

CiViTAS
Cleaner and better transport in cities

AALBORG

Aalborg

T. 1.4 Clean Fuelled Tourism Shuttle Bus

Aalborg Kommune
September 2010.



THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION

Project no.	TREN/FP7TR/218940 ARCHIMEDES
Project Name	ARCHIMEDES (Achieving Real Change with Innovative Transport Measure Demonstrating Energy Savings)
Start date of the Project	15/09/2008
Duration:	48 months
Measure:	No. 1: Biofuels in Aalborg
Task:	2.1: Clean Fuelled Tourism Shuttle Bus
Deliverable:	T1.4: Promotional material for clean fuelled tourism shuttle bus in Aalborg
Due date of Deliverable:	15 th September 2010
Actual submission date:	17 th September 2010
Dissemination Level	Public
Organisation Responsible	Aalborg Kommune
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Version	1.0
Date last updated	17 th September 2010

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1. Introduction

1.1 Background CIVITAS

CIVITAS - cleaner and better transport in cities - stands for City-VITALity-Sustainability. With the CIVITAS Initiative, the EC aims to generate a decisive breakthrough by supporting and evaluating the implementation of ambitious integrated sustainable urban transport strategies that should make a real difference for the welfare of the European citizen.

CIVITAS I started in early 2002 (within the 5th Framework Research Programme); CIVITAS II started in early 2005 (within the 6th Framework Research Programme) and CIVITAS PLUS started in late 2008 (within the 7th Framework Research Programme).

The objective of CIVITAS-Plus is to test and increase the understanding of the frameworks, processes and packaging required to successfully introduce bold, integrated and innovative strategies for clean and sustainable urban transport that address concerns related to energy-efficiency, transport policy and road safety, alternative fuels and the environment.

Within CIVITAS I (2002-2006) there were 19 cities clustered in 4 demonstration projects, within CIVITAS II (2005-2009) 17 cities in 4 demonstration projects, whilst within CIVITAS PLUS (2008-2012) 25 cities in 5 demonstration projects are taking part. These demonstration cities all over Europe are funded by the European Commission.

Objectives:

- to promote and implement sustainable, clean and (energy) efficient urban transport measures
- to implement integrated packages of technology and policy measures in the field of energy and transport in 8 categories of measures
- to build up critical mass and markets for innovation

Horizontal projects support the CIVITAS demonstration projects & cities by:

- Cross-site evaluation and Europe wide dissemination in co-operation with the demonstration projects
- The organisation of the annual meeting of CIVITAS Forum members
- Providing the Secretariat for the Political Advisory Committee (PAC)
- Development of policy recommendations for a long-term multiplier effect of CIVITAS

Key elements of CIVITAS

- CIVITAS is co-ordinated by cities: it is a programme “of cities for cities”
- Cities are in the heart of local public private partnerships
- Political commitment is a basic requirement
- Cities are living ‘Laboratories’ for learning and evaluating

1.2 Background ARCHIMEDES

ARCHIMEDES is an integrating project, bringing together 6 European cities to address problems and opportunities for creating environmentally sustainable, safe and energy efficient transport systems in medium sized urban areas.

The objective of ARCHIMEDES is to introduce innovative, integrated and ambitious strategies for clean, energy-efficient, sustainable urban transport to achieve significant impacts in the policy fields of energy, transport, and environmental sustainability. An ambitious blend of policy tools and measures will increase energy-efficiency in transport, provide safer and more convenient travel for all, using a higher share of clean engine technology and fuels, resulting in an enhanced urban environment (including reduced noise and air pollution). Visible and measurable impacts will result from significantly sized measures in specific innovation areas. Demonstrations of innovative transport technologies, policy measures and partnership working, combined with targeted research, will verify the best frameworks, processes and packaging required to successfully transfer the strategies to other cities.

1.3 Participant Cities

The ARCHIMEDES project focuses on activities in specific innovation areas of each city, known as the ARCHIMEDES corridor or zone (depending on shape and geography). These innovation areas extend to the peri-urban fringe and the administrative boundaries of regional authorities and neighbouring administrations.

The two Learning cities, to which experience and best-practice will be transferred, are Monza (Italy) and Ústí nad Labem (Czech Republic). The strategy for the project is to ensure that the tools and measures developed have the widest application throughout Europe, tested via the Learning Cities' activities and interaction with the Lead City partners.

1.3.1 Leading City Innovation Areas

- The four Leading cities in the ARCHIMEDES project are:
- Aalborg (Denmark);
- Brighton & Hove (UK);
- Donostia-San Sebastián (Spain); and
- Iasi (Romania).

Together the Lead Cities in ARCHIMEDES cover different geographic parts of Europe. They have the full support of the relevant political representatives for the project, and are well able to implement the innovative range of demonstration activities.

The Lead Cities are joined in their local projects by a small number of key partners that show a high level of commitment to the project objectives of energy-efficient urban transportation. In all cases the public transport company features as a partner in the proposed project.

2. Aalborg

The City of Aalborg, with extensive experience of European cooperation and having previously participated in CIVITAS I (VIVALDI) as a 'follower' city, is coordinating the

consortium and ensures high quality management of the project. The City has the regional public transport authority (NT) as a local partner, and framework agreements with various stakeholder organisations.

Aalborg operates in a corridor implementing eight different categories of measures ranging from changing fuels in vehicles to promoting and marketing the use of soft measures. The city of Aalborg has successfully developed similar tools and measures through various initiatives, like the CIVITAS-VIVALDI and MIDAS projects. In ARCHIMEDES, Aalborg aims to build on this work, tackling innovative subjects and combining with what has been learned from other cities in Europe. The result is an increased understanding and experience, in order to then share with other Leading cities and Learning cities.

Aalborg has recently expanded its size by the inclusion of neighbouring municipalities outside the peri-urban fringe. The Municipality of Aalborg has a population of some 194,149, and the urban area a population of some 121,540. The ARCHIMEDES corridor runs from the city centre to the eastern urban areas of the municipality and forms an ideal trial area for demonstrating how to deal with traffic and mobility issues in inner urban areas and outskirts of the municipality. University faculties are situated at 3 sites in the corridor (including the main university site). The area covers about 53 square kilometres, which is approximately 5 % of the total area of the municipality of Aalborg. The innovation corridor includes different aspects of transport in the urban environment, including schools, public transport, commuting, goods distribution and traffic safety. The implementation of measures and tools fit into the framework of the urban transport Plan adopted by the Municipality.



Figure 1: The Archimedes Corridor in Aalborg

3. Background to the Deliverable

The objectives of task 2.1 were to use a shuttle bus line as a means to provide clear urban transport for tourists and citizens in the city centre part of the ARCHIMEDES innovation area, and in combination with other ARCHIMEDES measures like the City Bikes and the Parking Information System, give a unique coverage of the city centre with eco-friendly transport.

A new tourist shuttle bus line had to be implemented to connect attractions on the renewed waterfront and other major tourist attractions, city hotels, parking lots and public transport terminals.

Removing the barriers that can be formed by language, knowledge of the bus network etc., and linking the shuttle bus system to the major parking lots will encourage tourists and visitors to park and use the sustainable transport system in the city instead of using their private car from attraction to attraction – or to circle around in the city centre in search for an unoccupied parking slot.

The bus had to operate on alternative fuel to save energy and reduce pollution.

In this context the tourist shuttle bus line serves two purposes - to solve existing local transport needs in a sensible way and to be an eye opener for a user group likely to be particularly open to new impulses.

This deliverable provides information about the implementation of task 2.1.

3.1 Summary Description of Task

Aalborg has launched a shuttle bus line, the City Circle, free of charge which runs between parking areas and key places in the city as the tourist attractions and the new waterfront. The City Circle is operated by a hybrid bus with 30% lower fuel consumption and hence lower CO₂ emissions than regular buses.

A guide is on board the buses every day between 10.00 and 13.00, giving information about Aalborg, sustainable initiatives in the city and facts about the bus to the passengers.

4. Clean Fuelled Tourism Shuttle Bus in Aalborg

4.1 Organization of Work Done

The City Circle line was planned by a working group with participants from “Nordjyllands Trafikselskab” (Regional Public Transport Authority), the department “Sundhed og Bæredygtig Udvikling” (SBU - Health and Sustainable Development) and the ARCHIMEDES team from Traffic and Roads in the City of Aalborg. Being responsible for planning of local Public Transport in the Aalborg municipality, most of the planning was done by SBU.

To secure local roots for the bus line and to benefit from local knowledge in the field, the local tourist organization, Visit Aalborg, was taken into the working group where they contributed valuable knowledge.

All major decisions were taken by the local ARCHIMEDES Partner Steering Committee.

4.2 Route, Timetable and Fares.

In deciding the route several important elements were taken into consideration, the most important being the attractions to pass, the possible frequency of the bus line, and closeness to parking areas.

Visit Aalborg participated in the process with input on which attractions to serve. In the end the working group decided on two proposals, a long and a short route, and presented those to the steering group.

The Steering Committee had to choose between the long route serving the Camping area and the Marina besides the other attractions, taking 30 minutes, and a shorter route taking only 20 minutes. The short route was preferred because a frequency of 3 departures an hour was considered important for the route to fulfill the function of a shuttle bus.



Figure 2: The two suggestions to the route. On the left, the short route with three departures an hour. On the right, the long route with two departures and hour.

As a consequence of the detailed planning a few modifications to the route were added. The route covers the city centre of Aalborg with bus stops placed at key spots in the city, at tourist attractions and transport nodes (City Bikes, bicycles, Public Transport and parking areas).

All stops on the final route (shown in figure 3) were provided with timetables in the shuttle bus design.

The bus operated in a period of 8 week during the summer from June 28 to August 21.

The bus was planned to run three times an hour from 9.00 to 19.30 from Monday to Friday and in the weekends three times an hour from 10.00 to 15.00.

But during the summer period it turned out to be impossible for the bus to make three trips an hour due to the traffic situation, and the timetable had to be changed to only two trips an hour to secure regularity.

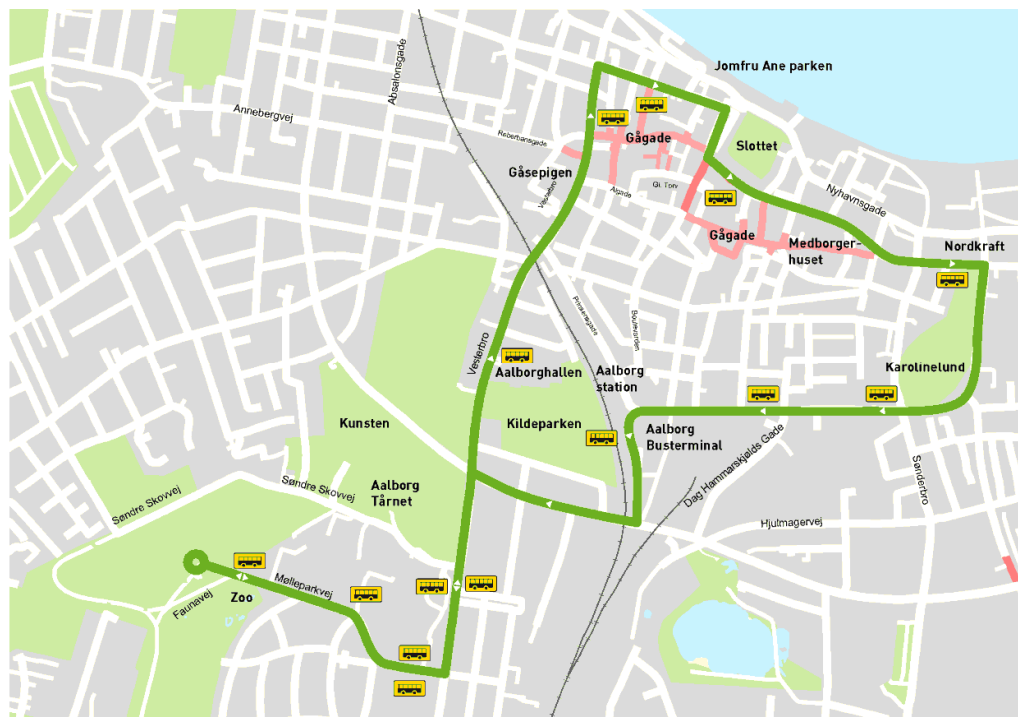


Figure 3: The final route for the Clean Fuelled Tourism Shuttle Bus

Early in the process the idea of a guide or host came up in the working group because it was perceived that a Guide / Host would give the bus more value. The expenses for a guide for three hours every day was found locally outside the ARCHIMEDES budget, so each day a guide was on board from 10.00 to 13.00. The guide served as a host and gave the passengers information about Aalborg, sustainable initiatives in the city and facts about the bus.

To secure the highest impact of the shuttle bus line, the City of Aalborg decided to make it free. As the fare level for using the city buses in Aalborg for tourists is relatively high, this should help to motivate car drivers to park the car and use the shuttle bus instead. This point was especially important as the introduction of a large new private parking house in the city centre initiated a 'pricing war' between the private parking lots in the centre, with the result that parking was made free for the first three hours!

4.3 Specification of the Clean Fuelled Bus

As a part of the demonstration task, a bus on alternative fuel should be tested. A Parallel Hybrid bus, the Volvo 7700 Hybrid bus was chosen. The Volvo bus was borrowed direct from the bus manufacturer.

The hybrid bus collects energy when the bus is breaking and uses this energy when the bus is starting from bus stops or at intersections. Otherwise this energy would have been wasted.

As a result the bus has more than 30% lower fuel consumption and thus lower CO₂ emissions than regular buses. At the same time NO_x and particulate emissions are lowered by as much as 40–50%. For a more detailed description of the bus see figure 4.

When stopping at a bus stop or an intersection the diesel engine automatically turns off. When starting the bus uses the electrical engine until the diesel engine automatically starts at 20-30 km/h. As a result there is no noise or pollution in the local environment for the waiting passengers at the bus stop.

The Volvo 7700 Hybrid is a so called parallel hybrid, featuring diesel and electric power that can operate independently of each other. The electric motor is used to start the bus and to accelerate it up to about 20 km/h, giving you considerable fuel savings and near-silent take-offs. With full torque from the start the acceleration is excellent, offering quick starts from standstills. At higher speeds, the diesel engine takes over, while also recharging the batteries. Since the electric motor serves both as a motor and a generator you actually recharge when driving and braking. During idling at a red light or bus stop the diesel engine is shut off, resulting in zero emissions.

<http://www.volvobuses.com/bus/global/en-gb/volvogroup/environment/going%20greener/hybrid/pages/hybrid.aspx>

Figure 4: Detailed description of the bus

The bus is 12 metres in length as are most standard city buses in Aalborg and has room for 36 seated and 32 standing passengers

4.4 Marketing and Communication

In the working group a marketing plan was decided in corporation with Visit Aalborg. The marketing strategy and design line was chosen as a common design line for more ARCHIMEDES Public Transport measures.

The bus is decorated both on the outside and the inside. The outside decoration is part of the marketing strategy with stickers saying “30% CO₂ reduction”, “Free bus. Guide on board every day from 10-13” and “30% less fuel”. It also has a decoration of the route on the side.



Figure 5: Outside decorations on the bus

As the bus line has a bus stop at the Zoo, they were asked if they would decorate the bus inside as advertising. They put up cuddly toys of the animals in the zoo, and the cuddly toys worked very well as eye catchers for potential passengers. The pictures below show some of the cuddly toys:



Figure 6: Cuddly toys from the zoo decorate the bus inside

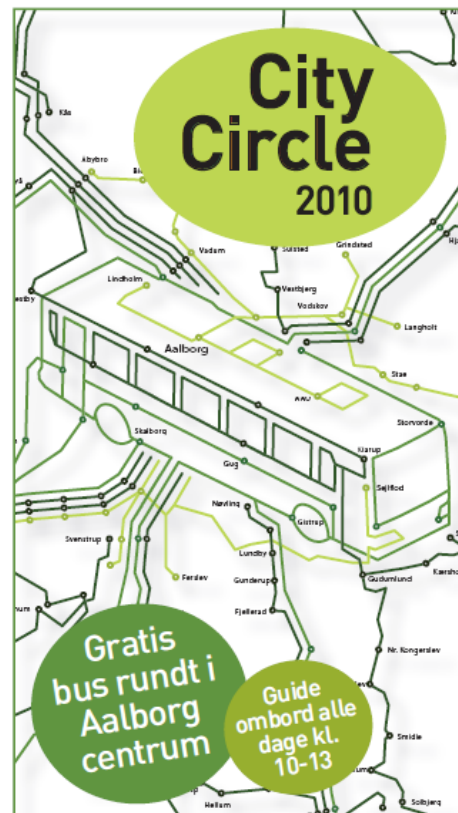
To promote the bus all the hotels in the city and several shops, cafés and other public places handed out brochures about the bus line, including the timetable, to guests and customers.

i Værd at vide...

- City Circle kører til og fra Aalborgs største attraktioner og seværdigheder.
- City Circle er gratis, og der er guide med i bus-sen hver dag klokken 10.00 - 13.00.
- City Circle betjenes af en hybridbus, der bruger mindre brændstof og udleder 30% mindre CO₂ end almindelige busser.
- City Circle finansieres af EU projektet ARCHIMEDES, der har til formål at forbedre bymiljøet gennem renere og bedre transport.
- Få mere at vide på www.civitas.eu/archimedes.

i Worth knowing...

- City Circle takes you to the biggest sights and attractions in Aalborg.
- Trips on City Circle are free of charge, and there is a tour guide onboard every day between 10.00 - 13.00.
- City Circle is operated by a hybrid bus, that has lower fuel consumption and 30% lower CO₂ emissions than regular busses.
- City Circle is financed by EU project ARCHIMEDES. The purpose of the project is to improve means of sustainable transportation in order to get a cleaner environment in the city.
- Find out more on www.civitas.eu/archimedes.



Nordjyllands Trafikselskab
J. F. Kennedys Plads 1 R
Postboks 1359
9100 Aalborg

City Circle - Aalborg rundt

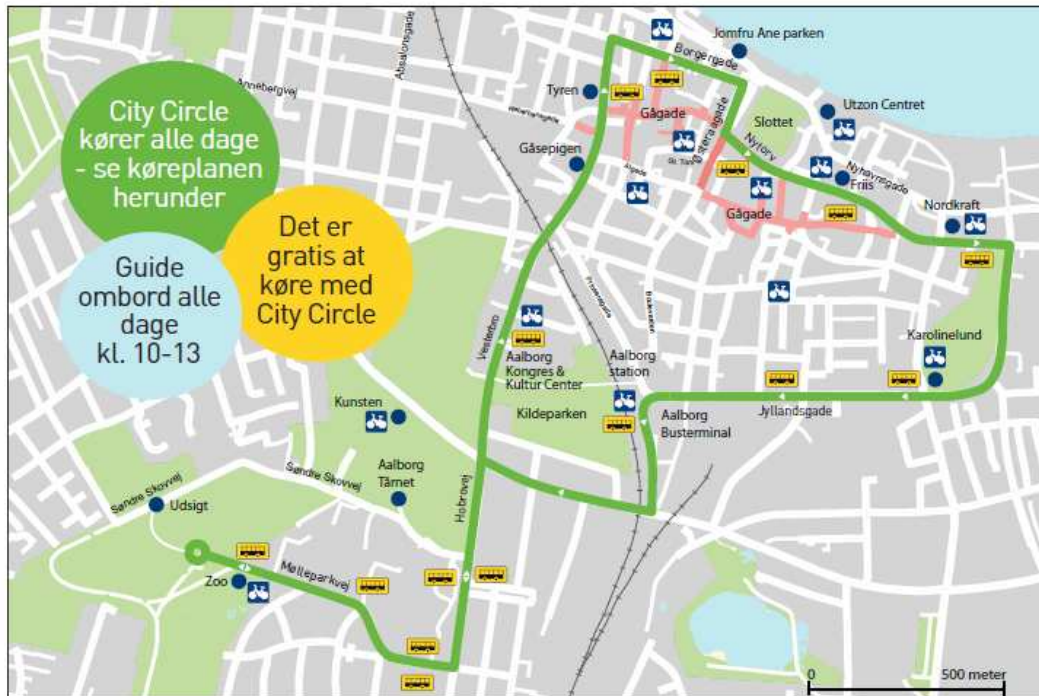
Aalborg Zoo, Aalborgtårnet, Utzon
Centret, Nordkraft, Karolinelund



Gyldig fra 28. juni - 21. august 2010



Aalborg Busterminal - Østre Alle - Hobrovej - Mølleparkvej - Zoo - Hobrovej - Vesterbro - Borgergade - Østeraagade - Nytorv - Østerbro - Karolinelundvej - Jyllandsgade - Aalborg Busterminal



CC Mandag-fredag

Aalborg Busterm.	Sygehus syd	Zoo	AKKC (Kongrescenter)	Jomfru Ane G. agle	Nytorv	Mødborgerhuset	Nordkraft	Aalborg Busterm.
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9.00	9.01	9.03	9.05	9.08	9.10	9.11	9.12	9.16
20	21	23	26	28	30	31	32	36
40	41	43	46	48	50	51	52	56
00	01	03	06	08	10	11	12	16
19.00	19.01	19.03	19.05	19.08	19.10	19.11	19.12	19.16

CC Lørdage og søndage

10.00	10.01	10.03	10.05	10.08	10.10	10.11	10.12	10.16
20	21	23	26	28	30	31	32	36
40	41	43	46	48	50	51	52	56
00	01	03	06	08	10	11	12	16
14.40	14.41	14.43	14.46	14.48	14.50	14.51	14.52	14.56

Signaturforklaring:

- Attraktion
- Rute med ensretning
- Stoppested
- Gågade
- Bicykel

Kom rundt udenfor ruten
Tag en bicykel til 20 kr

Besøg Visit Aalborg for mere information om attraktioner i Aalborg

Tjek NTmobil.dk for info om andre busruter i Aalborg

NB: 28. juni kører bussen fra klokken 13.00

Figure 7: The brochure and time table of the bus (front and back)

A banner ad was placed on the front page of the web pages of the city of Aalborg and of NT. The same banner was shown repeatedly on the National Danish Travel Planner webpage, www.rejseplanen.dk, on 8,766 requests coming from North Denmark.



Figure 8: Screen-shot of the banner ad at the webpage of the City of Aalborg

In measure 8.2 “On-Trip Bus Traveler Information” electronic screens are placed in the buses to help passengers navigate in the city. A pilot project of the screens is running and the screens were used to advertise for the Shuttle bus. In all other city buses posters were placed to advertise for the shuttle bus.

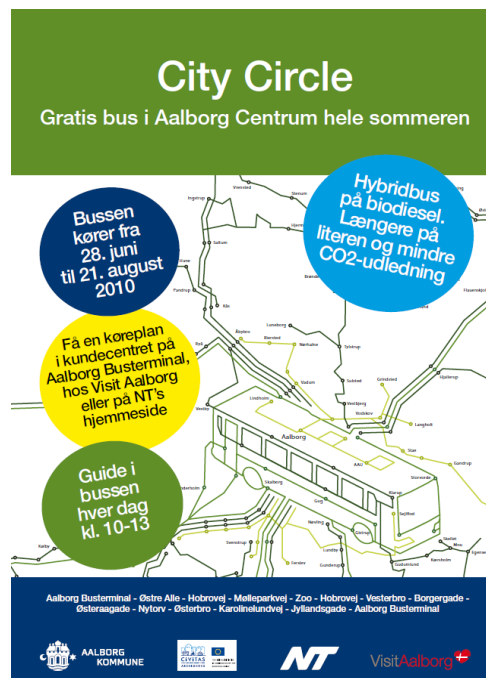


Figure 9: The poster placed in the city buses

Prior to the opening event of the shuttle bus a press release was sent to the Danish press telling about the opening, the route and about the details for the bus. The press release resulted in an article a week before the opening where people were urged to participate in the opening:

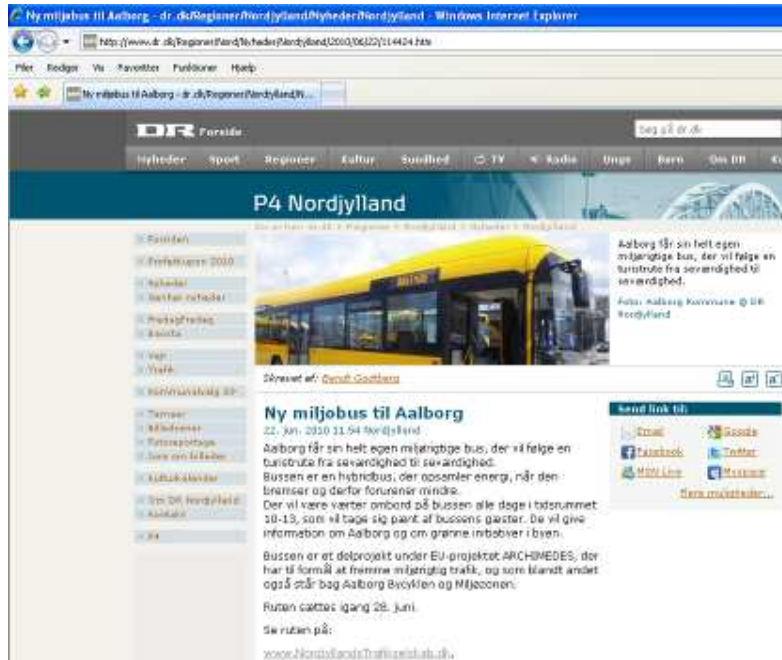


Figure 10: Article in the press prior to the opening of the route. Website of the Danish Radio

Invitations to the opening were sent to interested parties, especially people from the tourism sector in Aalborg.

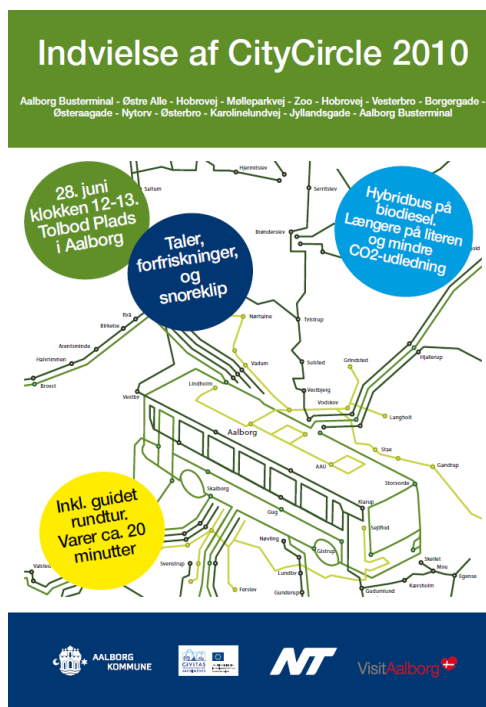


Figure 11: Invitation to the opening of the shuttle bus, City Circle

The opening arrangement was the 28th of June 2010. The president of NT, Alderman in the City of Aalborg, Thomas Kastrup Larsen gave a speech and opened the bus route by cutting the red – and green – ribbon. Refreshments were handed out and the VIPs took the first ride on the bus.



Figure 12: The president of NT, Thomas Kastrup Larsen opens the shuttle bus line by cutting the red and green ribbon.

After the first round with VIPs the bus took up normal traffic. In the afternoon the Danish Minister of Transport, Hans Christian Schmidt, had a ride on the bus together with the president of NT, Thomas Kastrup Larsen, and the Vice President of NT, member of the Danish Parliament, Birgitte Josefsen.



Figure 13: The opening day.

On the left, the president of NT, Thomas Kastrup Larsen is giving a speech. On the right, the president of NT, Thomas Kastrup Larsen (seated with the back to), the Danish Minister of Transport, Hans Christian Schmidt, and member of the Danish Parliament, Vice President of NT, Birgitte Josefsen take a ride on the shuttle bus.

The opening arrangement was followed by another article in the press having the subtitle “With this bus line we will have a better city environment and can offer a better experience to tourists in Aalborg”:



NT-FORMAND THOMAS Kastrop-Larsen var en glad mand, da han mandag indviede Aalborgs mest miljørigtige busrute.

ENERGI: Bussen laver ny strøm, hver gang den bremser



DEN NYE City Circle-bus kan blandt andet kødes på, at der står "Gratis bus" over forruden. Desuden er ruten gennem Aalborg tegn af på bussens længde. Foto: Martin Damgård

Aalborg har fået gratis busrute

AF Hanne Kongsgaard
hank@kglb.dk

AALBORG: - Det virker helt underligt, at motoren stopper. Man tænker: "Åh, nej, nu er den gået i stå igen", lød en af kommentarerne mandag på den allerførste tur med Aalborgs nye, gratis busrute. Bussen - der har fået navnet City Circle - kører hvert 20. minut på en strækning, der bringer passagerne rundt til en række af Aalborgs attraktioner. Den bliver kørt med en Volvo-bus, som indeholder den nyeste teknologi til nedbrændelse af brændstofbruset, og derfor er det

helt efter planen, at motoren går i stå, når bussen holder stille ved et stoppested.

- Der er en helt klassisk reaktion, det med, at der må være noget galt. Men det er der altså ikke, konstaterede key account manager Timo Nellemose fra Volvos busdivision i Taastrup, da han sammen med folk fra Aalborg Kommune og Nordjyllands Trafikelskab, NT, var med på jomfruturen.

Bussen er en såkaldt hybridbus. Det vil sige, at den ud over en dieselmotor har en elmotor, som opsamler energi, hver gang bussen bremser. Energien bliver

» Med den her rute får vi et bedre bymiljø og kan give Aalborgs turister en bedre oplevelse.

THOMAS KASTROP-LARSEN (S), NT-formand og rådmand

brugt, når køretøjet sætter i gang igen, og bussen bruger derfor cirka 30 procent mindre energi og forurenar langt mindre end de traditionelle busser.

- Et bedre miljø

- Med den her rute får vi et bedre bymiljø og kan give Aalborgs turister en bedre oplevelse. Men ruten kan jo også bruges af folk, der ek-

sempehvis er i Zoologisk Have og gerne vil en tur til midtbyen. Så kan de have bilen holdende ved Zoologisk Have og tage bussen tilbage og hente den, når de er færdige, påpegede NT-formand og rådmand Thomas Kastrop-Larsen ved indvielsen.

City Circle-ruten kører alle dage frem til 21. august i tidsrummet 9-19. Rund-

strækningen på 20 minutter bringer passagerne til blandt andet Nyanrv, Nordkraft, Karolinelund, busstøttemøntalen, Aalborg Zoo og Aalborg Kongres & Kultur Center.

Hvert dag i tidsrummet 10-13 vil der være en vært fra Visit Aalborg med i bussen. Ikke for at foruølle højt i en mikrofon hele tiden, men mere for at tage sig godt af gæsterne og eksempelvis svare på spørgsmål fra turister.

Bussen er led i EU-projektet Archimedes, som har til formål at fremme miljørigtig trafik. Projektet varer i to år

endnu, og så må byen tage stilling til, om vi vil fortsætte, bemærkede han.

NT får inden længe leveret tre tilsvarende busser, som bliver sat ind i den normale drift. Dermed er Aalborg med helt fremme på den grønne bølge, idet der hidtil kun er bestilt seks busser af slagen i hele Danmark, fortalte Timo Nellemose fra Volvo.

Figure 14: Article about the bus and the opening of the bus

In the summer holiday the Danish media DR carried a story about the shuttle bus including passenger numbers and reactions from the passengers. "Popular bus to the attractions in Aalborg":

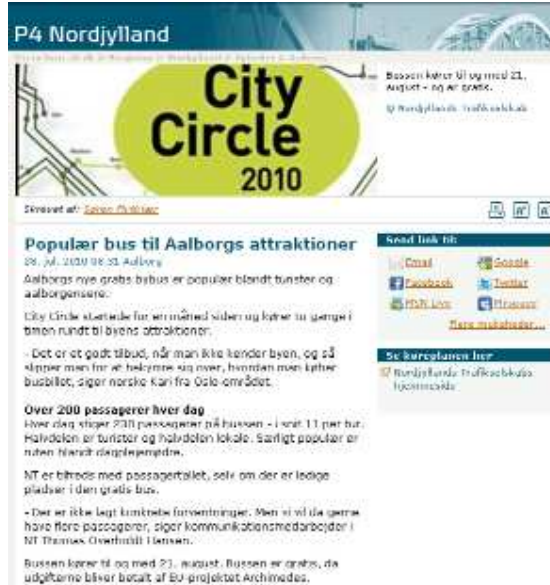


Figure 15: Article on the shuttle bus brought by the Danish media DR on July 28

In the beginning of August the ARCHIMEDES team sent out a press release which resulted in a journalist visiting the bus and in an article about the bus line. "Success for free bus line" subtitle: "Locals as well as tourists have used the new, easy city transport heavily"



Figure 16: Article about the shuttle bus brought by the Danish press August 14

Before the end of season the ARCHIMEDES team had a ride with the shuttle bus and made a video recording of the bus, the passengers, the driver and the guide, which will be made into a short promotion movie and placed on Youtube.

4.5 Problems Identified

It turned out to be impossible for the bus to make three trips an hour, and instead the timetable was changed to only two trips an hour to ensure that there was no waiting time for the passengers.

The bus was in operation from June 28 – August 21. In the last week of the period a questionnaire was handed out in the bus to get the passengers' impression of the bus and suggestions for possible improvements for the next year. 100 passengers answered the questionnaire. No major problems were identified, and the feed-back was in general very positive.

4.6 Future Plans

August 21 2010 was the last day for the shuttle bus to operate in 2010. It will be operation again in the summer 2011 and 2012. Since the shuttle bus is a demonstration project the team will reconsider the type of bus, the route, timetable, marketing etc. in the planning for next year's bus line. The results from the questionnaire will be analysed and used for this planning.