Aircraft Support Systems

CAVOTEC

FLAD001

Manufactured by Manfred Fladung GmbH

Aircraft Support Systems

The Cavotec Group

Cavotec is the name of a group of companies specialized in power supply technology for cranes and other industrial equipment. It is formed by 7 manufacturing "Centres of Excellence" located in Canada, France, Germany, Italy, Norway and Sweden and by 5 local manufacturing units located in Australia, China, Germany, Sweden and USA.

For distribution of their products and support to customers Cavotec has 22 sales companies which, together with a network of distributors, serve more than 30 countries on five continents. Each manufacturing company, no matter where it is located, aims at being a market leader in its field by providing innovative and reliable products to Group customers.

Although they manufacture different products in different countries, they are globally supported and coordinated by the Cavotec Group in their product development and marketing activities.

Each sales company, and each distributor, has a policy aiming at better serving its local market with the full support of the Cavotec Group.

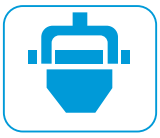
Our aim is to be located everywhere

Great emphasis is put in providing the highest quality not only in the selected products, but also in service and backing to their customers. Our philosophy in fact is to be local everywhere.

Our fields of activity are:

Ports & Maritime Industry

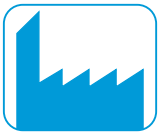
Mining & Tunnelling



Steel Mills & Aluminium plants

Airports

Energy & Offshore



General Industry & Automation

Manfred Fladung GmbH

The Fladung company was established in 1968 under the name of its founder Manfred Fladung. The important step in the growth of the company was the involvement in the 400Hz technology which orientated the company towards an ever growing demand in the airport industry for specialised equipment. This opened the way to the production of specialised cable rollers and connectors which are today at work in many airports around the world.

Since 1985 Fladung has, in addition to its aircraft support equipment, also started manufacturing physical security systems. These are now installed at access roads of many nuclear facilities, power stations, airports and other sensitive buildings.

The cooperation between Manfred Fladung and the Cavotec Group began with the entrance of Cavotec into the airport industry with the development of the Cavotec Caddy. In 2003 an agreement was reached to integrate the Fladung company into the Cavotec Group combining the specific experience of Fladung in the industry with the long established global network of the Cavotec Group.

Cavotec Group Organization

This page shows how the Cavotec Group is organised to support its customers around the world through its manufacturing units and sales companies. For our activities in the aircraft support industry we also closely work together with the selected representatives shown below on the right. Our combined technological competence and common approach to the market are the secret of the ability of the Cavotec Group and Manfred Fladung GmbH to provide specialised and direct assistance to its customers, no matter where they are located in the world.

MANUFACTURING NETWORK

Centres of Excellence

Canada
Gantrex
Crane Rail Systems

France
Cavotec RMS
Spring Driven Reels

Germany
Cavotec Alfo
Spring Driven Reels
Slipring Columns
Fladung GmbH
Aircraft Support Systems
Physical Security Systems

Italy
Cavotec Specimas
Motorized Cable Reels
Panzerbelt Cable Protection
Slipring Columns

Norway
Micro-control
Radio Remote Controls

Sweden
Cavotec Connectors
Electrical Plugs & Sockets

Local Manufacturing

Australia
Cavotec Metool
Motorized Cable Reels

China
Cavotec China
Product Assembly

Germany
Cavotec AixRail
Crane Rail Systems

Sweden
Cavotec Swerige
Product Assembly

USA
Cavotec Inc.
Product Assembly

Group Partners

Belgium
Gantry
Crane Rail Systems

Italy
Brevetti Stendalto
Cable Chains
Pirelli
Flexible Cables
Tratos Cavi
Flexible Cables

New Zealand
Mooring Systems Ltd
Automated Mooring Systems

The Netherlands
De Jong
Permanent Elevators

SALES NETWORK

Cavotec Sales Companies

Cavotec Australia
Cavotec BeNeLux
Cavotec China
Cavotec Denmark
Cavotec Finland
Cavotec France
Cavotec Germany
Cavotec Hong Kong
Cavotec Italy
Cavotec Korea*
Cavotec Latin America
Cavotec Middle East
Cavotec Norway
Cavotec Singapore

Cavotec Sweden
Cavotec UK & Ireland
Cavotec USA
Cavotec Gantrex South Africa
Gantrex USA-Pittsburgh
Gantrex USA-Houston
Gantrex USA-Phoenix
Gantrex USA-Chicago
Gantrex Canada
Gantrex Mexico
Gantrex Chile*
Gantrex Brazil*

* Branch Office

Fladung Representatives

Argenta Elektonik GmbH
Germany
Aviquipo Holland B.V.
The Netherlands
Beijing Baoma Engineering Ltd
China
Colben System Pte Ltd
Singapore
EMSS Pty Ltd
Australia
Ibcol Polen Sp. Z.o.o
Poland
Progecta s.r.l.
Italy
Saisa Europa S.A.
Spain
Statron AG
Switzerland

Fladung in airports

Airports around the world often have very different views on how best to service an aircraft. The decision to work with a specific type of system depends on many internal and external influences and variables. For this purpose Manfred Fladung GmbH has developed systems for either aboveground or underground supply of the necessary services to aircraft. Furthermore, they have also designed a range of auxiliary range of equipment such as towbars, access stairs and connectors for use at airports.

Below the three main Fladung activities are divided, each with their subsequent components. More detailed information on each of these units can be found further on in the catalogue.

Aboveground Supply Systems
Fladung has specially designed equipment to efficiently supply power to parked aircraft without taking up a lot of space around it on the tarmac apron. Each system can of course be specifically designed to meet any requirement from the customer.

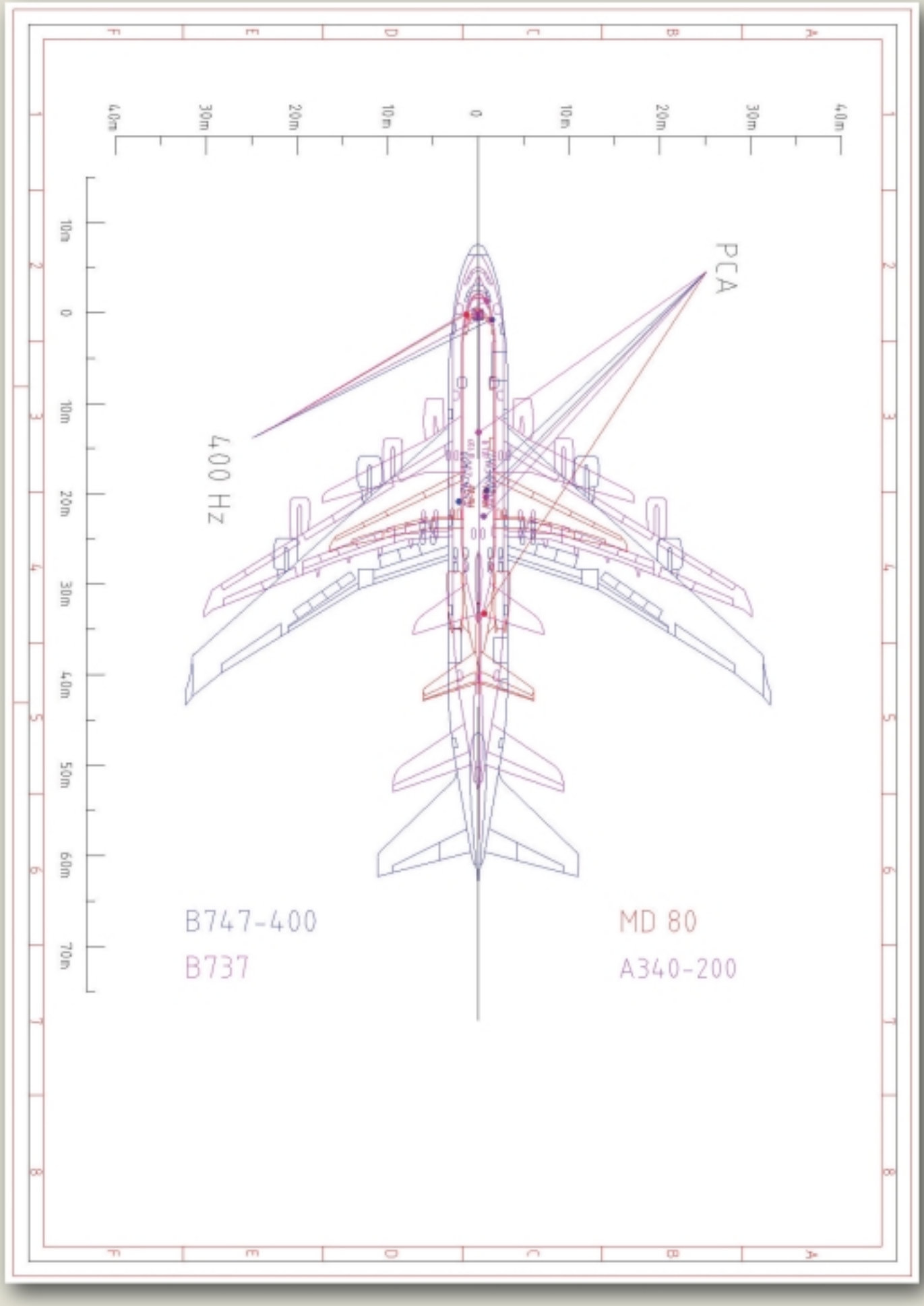
The components of the Fladung Aboveground Supply Systems are cable coils and winders, scissor systems and the Cavotec Caddy.

Underground Supply Systems
The underground supply system designed by Manfred Fladung GmbH is made in such a way to prevent any space to be lost on the tarmac-apron due to the supply of power, water and air to the parked aircraft. The system is based around an underground unit fitted with all the required supply outlets. The unit can be easily raised to working level by releasing the holding-catch or lifting the counter-balanced hatch cover. To meet specific requirements or infrastructural necessities Fladung's system can be divided into two segments; underfloor solutions and hangar solutions.

Aircraft Support Accessories
A third part of the Fladung activity is in the production of a range of auxiliary airport equipment. These units are manufactured to the highest standard and are often an integral part of the Fladung supply systems. The range comprises of specialised connectors, cables, aircraft towbars, access stairs and maintenance equipment.

FLAD002

A 747 coming in for servicing at Frankfurt Airport, Germany.


PCA
400 Hz
B747-400
B737
MD 80
A340-200


I-DACN

Cable Coils

The Fladung Cable Coil is designed to unwind the extension cable when in operation and to wind it up and store it on the integrated drum when not in use. The drum is capable of storing 28m of special cable (7x35mm^2 + 6x4x1mm^2), 4 intermediate cables of 1,5 meters each and the cable coupling and panel connector conform the DFS 400 standard. The power transmission between the terminal housing and the extension cable located on the drum is made with a cable harness or a Fladung 400 Hz coupling.

In order to achieve a safe unwinding of the cable the drum is secured by a patented system of compression rollers around the perimeter of the drum fitted with ball bearings. The transmission of power is made through a gear-motor (with PLC) with a gearwheel and chain-drive system. A limit-switch or initiator controls the end-of-travel cut-off in both directions. As an extra security measure the drum is fitted with an overload fuse that switches off the drum in case of malfunction.

In addition to these cable coils Fladung also produces a range of other cable winders with manual or automatic operation. For use with these other cable winders a special type of cable should be used. This cable consists of 4 twisted, highly flexible, individual cores. Each core has a cross-section of 50 mm^2 and contains 4 control cores with a cross-section of 1 mm^2. The useful length of this special cable is 20 meters. All the commands of the cable winder are transmitted over the integrated control wires. A panel plug for the connection to the aircraft is fitted conform the DFS 400 standard.

FLAD004

Dual cable coils mounted under a passenger bridge at Fraport, Germany.

FLAD005

A new installation of cable coils at Luxembourg Airport.

Page 6: A Fladung Hangar Solution at work in a modern maintenance facility at ATITECH, Italy,

FLAD003

Cavotec Caddy's

The Cavotec Group entered the airport industry in 2002 with an innovative, environment friendly system with the aim to supply aircraft with power, water and pre-conditioned air while reducing costs and time. These reductions are achieved by eliminating many traditional time-consuming servicing methods which take up a lot of tarmac space and at the same time leaving the tarmac-apron free for other services vehicles to approach.

Currently there are 3 different types of Power Caddy and a special 'PCA Caddy' which will be able to deliver pre-conditioned air to an aircraft without using diesel or Freon gases. Development is currently underway for a unit that will be able to supply white and blue water.

The Power Caddy's are essentially motorised cable reel trolleys fitted with two cable reels.

The drive unit is a 24 VDC motor which ensures the Caddy can be driven in both reeling-in and reeling-out directions with a totally automatic reeling of the two cable reels. The cable is stored in the drum-centre hub which provides easy access when in operation. The design also allows for easy dismounting for maintenance or damage. Steering is done with a foldable steering arm which retracts automatically to a vertical (braked) position when released. Thanks to the onboard battery the Caddy 2x90 has about two hours of continuous operational autonomy after which the Caddy must be recharged at the parking bay.

The Caddy 180 has all the features already mentioned with Caddy 2x90 but with some important differences. The Caddy 180 has only one reel and an onboard 180 kVA-400Hz converter.

The battery loader is mounted onboard and automatically recharges when connected to the main power cable. The Caddy 180 is fitted with a towing eye and the drive unit can be technically disengaged if longer transportation of the Caddy is required.

For more information please contact us to receive detailed information on the Power Caddy and the PCA Caddy.

The photograph shows a battery driven Power Caddy with 2x30m of 7x35mm^2 + 6x4x1mm^2 400Hz cable. It has two reels without sliprings and the connector cable stored inside the reel in the easy accessible conical drum. The two reels are driven by an electric motor with a hydrodynamic drive for easy reeling in and out.

The unit is environmentally friendly with an electric battery driven Caddy for driving out to the airplane and back. The battery recharges when supplying 400Hz to the aircraft.

CADD006

This manual Power Caddy is fitted with one reel for up to 35m of 400Hz cable. The connector cable and connector are stored inside the reel in the easy accessible conical drum. The reel is driven by an electric motor with a hydrodynamic drive for easy reeling in and at the same time pulling the Caddy back to the parking position. The unit is fitted with power connectors for the 400Hz converter and full rubber tyres with two swivelling tyres to ensure easy drive and low maintenance. Optionally this Caddy can be mounted with 2 reels for 2x90 kVA.


CADD012

This unit is a battery driven Power Caddy for 1x30m of 7x35mm^2 + 6x4x1mm^2 400Hz cable. The reel is fitted with 400Hz slipring to easily and smoothly supply the cable with connector to the airplane. An electric motor with hydrodynamic drive is fitted on the reel for easy reeling in and reeling out. The unit is fitted with power connectors for the connection with the 400Hz converter and the battery recharges when supplying power to the aircraft.


CADD013

The Caddy 180 is mounted with a 180kVA solid state converter. It is powered by 25m of 50 Hz cable connected to the main electrical system with a power connector enabling easy and flexible use of the unit at different gates. The solid state converter is mounted on the battery driven chassis for easy handling and drive out to the airplane. The unit is fitted with 2 cables with 4 twisted braids (1x50mm^2 + 4x1mm^2) of 8 meters length with a 400 Hz connector for easy handling. The batteries recharge when supplying 50Hz power to the aircraft.

CADD014

Scissor Systems

Fladung has since many years developed and manufactured scissor systems or crocodiles for the supply of power to aircraft parked at the gate. All units are equipped with guide rollers and locking mechanisms. The terminal housing for the unit is mounted at the service stations where the extension cables with the connectors are mounted. For added security the panel connectors are equipped with locks to ensure against accidental activating of 400 Hz power supply.

The connecting tubes are fitted in the joints and allow a 180 degrees opening. They are also fitted in the fixed station and the service station. The power and control core cables are then pulled through the connecting tubes. The length of the scissor-arm can be adjusted according to the wish of the customer.

To accommodate various different requirements, Fladung has manufactured three different types of scissor-system. They are all based on the same principle but with slightly different characteristics.

1. When the 400Hz plug and socket device is positioned at such a height that it cannot be reached without a climbing media, Fladung has developed a unit with an integrated staircase. The cables are mounted to the left and right of the stairs on hooks.

2. At floor-level and when the amount of cable is relatively large a scissor unit with an attached cable cart can be used. This cart is divided in two to accommodate both cables in a easy and orderly fashion.

3. For applications concerning smaller gates and aircraft a basic unit can be used. This comprises of an integrated frame with cable hooks on which the cables can be loosely hung.

Special scissor system with integrated staircase at work at Frankfurt Airport, Germany.

FLAD006

Accessories

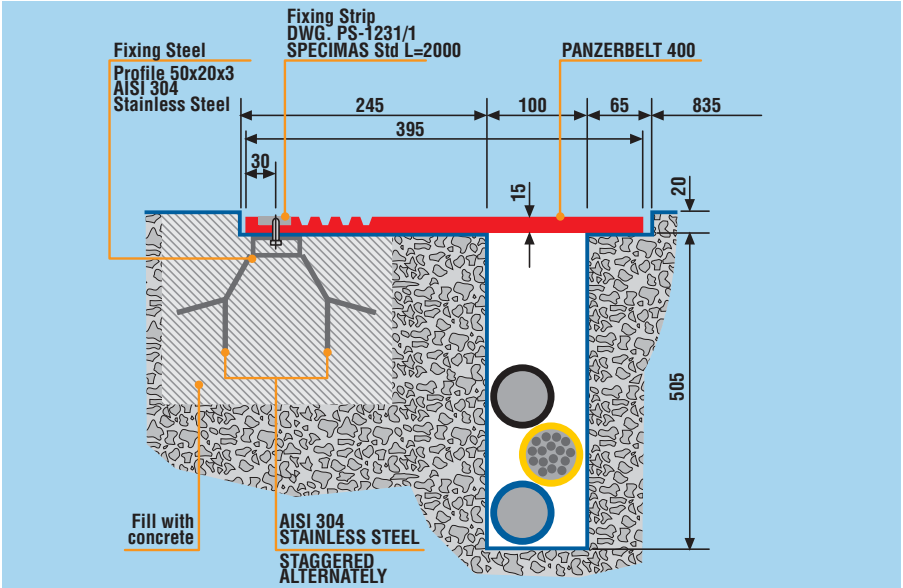
Spring Reels 400 Hz
The Cavotec Group also offers spring driven cable reels for use at airports. These reels are made of special high-grade steel and have an IP66 protection type, ensuring a long lifetime. The slipring assembly is mounted in a solid glass-fibre reinforced plastic housing which withstands corrosion and mechanical wear. Cavotec Alfo spring driven cable reels meet all applicable IEC international norms and standards and are in use all around the world in many different applications.


FLAD007

Cavotec Power Connectors
Cavotec Connectors are an essential part of the "Integrated Technical Panel" concept. They form the connection point between the different types of Caddy supplying power, water and air to the aircraft. These connectors are well-known for their high quality and robust design and are used around the world in many different industrial applications such as ports, mining & tunnelling, mobile generator sets, steel mills and offshore applications.


FLAD008

Panzerbelt Cable Protection
Panzerbelt is the Cavotec Group's solution to a large number of problems concerning the protection of the electrical supply to mobile equipment and has been installed in more than 300 installations around the world. The system is mainly used in environments such as ports, shipyards, steel mills and, most recently, airports which have an intense traffic of heavy load transports. Panzerbelt has a loading capacity of 400N/cm^2 and can be used in temperatures ranging from -30 to +80 degrees Celcius. The Panzerbelt system has been designed to meet all passenger aircraft wheels loads (kg/cm^2).



Underfloor Solutions

Aircraft need the service of a lot of auxiliary equipment when they are being prepared to leave. To supply fuel, power, water and pre-conditioned air there is need of large trucks, heavy diesel generators, cables and hoses that consequently cover most of the tarmac apron around the aircraft. To solve this problem Manfred Fladung GmbH has developed a completely underground system that supplies the aircraft through pop-up systems located very near the parking line. After operation these pop-up units can recede back flush into the tarmac-apron so that it is free for any crossing traffic.

Usually Fladung supplies this system with pre-cast concrete mounting block ready fitted with all the connection necessities. Optionally a complete tunnel system can be installed allowing very easy access and maintenance to all installations.

1 PCA - Power Supply

The connecting hose is located on this pit system, which is required to transport the air-conditioned air in the aircraft. As this is a spiral hose it is just 1/10th of its original length when stored. The spiral hose is connected to the air delivery side of the air-conditioning equipment, and there is an adapter at the top end, which is required for connection to the aircraft. The spiral hose is stored in a storage device that is designed to hold a hose of up to 28 m in length.

There is a pushbutton box above the adapter. The keys in this box switch the air-conditioning equipment on and off. A dependency circuit has been provided above the proximity switch, which only enables the switching on of the air-conditioning unit when the PCA suction pit has been extended up to the end position and the proximity switch has been released.

There is a fresh water hose mounted on the back of the mounting plate with which potable water can be supplied to the aircraft.

2 Waste water and blue water

A suction hose with adapter is attached to the pit system for the removal of waste water and the supply of blue water to and from the aircraft. The suction hose is stored on a drum in the shaft, which is in turn connected to a vacuum pump. In the resting position, the drum is released, which makes it possible to pull the adapter together with the hose by hand, and to connect the same with the aircraft.

There is a second hose on the pit system, for filling the washing water tank in the aircraft. The hose is connected to a water meter, so that the filling quantity can be measured. This hose is also stored on a drum in the shaft. There are two keys above the suction adapter, for winding the hoses.

3 400Hz / 28V

The cables required for the power supply to parked aircraft are mounted in this pit. Optionally 400 Hz and 28V cables can be fitted on each pit system. The cables are anchored in the shaft in a separate collection container. Each cable is equipped with an aircraft connector that is in conformity with the Aviation Standard 29845. This connector is connected to the aircraft after the cable has been pulled out of the shaft by hand. There are pushbuttons on the connector for switching the power supply on and off, after the connector has been plugged in as required. The fact that the connector has been plugged in properly is displayed over a LED with the inscription 'Pilot Contact'. This display is given over a micro-switch circuit, which is built into the E contact of the connector. The switching takes place after the connector has been plugged-in to the extent of around 80% into the receptacle of the aircraft. This optional feature can also be set-up to stop operation of the passenger bridge in case of wrong connection or power failure.

Pop-up systems
These units lift up vertically to working height and close flush with the tarmac apron after operation. As a safety precaution the unit can only be activated after turning a handle and can only retract after pressing on a foot pedal. The system is pre-wired and is delivered for immediate installation on a pre-assembled frame. This systems has a F900 (90 tonnes) class-rating.

FLAD009

Hatch-type systems
Access to these units is obtained through lifting a counterbalanced cover. All types of service can be installed in this system including a fuel exhaust filtering system. These units are classed F900 (90 tonnes).


FLAD010

Hangar Solutions
This system is developed to require an absolute minimum of space while supplying all necessary services from various point within a hangar. These units are specially fitted with a proximity switch which activates the unit only when fully erected. All the fuses are mounted visibly fro inspection or maintenance. These units are rated F900 (90 tonnes).


FLAD011

Aircraft Towbars

Specially designed aircraft towbars are an integral part of the Fladung Aircraft Support Systems range. These units are capable of towing all types aircraft from manufacturers such as Boeing, Airbus, Tupolev, Ilushyin, Saab and many others. The standard available tube lengths are: 3,510mm, 4.430 mm and 6.885mm. As an option all units can be fitted with a torsion adapter, shock absorbers and a pivoting towing eye. The mini-towbar has been specially designed for towing smaller aircraft and features a drawbar eye instead of the standard hook or towing eye.

Universal Towbar

- Steel/Aluminium tube with floating axle
- Undercarriage with two wheels
- Hydraulic hand pump
- Pneumatic tyres
- Adjustable lowering speed with flow control valve
- NATO towing eye
- Welded handles
- Interchangeable adapter heads
- Shearpin overload protection
- 'Skydrol' resistant paint

FLAD012

Standard Steel/Aluminium Towbar

- Steel/Aluminium tube with floating axle
- Rubber bellows to protect floating axle
- Undercarriage with pneumatic tyres
- Hydraulic handpump
- Adjustable height with flow control valve
- NATO towing eye
- Welded handles
- Shearpin overload protection
- 'Skydrol' resistant paint

FLAD013

Mini Towbar

This towbar is specially designed for towing small aircraft with upto 2000kg nosewheel weight (15% max takeoff weight). It features a steel tube with a height adjustable drawbar eye, an undercarriage with soft tyres and an overall length of just over 3.500 mm. To enable better manoeuvring, the nose wheel support can also be moved axially.

FLAD014

Special Cables

The use of the right type of cable is very important to ensure the correct functioning of equipment. This even more true in harsh working environments, such as airports, where the cables are subjected to daily use in all kinds of weather conditions. Each Fladung' cable is strenuously tested and confirms to all applicable regulations and standards to ensure maximum safety and reliability when in operation. All cables are highly flexible and resistant to mineral oils, kerosene and defrosting liquids and abrasion.

400Hz Cable 1 x 120mm^2 + 4 x 1,0mm^2
The 400 Hz cable 1x120 + 4x1.0 mm^2 with 4 integrated control wires is subject to a maximum operating voltage of Uo/U=0.6/1 Kv and a current carrying capacity of 366 Amp. The outer diameter is 25,0 + /-0.4 mm


FLAD015

400 Hz Cable 7 x 35mm^2 + 6 x 4x1mm^2
The 400 Hz cable 7x35 + 6x4x1 mm^2 was specially developed for supplying power to aircraft. With its 7-floor construction, excellent electrical values are obtained with minimal inductivity. The conductor resistance of 20°C is 0.565 Ohm/km. The diameter of the halogen-free outer jacket is 39.7 mm.


FLAD016

400Hz Cable 1 x 50mm^2 + 4 x 1,0mm^2
The 400 Hz cable 1x50 + 4x1.0 mm^2 with 4 integrated control wires is subject to a maximum operating voltage of U/U0.6/1KV and a current carrying capacity of 202 Amp. The outer diameter is 17.8 + /- 1.0 mm. The cable 1x50 + 4x1.0 mm^2 is also available as a twisted (stranded) version.


FLAD017

400Hz Cable 1 x 70mm^2 + 4 x 1,0mm^2
The 400 Hz cable 1x70 + 4x1.0 mm^2 with 4 integrated control wires is subject to a maximum operating voltage of U/U0.6/1KV and a current carrying capacity of 250 Amp.
The outer diameter is 18.7 + /-1.0 mm. The cable 1x70 + 4x1.0 mm^2 is also available as a twisted (stranded) version.


FLAD018

Aircraft Connectors

Connectors play a very important role in the day to day servicing of aircrafts. Without good connectors expensive equipment stands still, aircrafts cannot be serviced and personnel cannot get their jobs done. To ensure a maximum lifetime and security of operation Fladung has designed their own special aircraft connectors.

These connectors all have changeable plugs and contacts and a divided housing for easy on-site assembly. The special sealing resin ensures complete protection from water and forms a very strong and long-lasting connection to the cable.
All connectors are all made out of high shock resistant material which is abrasion-proof and non-flammable. As an option all the connectors can be fitted with a pilot contact with a LED indicator for 80% contact and an integrated temperature control.

CADD001

The Cavotec Caddy in action servicing an aircraft with 2x90k VA power.

400Hz Connector & Panel Connector

This 400Hz Connector is ideally suited for cables 4x1x50 + 4x1 mm², 4x1x70 + 4x1mm² and 7x35 + 6x4x1mm². The connectors are fitted with the following features:

- Interchangeable connector contacts/connector forepart
- Interchangeable connector housing
- Pilot contact and LED
- 4 cable bushings d =11.1 mm
- 2 cable bushings d =7.92 mm
- Current loading (LN 29845): 200A continuous load, short-term overload of up to 150%
- Temperature range: - 55°C up to + 125°C
- Pulling force and insertion force (LN 9065): approximately 380 N
- Cross-section of connecting cable can be 35 mm², 50 mm² or 70 mm²

The 400Hz Panel connector has all of the above mentioned features but has additionally 4 integrated pushbuttons for various functions such as “power on”, “power off”, “unwind” and “wind”. The connector panel is rated (LN 9065) for 208V – 400Hz and has a protection classification of IP67.

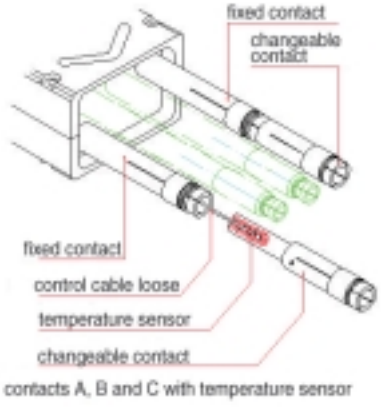

FLAD019

28V Connector & Panel Connector

This 28V Connector is ideally suited for 2x120 + 4x1mm² cable but other types can be fitted on request. The connectors are fitted with the following standard with the features below but can optionally be with equipped with a pilot contact. The standard features for the 28V connectors are:

- Interchangeable connector contacts / connector forepart
- Interchangeable connector housing
- Pilot contact and LED
- 2 cable bushings d =11.1 mm
- 1 cable bushings d =7.92 mm
- Current loading (LN 29845): 200A continuous load, short-term overload of up to 150%
- Temperature range: - 55°C up to + 125°C
- Pulling force and insertion force (LN 9065): approximately 380 N
- Cross-section of connecting cable can be 35 mm², 50 mm² or 70 mm²

The 28V Panel connector has all of the above mentioned features but has additionally 2 integrated pushbuttons for 'power on' and 'power off'. The connector panel is rated
(LN 9065) for 208V – 400Hz and has a protection classification of IP67



contacts A, B and C with temperature sensor

Temperature Control 2000

A new development from Fladung is the 'Temperature 2000'. This device is specially designed to monitor the temperature for the power contacts and can be easily attached directly to the plug connection of the aircraft.
Clip-on sensors measure the temperature of the 400Hz contacts directly at the exact place of contact ensuring a very accurate measurement.
The extendable thermo-element gives an analogue display of the resistance values over the control wires of the extension cable. These readings can be directly processed in the control cabinet and converted into various switching operations such as: rotating alarm lamp, warning signal, power cut-off or a data call to the fixed networks or mobile phone.

At work around the world

Cavotec equipment and technology is at work around the world in very diverse operating environments, from ports and terminals to offshore and energy and from mining and tunnelling to marine industry and shipyards. The pictures on these two pages show some typical examples of Cavotec equipment at work around the world.

A Pull & Store reel application at Copenhagen Port, Denmark

Gantrex clips and pads at a steel mill, USA

Cavotec Connectors at Stockholm Port in Sweden

Panzerbelt at work at Southampton Port, UK

Cavotec reel and connectors at work in a Swedish mine

De Jong PE elevator in action in the Gulf of Mexico

Cavotec reels in action at L.A. port, USA

A Cavotec Specimas MPS application for the Seven Seas

Cavotec Caddy at work at Frankfurt Airport, Germany

Brevetti chains in action in Odense, Denmark

Cavotec Connectors at work Port of Gotheburg, Sweden

Giant tunnelling reels for the San Gothard tunnel, Switzerland

A reefer plug application at the port of Dunkirk, France

A Pull & Store reel in action at Everglades terminal, USA

CAVOTEC

Connecting mobile equipment

Cavotec Group Headquarters

The Netherlands
Cavotec Group Holdings N.V.
Postbus 213
NL-2950 AE Alblasserdam
phone: + 31 78 693 0794
fax: + 31 78 693 1212

U.K.
Cavotec International Ltd
Stirling Way, Market Deeping
Lincolnshire PE6 8AS
phone: + 44 1778 346 769
fax: + 44 1778 341 850

For more information consult our websites:
www.cavotec.com
www.gantrex.com
www.fladung-airport-systems.de
www.micro-control.no

"Cavotec", "Specimas", "Cavotec Caddy", "Cavoflex", "Cavotec Connectors", "Panzerbelt", "Pull & Store" and the "Cavotec coil logo" are trademarks of the Cavotec Group. All other trademarks and trade names are the property of their respective owners.

Cavotec Group Manufacturing Companies

Australia
Cavotec Metool
Cardiff (Newcastle)
Perth

China
Cavotec China
Shanghai

Canada
Gantrex Canada Inc.
Ajax, Ontario

France
Cavotec RMS
Cergy Pontoise (Paris)

Germany
Cavotec Alfo
Overath (Köln)

Cavotec Aix Rail
Aachen

M. Fladung
Mömbris (Frankfurt)

Italy
Cavotec Specimas
Nova Milanese (Milan)

Norway
Micro-control
Stjørdal

Sweden
Cavotec Connectors
Dalby (Malmö)

Cavotec Sverige
Haninge (Stockholm)

U.S.A.
Cavotec Inc.
Statesville, NC

Group Partners

Belgium
Gantry
Nivelles

The Netherlands
De Jong's Liften
Leerdam

Italy
Brevetti Stendalto
Monza (Milan)

Pirelli Cavi
Milan

Tratos Cavi
Florence

New Zealand
Mooring Systems
Christchurch

Cavotec Group Sales Companies and Distributors

Argentina
Cavotec Latin America
Buenos Aires

Australia
Cavotec Metool
Cardiff (Newcastle),
Brisbane, Sydney, Perth,
Melbourne

BeNeLux
Cavotec Benelux
Alblasserdam (Rotterdam)

Brasil
Marlin Gantrex
Rio de Janeiro

Chile
Gantrex
Santiago

China
Cavotec China
Shanghai

Denmark
Cavotec Danmark
Odense

Egypt
Ase, Cairo

Finland
Cavotec Finland
Espoo (Helsinki)

France
Cavotec RMS
Cergy Pontoise (Paris)

Germany
Cavotec Alfo
Eschborn (Frankfurt)

Hong Kong
Cavotec Hong Kong
Shatin

Italy
Cavotec Italia
Nova Milanese (Milan)

Korea
Cavotec Korea
Ulsan

Mexico
Gantrex Mexico
Monterrey

Norway
Cavotec Norge
Drammen

Singapore
Cavotec Singapore
Singapore

South Africa
Cavotec Gantrex
Germiston

Sweden
Cavotec Sverige
Stockholm

Taiwan
Ehrung Industrial
Taipei Hsein

U.A.E.
Cavotec Middle East
Dubai

U.K. & Ireland
Cavotec UK
Market Deeping

U.S.A.
Cavotec USA
Statesville, NC

Gantrex Inc
Pittsburgh, PA
Phoenix, AZ
Chicago, IL
Houston, TX

X2EN-CGSS0-00

July 2004