How A Digital ID Card System Works
Digital ID card systems are made up of basically 4 components:

- **The software** allows you to create an ID card design and enter all the information you would like to appear on the ID card. The **digital camera** captures a person’s photo and automatically loads it into the software. The **digital printer/encoder** takes all the text, photos, and images from the software and prints them directly onto a plastic ID card. And lastly, the **computer** ties everything together.

As you can see, digital printing really is a fast, efficient, and easy way to produce ID cards. And the results are outstanding. Just look at all the features digital ID cards have to offer:

- **Clear, Continuous-Tone Photos**
- **Full-Color Graphics & Logos**
- **Smart Chips**
- **Unique Photographic Backgrounds**
- **Bar Codes**
- **Edge-to-Edge Printing**
- **Sharp, 600 dpi Text**
- **Holographic Security Features**
- **Magnetic Stripes**
- **Automatic Front & Back Side Printing**
- **2-Dimensional Bar Codes**

How Digital ID Card Printers Work
If you are among the truly curious, you may wonder how FARGO’s digital card printer/encoders actually get those great looking images onto plastic cards. Well, this too is easier than you might expect. FARGO Card Printer/Encoders utilize two different, yet similar, technologies called **direct-to-card printing** and **High Definition Printing**” (HDP”).

Direct-to-card printing is the traditional technology used by digital card printers to print images directly onto the surface of a plastic card. It does this by heating a special print ribbon beneath a thermal printhead, resulting in the transfer of color from the ribbon to a blank card.

The Original Way To Make ID Cards
People have been creating and using identification cards since before the turn of the century. Prior to the early 1990s, the most common method of producing an ID card was known as the composite or **film-based** method. This simply involved taking a person’s photo, cutting it out, and laminating it to a card-sized piece of paper containing the person’s name, ID number, and any other personal information.

Although the initial investment for a film-based system was relatively low, the time, labor, and individual cost per card was high. Plus, these cards were easily counterfeited. As a result, a new method called **digital printing** arose during the late 1980s and early 1990s.

The New Way To Make ID Cards
Today, digital printing has become the technology of choice for the majority of organizations issuing identification cards — and with good reason.

Digital ID card systems are growing increasingly affordable, are easy to use, and offer a host of benefits including…

- **Ultra-fast production times** (complete, full-color photo ID badges in as fast as 25 seconds!)
- **Low cost per card**
- **Single-step printing**
- **Unlimited card design possibilities**
- **Unlimited color options**
- **Automatic magnetic stripe, bar code, proximity, or smart card options** (for access control, time and attendance, etc.)
- **Powerful database options** (for employee, student, or membership records or reporting)
- **Highly durable cards**
- **Difficult to counterfeit**
- **Faster, easier badge replacement**
- **Far less labor**

… and the list goes on and on. But to truly understand the benefits of digital printing, you should understand how it works. It’s surprisingly simple.
With FARGO’s new
High Definition
Printing technology, the printer first
prints images onto
the special HDP Film
which is then fused into the surface of
a blank card through heat and
pressure. Because the graphics and
text are printed on the underside of
HDP film, the image is "sandwiched“
between the highly durable film and
the card (see diagram below). This
unique process results in exceptional
print quality, extreme durability, and
the ability to print on virtually ANY

card size or type.

Both of these remarkable
digital printing technologies, share two print
methods. These print methods are
called dye-sublimation and resin
thermal transfer.

Dye-Sublimation
Dye-sublimation is the
process FARGO printer/
encoders use to
print smooth, continuous-tone
images that look
truly photographic.
This process uses a dye-based ribbon
that is partitioned by a number of
consecutive color panels. The panels
are grouped in a repeating series of
the three process colors — Yellow,
Magenta, and Cyan (YMC) — along
the entire length of the ribbon.

During printing, a printhead
containing hundreds of thermal
elements heats the dyes on the ribbon
which then vaporize and diffuse into
the surface of either the card (for
direct-to-card printing) or the HDP
Film. A separate pass is made for each
of the three color panels on the
ribbon. By combining the colors of
each panel and by varying the heat
used to transfer these colors, the
printer is able to produce up to 16.7
million, photo-realistic colors.

Resin Thermal Transfer
Resin Thermal Transfer is the process
FARGO printer/encoders use to print
sharp black text and crisp bar codes, extreme
durability, and visible-light bar code scanners.
Like dye-sublimation, this process uses
the same thermal printhead to transfer
color from the ribbon to the card or
HDP Film. The difference, however, is
that solid dots of color are transferred
in the form of a resin-based ink which
is fused to the surface of the card
when heated. This produces very
durable, single-color images.
Resin black panels are included on
many of FARGO’s full color dye-
sublimation ribbons so that you can
automatically print both dye-
sublimation and resin images on the
same card. This gives cards the benefits
of both print methods.
Resin-only ribbons
are also available for
use with FARGO’s
direct-to-card
printers for printing
economical one color cards in as fast as
5 seconds. These ribbons consist of a
continuous roll of a single resin color
and can produce up to 3,000 cards.
Black, scratch-off and a variety of
other resin ribbon colors are available.

Do You Need ID Cards?

Once you understand how digital ID
cards are made, you may still find
yourself wondering, “Does my
organization or school really need ID
cards?” This is a very important
question and one that can be
answered only by you and your
colleagues.

There are, however, a few things to
consider which may help you make
your decision.
The most basic reason for ID cards is
simply to identify people. So, ask
yourself why you need to identify
people. Most schools or organizations
identify people for safety or security
reasons. ID cards identify which people
are authorized to be in or around your
facility and which people are not.

Unauthorized visitors can be a
nuisance, a distraction, or even a
threat to your employees, students,
members, or customers.

They can also be costly if they are
using your equipment or services
without permission or without paying
the necessary fee. In this regard, the
question simply becomes do you have
people, equipment, or services you
would like to protect? If the answer is
yes, ID cards can be an extremely
effective solution.

Another primary reason for ID cards is
convenience and efficiency. Today’s
digital ID cards can include bar codes,
magnetic stripes, or even small
computer chips called smart chips.
These extra features provide access to
a host of automated applications you
may not have even considered. For
example, ID cards can be used for
controlling access to restricted areas
such as rooms, buildings, or parking
lots. They can also be used for
controlling access to equipment such
as computers, copy machines, or fax
machines. If your facility has (or is) a
cafeteria or store, ID cards can provide
credit and debit programs for
students, employees, or customers.

Today’s ID cards can even be used for
phone cards, for checking time and
attendance, or for regulating
admission to sporting events, theme
parks, resorts, clubs, and much more.

Just think how much time, money, and
hassle your organization could save
through these convenient digital ID
card features. Plus, even if you don’t
have a need for such features right
away, your digital ID cards could easily
be upgraded at any time to include
one or all of these options.

Hopefully, you now have a better
understanding of digital ID cards and
how they can be helpful to your
organization. If you have any
questions about digital ID cards or
would like more information on digital
ID card systems or FARGO Card
Printer/Encoders, please contact us. We
look forward to helping your
organization become as safe, secure,
and efficient as possible.

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