also, keep in mind that none of the prices we're using include the installation costs. Schloss stressed that along with the quoted installation costs, anytime you are budgeting for new avionics, you must have a buffer for those „surprise" costs that arise anytime the panel is opened.

„You will have unforeseen expenses with every installation," he said. „Once the panel is off, there will be wiring issues or hardware problems or antenna issues to deal with that will be add-ons to the original estimate. There's no way to know what they will be until the project is started."

Can you hear me now?

Truth be told, if an aircraft owner has a good Collins or King stack, an ADS-B Out transponder and a GPS, they can fly all the VFR and light IFR they want. But it may not be considered cool. Both Avidyne and Garmin currently have amazingly capable comm/nav/GPS/MFD units that deliver an incredible array of capabilities to the panel.

The installation options are virtually unlimited, especially when you consider using compatible legacy avionics as secondary units. And speaking of legacy units, don't overlook the possibility of buying „reconditioned" comm/nav/GPS units like a Garmin GNS or Avidyne IFD. Pilots who catch the fever will quickly trade perfectly good units for the latest „shiny object," so the pre-owned option is certainly worth looking into.

But for the sake of our story, let's say you want the latest and greatest comm/nav/GPS. To get it, you must budget $15,000. Again, that's just a number. No doubt you'll find it different when talking with an AEA member repair station about your aircraft's needs.

Buy George

„If you're flying a lot of IFR, then you might want to upgrade to a more-capable autopilot," Schloss said. „There are a lot of good options on the market today from Avidyne, Garmin, Genesys and the new models from Trio, TruTrak and others.

The good news is these new digital autopilots can do what you used to pay $30,000 for, at a fraction of the cost. Like with other avionics, check with your avionics shop to make sure that your autopilot will truly work with the GPS and navigation radios you currently have or are looking to add. Some avionics just don't play well with others."

Schloss said that with regards to the budget, he'd suggest putting $8,000 to $18,000 aside for a new, fully featured, digital autopilot. The wide pricing spread is due to the type of autopilot selected and whether or not new servos and wiring are needed.

Displays you can use at a price you can afford

As you can see, when you add all the various parts of our upgrade package, we've blown our $70,000 budget to bits. But if you leave out the large-format displays, you can bring it close to target. Ah, but you really want that glass...

Well, think about it for a minute: What information do you truly want those large screens for? Typically, it's going to be traffic and weather.

And that, my flying friend, is easily achievable with a piece of technology you probably already own. I am, of course, speaking of your trusty iPad.

„The first thing you must know about using an iPad in the cockpit is that it is not FAA certified, so you can't use it for IFR flights; no approaches or emergency attitude information," Schloss said.

„But aside from that, they are great informational and situational awareness tools. iPad apps from Garmin Pilot, Avidyne and ForeFlight offer you a lot of tremendous capabilities when it comes to having information on your iPad. You can preload your flight plans and then wirelessly send them to your (compatible) avionics, which is great.

The thing you must remember is that the panel-mounted units need to be Wi-Fi and/or Bluetooth capable. If they're not, you'll need a secondary GPS source like the Garmin GDL 50-series ADS-B/GPS receiver or the Stratus 2.

For under $200, you can access GPS position on your iPad, and starting at around $800, you can have access to free weather and traffic displayed on your yoke-mounted iPad. It's a small price for a great amount of awareness."

Avionics modernization on a plane Zlin 242L

AFTER MODERNIZATION

This article contains pictures of selected projects completed by our company in the scope of avionics upgrades on aircraft. We can see how the cockpit changed after the upgrade.

GARMIN

G5 with G500 TXi & TXi V2.20 Now EASA Approved

Garmin is pleased to announce EASA have approved the FAA STC for the G5 for certificated aircraft for use as a standby instrument when paired with the G500 TXi flight displays. Garmin is also pleased to announce that EASA has also approved the latest Software Version 2.20 for the TXi Family. The availability of these STC's further represents Garmin commitment to reduce the certification fees and paperwork to our Customers and Dealers.

The ever-popular G5 electronic flight instrument is now FAA & EASA approved as a standby flight instrument when paired with the G500 TXi. G5 as a standby flight instrument is available for Class 1 & 2 aircraft provided they are listed on both the G5 AML STC and the G500 TXi AML STC. Garmin is also working on updating the legacy G500 STC to also include the G5 as a backup instrument.
Please note, some aircraft listed on the TXi AML require a Pilot type rating and Operational Suitability Data, to meet the latest EASA Flight safety standards. Prior to commencing the installation of G500/G600 TXi, verify that no additional type rating training or requirements exist. Information regarding EASA Aircraft Type Rating requirements can be found form the link below.
https://www.easa.europa.eu/sites/default/files/dfu/20180212%20EASA%20T_R_List_Acft.pdf

New TXi Display Orientations, Configurations and Capabilities

With EASA approved software version 2.20, the TXi family adds even more options, which now includes:

- The 10" TXi flight display can be configured to a 40% PFD and 60% MFD split-screen layout.
- On a 7" portrait or landscape G500 TXi/G600 TXi display, the displays can be configured to view MFD features2 and single-engine EIS information simultaneously.
- The 7" landscape TXi display can be used as a PFD, adding installation flexibility in aircraft panels that are space-limited.
- Multiple video inputs can be displayed on the MFD with purchase of a new video input feature enablement.
- Within the EIS-capable TXi displays, pilots can select and view individual cylinder head temperature (CHT) values.
- Flight Stream 510 may now be installed directly in a TXi display, allowing aircraft equipped with a GNS navigator instead of a GTN navigator to take advantage of flight data (including EIS data) transfer to the Garmin Pilot™ app and database transfer to TXi. Note that flight plan transfer is not supported if Flight Stream 510 is installed directly in a TXi display.

Garmin's GTN™ Software V6.50 Now EASA Approved
Garmin GTN™ Navigators latest software receives EASA Approval

Garmin is pleased to announce the availability of the EASA approved software upgrade for the GTN 650/750 Series touchscreen navigators. The availability of this validation further represents the commitment Garmin is working to reduce the certification fees and paperwork to our Customers and Dealers.

GTN Series – Descent VNAV

To assist in descent planning and energy management, pilots can take advantage of VNAV profiles throughout the en route and terminal phases of flight within the GTN 650/750 series touchscreen navigators.

Additional integration is available when paired with G500 TXi/G600 TXi, G500/G600 or G5. Within GTN, pilots can easily enter altitude constraints on the flight plan page to set up a vertical descent profile. Pilots also experience a near-seamless transition from VNAV to an arrival and instrument approach. Once an arrival or approach is loaded and activated, GTN automatically populates step-down altitudes or any applicable altitude restrictions.

If ATC issues an unpublished altitude restriction, pilots can enter those altitudes manually into the active flight plan under the VNAV field.

As part of the VNAV profile, top of descent (TOD) and bottom of descent (BOD) values are also calculated and displayed on the moving map. As the aircraft arrives at TOD, GTN displays a visual annunciation, prompting the pilot to begin the descent. When paired with a flight display such as G500 TXi/G600 TXi, G500/G600 or G5, a vertical deviation indication (VDI) also populates on the display to provide vertical guidance for the descent. Additionally, when the GTN 650/750 series is paired with the GFC 600 or GFC 500 autopilot, pilots can select the VNAV button on the mode controller to fly a fully coupled VNAV profile.

GTN Series Enhancements

The GTN series touchscreen navigators also receives many new features with software version 6.50, including the following:

- The addition of Forward Looking Terrain Avoidance (FLTA) audible and visual terrain proximity alerts, including, "terrain ahead, pull up," "obstacle ahead, pull up" and "wire ahead." An aural "five-hundred" annunciation is also available when the aircraft is on approach to land. These new alerts are available as a free feature.
- Pilots can now set a user-defined waypoint as an airport, so terrain alerts are minimized while landing at an airport that is not in the navigation database.
- The addition of a QWERTY keyboard within the GTN 650/750 series and G500 TXi/G600 TXi gives pilots a more familiar way to input information.
- Pilots can configure COMM sidetone settings within GTN.
- Irish, Swiss and English coordinate systems are now supported, so it's easier for pilots to enter GPS coordinates in various formats, including latitude/longitude, degrees/minutes/seconds and decimal degrees.
- The new GWX™ 75 weather radar is now supported by the GTN touchscreen navigators and G500 TXi/G600 TXi flight displays, which offers 4 times more color contouring than typically found on other weather radars on the market.
- Downloadable Feature Enablements will soon be available for GTN touchscreen navigators. A separate marketing memo will be published with additional details.

UA eNews

UNIVERSAL AVIONICS – ostatnie newsy

Universal Avionics Offers New Touchscreen Control Device for InSight™

Universal Avionics (UA) is offering a new touchscreen model for the InSight Display System's EFIS Control Display Unit (ECDU). The company's latest offering further improves the InSight Display System, offering a choice for advanced operation in addition to the traditional InSight ECDU.

The Touch ECDU combines multiple InSight System controls, including the flight displays, FMS, radios, weather, traffic, and terrain into a centralized control device.

The ECDU eliminates the need for external panels that take up valuable cockpit space by integrating with the PFD/MFD and standalone radios. The Touch ECDU combines the functionality of the traditional ECDU with an even more intuitive interface for an enhanced, easy user experience. Operators can now use the Touch ECDU, Cursor Control Panel (CCP), or both for unique and intuitive 'Point and Click' system control.Pending FAA certification, UA expects the Touch ECDU and corresponding InSight software update to be available by the end of 2018.

Dan Reida,
UA Vice President of Sales, Marketing

"The Touch ECDU provides a well sought-after man-machine interface.Designed for efficiency, the Touch ECDU provides fast, easy access to programming InSight, improving upon the already easy-to-use system," he added. "It's a smarter way to utilize touchscreen technology and reflects UA's continuous investment to making sure our user interface is state-of-the-art."

UA Takes Next Step Toward Integrated Cockpit with New UniLink™ CMU Software

Universal Avionics (UA) introduces UniLink software version SCN 31.3 for the UL-80X Communications Management Unit (CMU). Through continuous investments in the UniLink CMU product, UA is improving the user experience and offering new, versatile functionality. It's the next step toward the company's vision for a fully integrated cockpit experience.

Combined with Flight Management System (FMS) software version SCN 1002.1, UniLink SCN 31.3's „push to load" capability allows for automatic loading of information received from Air Traffic Control via Controller-Pilot Data Link Communications (CPDLC) into the FMS flight plan.

Additionally, automatic transition between SATCOM and VHF further streamlines operations so pilots don't have to manually manage this transition.

Robert Clare, UA Director of Sales

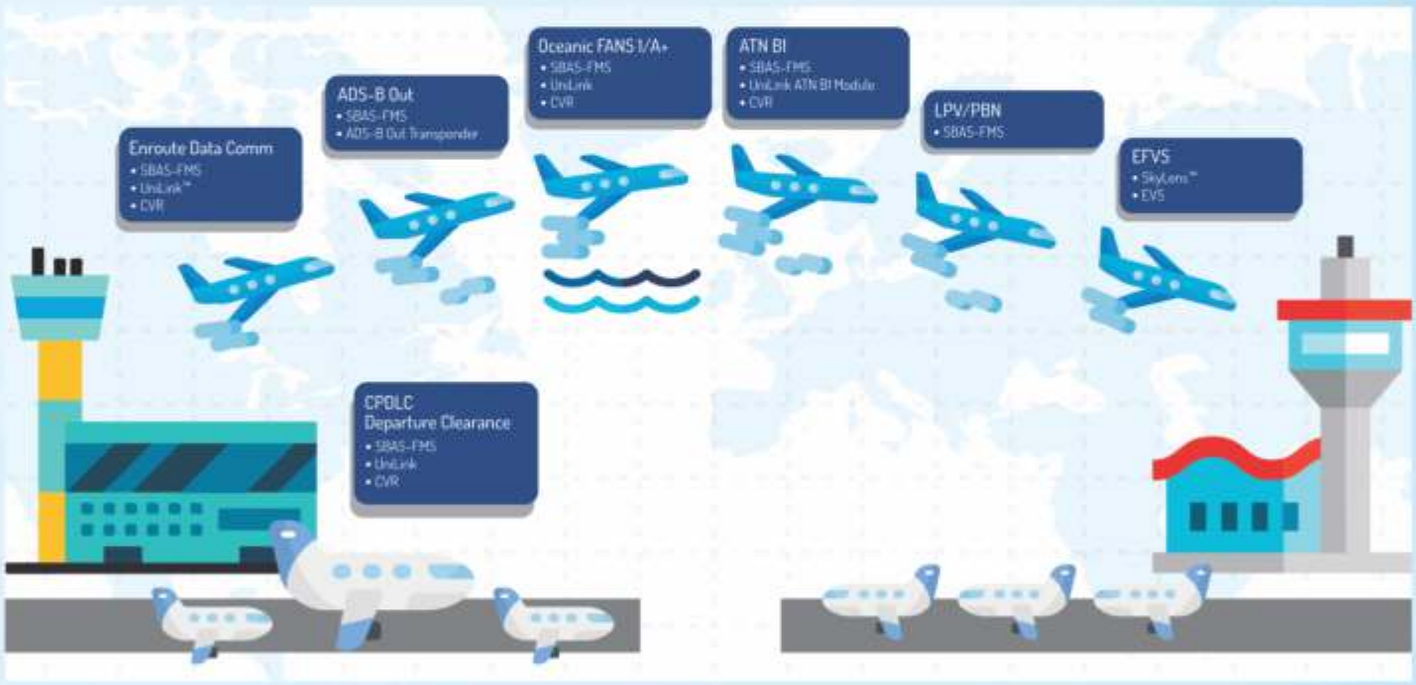
"We are continually improving our products to support our customers' daily operations.

SCN 31.3 will increase operational efficiency for operators not only domestically, but for remote oceanic operations as well," he added. "We are taking the level of operating the FMS and UniLink CMU one step ahead to make it easier and more user-friendly for the pilot to use."

In addition, UniLink SCN 31.3 includes:

- Latency monitoring required for use of FANS 1/A+ / PBCS (Oceanic/Remote operations) and U.S. Domestic (DCL, CPDLC, and enroute)
- VDL Mode 2 multi-frequency
- Ability to interface to a MCDU and support FANS CPDLC without an FMS

The newest NEXTGEN technologies



We believe every operator should have the benefit of advanced technologies in their aircraft, for the freedom to fly in airspace around the world efficiently and safely.

Equipping your aircraft for NextGen means more than the ADS-B Mandate; it means equipping for the flight operations you have today and might have in the future. Universal Avionics provides a suite of cockpit avionics to which operators can build their ideal flight deck. From takeoff to landing and rollout, use the building block approach to configure your ideal flight deck today.

The perfect pilot cockpit – elements:

- ➤ CPDLC Departure Clearance.
- ➤ Enroute Data Comm.
- ➤ Automatic Dependent Surveillance-Broadcast (ADS-B) Out.
- ➤ Oceanic Future Air Navigation System (FANS) 1/A+.
- ➤ ATN B1.
- ➤ Localizer Performance with Vertical Guidance (LPV).
- ➤ Performance-Based Navigation (PBN).
- ➤ Enhanced Flight Vision System (EFVS).

ATG ARTICULATIONS OVERVIEWS AND SERVICING

ATG AUTOTECHNIK GMBH

Like all devices, also ATG articulation systems require periodic inspection and service while operating.

The manufacturer's assumption (ATG) when designing the articulations was to simplify the system to a minimum, so that service access could be easy and that inspection could be made within a short time.

The ATG articulation systems are made of cast steel, so that the possibility of mechanical damage of the system is minimal. The system controlling articulation and the spring strength of the articulation during a turn is hydraulic, and the electronic components are limited to a minimum. The only electronic elements of the system are limiters and a controller that is usually installed on the vehicle's duct, so that it will not be subjected to mechanical damage.

The inspection and service procedure is also simplified in this respect. Access to the main mechanism of the articulation turntable is possible from the inside of the vehicle after opening two flaps, which are located on the floor cover of the articulation.

Access to a turntable area of the articulated system from the level of the internal service flaps.

After opening the flaps, we have access to the lubrication points of the articulation that need to be refilled once a year. The loss of lubricant is minimal, so it does not require a more frequent refilling. This is also the answer to the question why ATG does not use a central lubrication system.

First of all we have to check the limit switches – if they have been mechanically damaged. Then, with a simple set of manometers, we measure the pressure in the hydraulic control system of the articulation system.

The correct operating pressure in this system is 20.7 bar. If the manometers show lower or higher pressure, the value must be adequately leveled. When the pressure is too high, reduce the volume of oil through the drain valve located in the hydraulic control block. If the pressure is too low, the oil level must be completed. This is done with the use of the ATG manual pump.

After checking pressure and levelling the oil level, we carry out a visual inspection of the folding bellow mechanism, i.e. the cable guides of the

Pressure measurements using a manometer in the hydraulic control block.

springs supporting this guides. These elements wear out and are subjected to periodic inspection. The frequency of inspections is described in detail in the vehicle's service book. In order to be able to make the inspection, we have to unclasp a part of the folding bellow that has special clamps at the designated points. After verification of these components, information on the controller is checked - we check if all indications are correct.

The controller itself is simple in use and its readings are also easy to read. Two rows of LEDs indicate the correct operation of individual elements when they are red. Incorrect indications are signalled with green light.

Electronic controller for ATG articulation system.

ATG's hydraulic pump for maintaining the right oil level in the articulation hydraulic system.

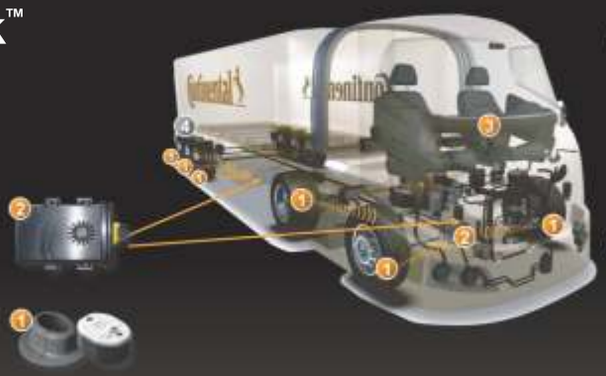
After verifying the indications on the controller, the final check of the system functioning takes place. For this purpose, it is necessary to perform a number of operations on bus. It is necessary to check the articulation lock at the maximum turn and the automatic braking function during reversing and simultaneous turning. The function of the articulation lock in the upright position and the indication of the alarm states for the driver are also checked - if there is a proper communication between the articulation controller and the on-board vehicle management system and the driver's workplace.

They wrote about us:

1. www.truck-van.pl, ,,Awarded powertrain system", 2018-10-29
2. ,,Na osi" programme, ,,Drabpol – Transexpo trade fairs", episode 800
3. www.infobus.pl, ,,Drabpol celebrates 35th anniversary – electrically", 2018-10-18
4. www.truckfocus.pl, ,,DRABPOL awarded for TM4 powertrain system", 2018-10-29
5. www.warsztat.pl, ,,TM4 powertrain system for electric city buses ", 2018-10-29
6. www.Infobus.pl, Drabpol awarded for TM4 electric motor", 2018-11-02
7. www.dlapilota.pl, ,,Nomination for the President of Drabpol for the AEA Member of the Year 2018 award, 2018-11-08
8. www.prtl.pl, ,,Nomination for Drabpol for the AEA Award of the Year", 2018-11-13
9. TRUCK.PL, "The truck like a frotress - active tracking of semitrailers ", no. 1240 (2018-11-02)

Protect your tires, save your time and money

ContiPressureCheck™ STANDARD option:



A display visualizing tire pressure and temperature

Central control unit (CCU) – receives signal from the sensors in tires and transmits it to the display

Microprocessor measuring the tire pressure and temperature and wirelessly sending data to the central control unit (CCU)

RX – additional receiver/ sensor signal amplifier, used when the distance from the tire to the central control unit is bigger than 10m

Our solutions

Name	Functions and capabilities	System components	For whom?
CPC – 200T	1. **Complete supervision over pressure and temperature** in tires of vehicles designed for oversized cargo, including multi-axled trailers with 8 parallel wheels. 2. **Reduction in operating costs** for this type of vehicles. 3. **Increasing the transport safety** of oversized cargo.	• MultiCPC drivers and boxes • Multifunctional MVF 7 TK display - in a tractor unit • Electric wiring 	 **For vehicles for the transport of oversize cargos, such as multi-combination trailers, semitrailers as well as tractor units. A unique feature of this system is that it can be applied for multi-combination and multi-axle trailers with eight wheels on the axle.**
TPMS_Telematics	1. **TPMS Telematics module** converts alarm signals in CAN format (J1939), coming from the ContiPressure-Check control unit, into voltage signals and transfers them to analogue/digital inputs of telematics system. 2. **It enables:** • remote control for the transport managers in case of low pressure or too high temperature in a tire • Recording events when the alarms have occurred through the telematics system.	• TPMS_TELEMATICS Module • Wiring harness for the TPMS_TELE-MATICS module 	 **For all vehicles and machines/work vehicles** 
TPMS_WIFI NACZEPA (TPMS_WIFI SEMITRAILER)	1. **Complete control over tires pressure and temperature** in trailers equipped with wireless data communication and display in driver's cab. 2. **It allows to monitor** the pressure and temperature in tires of frequently changed trailers without necessity to configure the tires' sensors.	• TPMS_WIFI MASTER transmitter • TPMS_WIFI SLAVE receiver • TPMS_WIFI wiring harness 	 **For semitrailers that are often exchanged in different places and at different times, 7/24. This solution is particularly recommended for companies renting semitrailers.**

Laboratorium Analiz Zapisów z Tachografów DRABPOL AUTOMOTIVE

DRABPOL® AUTOMOTIVE

DRABPOL® AWIONIKA

PART 21 DRABPOL

TELEMATICS